

The Volkswagen Emissions and Toyota Recall
Scandal: An Application of the Situational Crisis
Communication Theory

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1 | Abstract

This paper applies an event study methodology on crisis situations to study immediate responses of corporate crisis communication on firms' market value. The results are subject to the theoretical framework of the Situational Crisis Communication Theory by Timothy W. Coombs (W. T. Coombs, 2007). The theory suggests that crisis managers should match strategic responses to the level of crisis responsibility and reputational threat faced. The author chooses two automobile manufacturers, namely Toyota and Volkswagen, which recently faced major crises, due to an accident and intentional fraud respectively. The implemented strategies match the underlying theory. The Toyota case suffers of major limitations; the effect of interest cannot be isolated as confounding effects are present. The Volkswagen case reveals insignificant positive effects on two consecutive days following a public announcement, and a significant decrease in excess volatility after the event of interest.

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2 | Introduction

2.1 The Importance of Business Reputation

An adequate situational management is crucial to an enterprise that is negatively influenced by the consequences of a decisive event. Historically, crises of organizations have been mainly considered a threat to the operations; production might need to be altered, product recalls implemented. Recent empirical and theoretical research have concentrated on the reputational element: Among other things, the diversity in media channels' coverage in line with an increasing relevance of sustainability have made it interesting to investigate the effects of different crisis response strategies.

The spread of digitalism has brought up an increased perception of the values that people, nations and companies stand for. As a result, an international corporation is well advised to not idle with the greater "corporate social responsibility" that it bears. Multinationals are endangered to lose reputation by breach of law or low-grade production. Media coverage lets little failure of a business unnoticed, reputational threats have never been more dangerous.

Therefore, it is of high relevance to analyze reactions to reputational issues on the financial market. Results reveal that consumers respond more negatively to product recalls with greater media attention, more severe consequences, and higher perceived product quality (Liu & Shankar, 2015). This aspect depicts how bound a company is to the reputation of its products or services. The sports clothes producer Nike was hit by a reputational crisis in 1992, after the news highlighted bad labor conditions in the company's production sites in Indonesia. Thereby, product sales fell by over 9%. In 2004, the US pharmaceutical company Merck withdrew its drug Vioxx from the market. Merck withheld information about increased risk of heart attacks and stroke from its customers for over 5 years, disclosures had revealed. The share price of Merck fell by approximately 27%. Furthermore, in 2010 a deep-water oil spill led to a 55.8% drop in financial value of the oil and gas company BP.

2.2 Introduction to Crisis Communication

Crisis managers need to apply a communication process to maximally absorb negative consequences. The process depends on numerous factors: Uncertainty about consumer cognition and media involvement can lead to surprises in effects on perceived quality, purchase intention or brand attitude (Fang & Yang, 2011). On the other hand, decision makers can make use of marketing factors to enhance consumer loyalty, reduce the elasticity of reaction or weaken competitors marketing campaigns (Keller, 1993). It is of exceptional importance to focus on the characteristics of a crisis in association to the brand and products to optimally approach post-crisis

communication. No standard idea exists on what strategy works best, but “the more relative the crisis is with brand association, the more harm crisis will do to brand equity” (Dawar & Lei, 2009).

Posited by W. Timothy Coombs in 2007, the Situational Crisis Communication Theory (SCCT)¹ suggests crisis managers to match strategic crisis responses to the level of crisis responsibility and reputational threat posed by a crisis. A general guideline to post-crisis organization is given to identify how key facets of the crisis situation can influence stakeholders’ attributions and additionally, how certain patterns in the post-crisis communication affect stakeholders. The theory is based on scientific and empirical evidence. Note that Coombs refers to stakeholders as any group that can affect or be affected by the operation of an organization (W. T. Coombs, 2007).

A crisis can disrupt an organization’s operation and poses a financial and reputational threat (Barton, 2001). Furthermore, it can erode the organization-stakeholder relationship (Hearit, 1994). Nonetheless, effective crisis management can strengthen an organization’s ties to its stakeholders (Ulmer, 2001). Coombs and Holladay have examined three types of emotions, namely sympathy, anger and schadenfreude² (Heider, 2013), generated by a variety of crisis types (W. T. Coombs & Holladay, 2005). The research integrates emotions in the SCCT to prove that crisis communication can be more effective “when it is cognizant of the emotional reactions of stakeholders and factors this information into the selection of post-crisis response strategies” (W. T. Coombs & Holladay, 2005).

2.3 Basic Elements, Motivation and Findings

The author of this research paper intends to examine the effects of certain crisis responses. Specifically, financial data will be assessed to analyze the reaction of stakeholders on public announcements. One will inquire two specific crises in the history of the automotive industry, namely the Toyota recall crisis and the Volkswagen emissions scandal.

In September 2015, the German car brand manufacturer VW made public that it had intentionally programmed its car engines with a deceptive software. The software activates certain emission controls only during emissions testing. Thereby, Volkswagen violated federal law in the United States and Europe, amongst others. Its share price dropped by 40.9%, quarterly US sales of the corporate dropped by 24.7% in comparison to 2014. In 2016, Volkswagen agreed to spend more than \$14 billion to settle its US emissions lawsuit. In 2009, Toyota’s electronic throttle control failure led to fatal car crashes. Consequently, the world’s largest automaker had to implement a massive recall action. The production and sales of the company had to be halted for a period. Moreover, the company failed to explain the safety issues on time. In effect, the share price dropped by 22% and the company paid \$1.2 billion in fines to defer prosecution.

Crisis management must involve in three phases of a crisis, namely pre-crisis, crisis response and post-crisis³. This research focuses on responses of the Volkswagen

¹Theory (experimentally)-based, empirically tested methodology

²Specified by the Attribution Theory posited by Fritz Heider in 1958

³Generally accepted belief of economic practitioners

and Toyota management on the concerning crisis situation. By putting the crises in the SCCT framework it can be assessed how the two automotive enterprises have dealt with the reputational threat. One can analyze the results that a communication strategy had on the firms' value. Furthermore, the behavior of investors can be assessed by considering volatility in the equity market.

The data used in the analysis stems from "Datastream"⁴. Event studies will be used to analyze the effect that specific events had on the Toyota and Volkswagen share price.

The selected empirical cases depict two major crises in recent economic history. Multiple groups of stakeholders were involved in and affected by the crises. Furthermore, the comparison of these specific crises is logic: The companies are direct competitors. Moreover, it is interesting to analyze the effects of an accident (Toyota) compared to an intentional fraud (Volkswagen).

The management of Toyota faced massive criticism in relation to the implemented crisis communication. The response is said to have led to confusion and had not been publicized timely enough. The Volkswagen crisis led competitors to similar negative public exposures. It happened when industry competition to develop environmentally friendly vehicles was occurring. It is considered that the diesel emissions scandal could accelerate the industry transformation towards sustainability.

The latter highlights the economic and social relevance of both cases. In addition, an interesting match with the theoretical framework of the Situational Crisis Communication Theory is identified.

In general, the findings suppose that an application of event study metrics on crisis situations must be met with caution. The implemented crisis responses of Toyota and Volkswagen match with the Situational Crisis Communication Theory posited by W. Timothy Coombs in 2007. The isolation of an effect of the event of interest on the share price is difficult as confounding factors are present. The results show no significant increase in share prices due to chosen events. Nonetheless, an insignificant increase over two consecutive days and a significant difference in event and post-event window magnitudes surmise a positive effect of crisis communication on the market value of Volkswagen.

⁴Financial database published by Thomson Financial

3 | Literature Review

Presently, opinions are divided as to whether a certain response strategy can be seen as the most constructive during times of an enterprise' crisis. Although past literature is of mainly descriptive fashion, the aspiration to create a better foundation for this function has developed. The work on case studies and accepted wisdom has come to a general acceptance of an all-round theoretical concept: The Situational Crisis Communication Theory (W. T. Coombs, 2007) created a prescriptive system for matching crisis responses to the crisis situation. It has been used to organize the discussion of the content research of the past and serves as base for future research and theory development (Botan & Hazleton, 2010).

The roots of SCCT can be found in psychology, specifically in the process of attaching meaning to behavior of other individuals. Coombs as both main contributor in the field of crisis communication and positioner of SCCT has drawn on William Benoit's theory of image restoration. Benoit reflects on the ubiquity associated to the communicative phenomenon of repairing a damaged reputation that occurs throughout human society (W. Benoit, 1995). However, it is important to assess Benoit's work in detail to not arrive at a tentative implementation that does not lead to expected results (T. Coombs & Schmidt, 2000). An empirical analysis on a racism crisis recommends a more rigorous application of image restoration theory to unpack its utility for crisis management (T. Coombs & Schmidt, 2000).

3.1 General Suggestions by Past Research

One can perceive crisis response research as vibrant and growing. Nonetheless, it remains at an early stage of theoretical development with literature being largely descriptive. General suggestions can be inferred from past papers in the specific field:

3.1.1 Preparation and Structure

It is obvious and generally accepted that an organization is compelled to offer a communicative response to defend its corporate image in case it is confronted with a reputational threat (Bradford & Garrett, 1995). According to Carney & Jorden, certain elements must not be omitted in any communication strategy: 1. Analysis or audit to find aspects of the business susceptible to negative publicity, 2. Situation analysis, 3. Audience identification, 4. Key message development, 5. Anticipation of and preparation for potential questions, 6. Selection of the medium for the message, and 7. Designation of a spokesperson (Carney & Jorden, 1993). The positive consequences such planning elements have on crisis management are generally recognized.

Furthermore, the authors stress for flexibility in execution.

Kathleen Fearn-Banks describes different theories to help structure general crisis communication (Fearn-Banks, 2010): Firstly, information about differences in stakeholders' impression of the organization are crucial to make targeting of crisis communication possible. This is explained by the image restoration theory (W. L. Benoit, 1997). Thereafter, careful¹ research will be the first step in the rehabilitation process. Secondly, the decision theory counsels crisis managers to compare weight of alternative outcomes to arrive at the most efficient solution. The third theory prescribes to regard the past, the decision makers and the innovation and change that has been put into practice. As a result, it can be decided whether something is adopted or not. The various theories suggest attributes and characteristics of proactive public relations programs that enable organizations to recover from crises more swiftly than organizations without such preparation (Fearn-Banks, 2010). Nonetheless, the likelihood of a crisis is noted as being underestimated by many managers (Fearn-Banks, 2010). In his book "The Crisis Manager", Otto Lerbinger states that conscientious risk management and contingency planning are principles of modern crisis management. It is part of every manager's responsibility and capability to develop a crisis mentality and monitor different scenarios of business functions (Lerbinger, 2011).

Coombs and Holladay advise crisis managers to follow a two-step process to identifying the reputational threat of a situation. Firstly, the consideration of news media and stakeholders' reactions will help to define the type of crisis on basis of the subjects' attributions of crisis responsibility (W. T. Coombs & Holladay, 2002). Common crises can be categorized into the victim cluster, accidental cluster and preventable cluster. The three categories respectively have minimal, low and strong attributions of crisis responsibility. Secondly, the intensifying factors of crisis history and prior reputation should be reviewed to determine the manner in which reactors are going to perceive the crisis (W. T. Coombs & Holladay, 2002). Experimental studies have proven the existence of an intensifying value in cognition that aligns with crisis history (W. T. Coombs, 2004) and prior reputation (W. T. Coombs & Holladay, 2001). This proves to be true albeit the crisis arises from victimization or an accident (W. T. Coombs, 2004). Furthermore, Coombs and Holladay (W. T. Coombs & Holladay, 1996) prove that the more an organization is held responsible for its crisis, the more accommodative a reputation repair strategy must be in order to be effective and protect the organization's reputation (W. T. Coombs, 2004).

3.1.2 The Role of New Media

The diversity in Social Media channels plays a role in the intensification of crises effects on organizations. Case studies show that the "severity of crisis is rising with the complexity of technology and society" (Lerbinger, 2011). The number of "society watchdogs" increases, as do the dynamics in the economy; fewer crises remain unpublicized (Lerbinger, 2011). Consequently, the vulnerability of organizations increases. The latterly mentioned media channels demand their integration into the crisis management and communication process (W. T. Coombs, 2014). The modern ways of information exchange influences the emergence of a crisis and has a relevant

¹"...to clearly understand both the nature of a crisis and the relevant audience(s)" (W. L. Benoit, 1997)

effect on altering the pre-crisis phase of crisis communication. The term “paracrisis” has been used to describe how social media influences the emergence of the crisis; it happens when a crisis begins to receive public attention online. Therefore, a paracrisis is a situation in which managers must address a crisis risk in full view of its stakeholders (W. T. Coombs & Holladay, 2012). Whenever it is mishandled – there is ineffective crisis communication – it can escalate into a crisis. In general, one can say that the means of communication, through new media, have created a need for modification of crisis communication research, with the knowledge base remaining valid. Anyhow, the discussion about the change it has induced is outside the scope of this research.

3.1.3 Public Relations in Crises

In their book on public relations theory, Botan and Hazleton refer to a range of research papers in the field of crisis management. Three form lessons for an appropriate reaction are established (Botan & Hazleton, 2010):

Firstly, aggravating situations need to be detected in a timely fashion (Darling, 1994). The information vacuum that opens needs to be filled with accurate information to create a perception of control (Botan & Hazleton, 2010; Lukaszewski, 1997). The slightest hesitancy to report and cooperate can lead to reputation issues and concerns that will affect the legal strategy (Lukaszewski, 1997). Moreover, a slow response allows others to fill the vacuum with misinformation or speculations (Botan & Hazleton, 2010). An important element of an appropriate information system includes “the capability to describe the firm’s current situation as well as to make solid projections about its future” (Darling, 1994). Secondly, it is important for an organization to react consistently. A firm with geographically diverse operations is well advised to have procedures in place, to deal with matters orderly and timely². At best, the CEO or a designated company spokesperson is used to channel information accurately to avoid an approach that is perceived as uncaring, insensitive or inept (Carney & Jorden, 1993). In case a crisis team of different spokespersons is formed, it is crucial for them to deliver a consistent message (Barton, 2001) - inconsistency erodes the believability of a message (Clampitt, 2012). The latter is in line with Robert L. Heath’s general findings on corporate communication that he presents in 1994: He underlines the importance of coordinated effort between internal communicators and external communication like public relations and advertisements (Heath, 1994). A more extensive discussion on the relevance of internal stakeholders is discussed in the section on possible future research. Finally, one arrives at the third recommendation: Openness during rehabilitation of a crisis must be regarded carefully. Botan states that it has led to controversies in explanation due to different modes of interpretation in the academic field (Botan & Hazleton, 2010). On the one hand, an organization releases negative signals in case it does not publicly signal its full transparency in the situation of a crisis. It can be understood to not be in control, stonewalling or trying to hide (Barton, 2001). Company representatives are advised to fully disclose information to secure that stakeholders and reporters feel familiar and not view the organization as purposefully trying to deceive the public (Kaufmann, Kesner, & Hazen, 1994). Nonetheless, voluntarily revealed information could prove costly in subsequent lawsuits (Kaufmann et al.,

²According to specific crisis circumstances

1994). Full disclosure is meant to minimize long-term³ damage to organizations. However, corporate lawyers suggest that advocates of full disclosure may significantly underestimate legal cost. A newspaper article mentions that “the potential legal liability may be trivial compared with the risk of alienating customers, employees or regulators” (Sherman, 1989). Coombs suggests against a universal application of highly accommodative strategies, and for a situational approach in selecting crisis responses (W. T. Coombs, 2007). An organization must balance its concerns for financial stakeholders against concerns of stakeholders injured by the crisis (Botan & Hazleton, 2010). A more collaborative approach to reconcile the often contradictory counsel of public relations and legal professionals should be consulted (Fitzpatrick, 1995; Kaufmann et al., 1994).

In relation to the latter, David L. Sturges criticizes the fact that crisis communication has been relegated to a defensive role (Sturges, 1994). Instead he argues for the integration of crisis communication as part of the larger issues of communication policy and strategy. This can lead to “a more effective and efficient influence of opinion development among members of publics important to an organization” (Sturges, 1994). In addition, a defensive role in crisis situations may lead to a worsening in situation: Negative emotions can be a consequence of infelicitous apologies, due to the discouragement of our present legal system to apologize (Tyler, 1997). Moreover, Lisa Tyler calls out crisis communication theorists: She challenges them to develop a more sophisticated understanding of the ways in which concerns about liability affect corporate executives from apologizing for crises for which the corporations themselves bear some responsibility (Tyler, 1997).

3.2 Prescriptions of Past Research

Besides general suggestions of past academic research that has been dealt with in the latter paragraphs, it is important to direct the attention to prescriptions that focus on specific types of strategies a firm can implement in a crisis situation.

The Situational Crisis Communication Theory means to help managers in protecting an organization’s reputation during a crisis. One of its main messages: Responsibility acceptance of the organization’s crisis response must be consistent with the stakeholder’s attributions of crisis responsibility generated by the crisis situation (Botan & Hazleton, 2010).

The impact of communication in situations has been a long-held belief in rhetorical studies (Ware & Linkugel, 1973) and interpersonal communication (Sharkey & Stafford, 1990). Ware and Linkugel (Ware & Linkugel, 1973) have early addressed four discernible sub genres of the apologetic form that are being used in apologetic speeches. Furthermore, Benson (Benson, 1988) has been one of the first to analyze successful proactive behavior of a firm during a crisis in particular. This led crisis researchers to articulate a future goal, namely to find a system that matches the comprehension of situations with a right choice of strategy in reaction. Lerbinger (Lerbinger, 2011) and Mitroff (I. I. Mitroff, Pauchant, & Shrivastava, 1988) predicted that different crisis situations can be identified as part of clusters⁴ associated to distinct factors. This added a significant component of rationalization to crisis

³Usually considered above 3 years

⁴Two-dimensional system of identification similar to matrix of SCCT (W. T. Coombs, 1995)

management and future research.

The corporate apologia research was the first to systematically identify crisis response strategies. Ice (Ice, 1991) as well as Hobbs (Hobbs, 1995) used apologia in their empirical studies to analyze the differentiation in response characteristics. Their list of responses similarly included (1) denial, no claim of responsibility; (2) bolstering, the acceptance of responsibility but construction of a link to something positive; (3) differentiation, separation from larger context; and (4) transcendence, the placement in a new, higher context (Ice, 1991). On the one hand, Ice (Ice, 1991) recognized a gain in directly tailoring responses to please the needs of the stakeholders. On the other hand, Hobbs (Hobbs, 1995) focused on the identification (relationship) between firm and stakeholders that breaks during a crisis. He argued that responses can be used to rebuild identification. In addition, Hobbs analyzed the utilization of combination of responses to target the diversity of identifications with stakeholder parties (e.g. shareholders or customers). Research was widened by Hearit (Hearit, 1994) who stressed a coherent perspective that included findings from social legitimacy and rhetoric theory. Social legitimacy addresses the match between organizational values and stakeholder values. As a result, Hearit developed a framework and vocabulary for integrating corporate apologia and crisis management.

Apologies are occasionally being used with the objective of restoring an image, in other words to regain status. In his paper, Benoit focuses on his so called Image Restoration Theory as viable input in the development and understandability of messages that respond to corporate crisis (W. L. Benoit, 1997). Without putting certain types of crises in context with appropriate responses, he focuses on the messages an organization can send out: These include subsets of responses under the headers (1) denial, (2) evasion of responsibility, (3) Reducing offensiveness of event, and (4) Mortification (W. L. Benoit, 1997). Furthermore, he stresses a thorough preparation and analysis of the crisis and gives prescriptions on how to maximize the effectiveness of the persuasive discourse.

Pearson and Mitroff (Pearson & Mitroff, 1993) shared similar conduction in their framework of crisis clusters, on the logic of crisis portfolios. According to them, crisis management needs to be concerned about four distinct variables, namely the type of the crisis, its phases, the systems it faces (e.g. technical; human; infrastructure) and the stakeholders it affects (Pearson & Mitroff, 1993). A strategic checklist helps to establish and reinforce custom programs through strategic, structural, diagnostic, communication, and cultural efforts (Pearson & Mitroff, 1993).

4 | Theoretical Framework

4.1 Situational Crisis Communication Theory

Research by Benoit (W. Benoit, 1995) as well as Allen and Caillouet (Allen & Caillouet, 1994) have been the main contributions of a fundamental¹ paper by Coombs. A list of strategies is created that serves as basic module of the SCCT. On the one hand, Benoit examined face work (interpersonal efforts) and apologia (rhetorical self-defense) to create his list. On the other hand, Allen and Caillouet looked at the impression management literature to express a list of strategies. The integration of forms resulted in five categories: nonexistence, distance, ingratiation, mortification and suffering (W. T. Coombs, 1995). The following list pictures the subcategories that Coombs extracted from a diverse portfolio of past literature:

4.1.1 Crisis-Response Strategies

- Nonexistence Strategies
 1. Denial
 2. Clarification
 3. Attack
 4. Intimidation
- Distance Strategies
 1. Excuse
 - (a) Denial of intention
 - (b) Denial of violation
 2. Justification
 - (a) Minimizing injury
 - (b) Victim deserving
 - (c) Misrepresentation of the crisis event
- Ingratiation Strategies
 1. Bolstering
 2. Transcendence
 3. Praising Others
- Mortification Strategies
 1. Remediation

¹As of July 19, 2016, Coombs' "Choosing the right words" was cited 730 times on Google Scholar

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2. Repentance
 3. Rectification

The objective of a nonexistence strategy is to show that there is no link between the fictitious crisis and the organization (W. T. Coombs, 1995). A distance strategy tends to acknowledge the crisis and serves to create public attendance of the crisis while weakening the linkage between the crisis and the organization (W. T. Coombs, 1995). Public approval is sought by means of an ingratiation strategy by connecting the organization to things positively valued by public (W. T. Coombs, 1995). A mortification strategy attempts to win forgiveness of the publics and to create acceptance for the crisis (W. T. Coombs, 1995). Finally, the idea behind a suffering strategy is to win sympathy from the public; a positive rather than a negative is drawn from the link to the crisis.

Compassion as part of the strategy plays a great role in the list. An article by Coombs found a significant, positive effect for compassion on organizational reputation, honoring accounts, and intended potential support behavior (W. T. Coombs, 1999). The author marks a benefit in implementation of elements of compassion in case of transgressions and product-harm crises as well as accidents (see matrix below). Nonetheless, compassion must not be taken as a “cure-all response”, since it can be a drain on stock prices (W. T. Coombs, 1999) – the underlying social-financial tension in crisis management is revealed. According to Goodman and Marcus, a conflict arises in case of accidents: The need of victims contrasts the potential corporate liability. Moreover, management can plausibly claim there are matters that it is not in control of. In such situation, shareholders are likely to suffer if managers are accommodating (Marcus & Goodman, 1991). In case of a scandal however, the situation is clear and shareholders benefit when managers are accumulating (Marcus & Goodman, 1991). Furthermore, it is shown that concession depicts an effective instrument against accusations of unethical behavior of corporations (Bradford & Garrett, 1995).

It is with help of the Attribution theory² posited by Fritz Heider (Heider, 2013) that an organization should choose a strategy in a crisis situation. A crisis is represented by four characteristics that shape the public attribution: crisis type, veracity of evidence, damage, and performance history (W. T. Coombs, 1995). In his paper, Coombs discusses the relationship to attributions and the potential impact on specific strategies of these four factors.

4.1.2 Classification of Crises

The field of crisis research has created numerous schemes to which a crisis can be classified. One can connect them in reliance to dimensions in attribution (Wilson, Cruz, Marshall, & Rao, 1993; Russell, 1982). Coombs pictures a matrix with (1) an internal-external and (2) an intentional-unintentional dimension. A faux pas is an unintentional action that an external agent tries to transform into a crisis (W. T. Coombs, 1995). An accident is unintentional and happens during the course of normal organizational operations (W. T. Coombs, 1995). Transgressions are intentional actions taken by an organization that knowingly place publics at risk

²In social psychology, attribution is the process by which individuals explain the causes of behavior and events

or harm (W. T. Coombs, 1995). Terrorism refers to intentional actions taken by external factors (W. T. Coombs, 1995).

	UNINTENTIONAL	INTENTIONAL
EXTERNAL	Faux Pas	Terrorism
INTERNAL	Accidents	Transgressions

Table 4.1: Two-dimensional matrix by Coombs

Veracity of evidence refers to the proof of whether or not a crisis event occurred (W. T. Coombs, 1995). Crisis situations vary in terms of the amount of damage associated with the trigger event (I. Mitroff & Pearson, 1993). Damage may be to the organization itself, to external publics or both and can be classified as severe or minor (W. T. Coombs, 1995). Furthermore, public seems more willing to forgive an organization with a positive performance history of problems (Barton, 1993). Performance history can be ranked positive or negative.

The selection guidelines that are needed to attach different combinations of the four crisis characteristics to a specific strategy are visually depicted in four decision flowcharts, pictured in Coombs paper. The victim status must be taken into consideration after categorizing the damage of the crisis and before categorizing the performance history. The public can be divided between victims and non-victims. Victims anticipate some form of closure. Non-victims want assurance that the crisis will not affect other groups, especially themselves (W. T. Coombs, 1995). The flowcharts are pictured in the appendix.

4.2 Excess volatility of stock returns

It is a widely accepted empirical conclusion that learning effects can have substantial impact on stock price dynamics. Learning of investors can therefore contribute to an explanation of excess volatility and predictability of stock prices (A. G. Timmermann, 1993). Numerous empirical research (LeRoy & Porter, 1981; Shiller, 1979; Flavin, 1983) has implied that simple models of market efficiency accounted for less than actual variation in prices of stocks and bonds after a random arrival of new information (Shiller, 1981). Measures of the variance of speculative assets were used to analyze the relevance of rational expectations and recursive learning components to find a substantial effect (A. Timmermann, 1996). Furthermore, Bullard and Duffy introduced adaptive learning behavior into an economic model to match an autoregressive forecast models of investors with stock returns (Bullard & Duffy, 2001). The findings showed changes in investors' expectations to be an explanation for excess volatility in the data.

4.3 Hypotheses & Assumptions

This research will examine the crisis response strategies used by Volkswagen and Toyota to see if these agree with the suggested strategies of the SCCT model. Moreover, an event study methodology will be applied to determine the short-term reaction to the corporates' crisis communication strategy. In addition, one will examine

cumulative excess volatility in the capital market to assess the adaptive learning behavior or changes in investor expectations. A qualitative analysis will discuss the impact of the two crises of interest.

The following hypotheses on both Toyota and Volkswagen will be (dis)confirmed throughout the research paper:

Hypothesis 1 (H1): *The response strategy suggested by the Situational Crisis Communication Theory matches with the selected response strategy of the firm*

Hypothesis 2 (H2): *The chosen event associated to the company specific crisis response successfully led to a regain in financial value*

Hypothesis 3 (H3): *The magnitude of the excess volatility after the crisis event decreased over time*

An event study as statistical research method will be used to (dis)confirm the latter hypotheses. The following general finance theory assumptions are set to provide the theoretical basis needed to assess the hypotheses:

Assumption 1: *Capital markets accurately reflect the economic implications that the analyzed event has for the firm in question. The market is efficient.*

In their paper, Brown and Warner (Brown & Warner, 1980) note that “event studies provide a direct test of market efficiency. Systematically nonzero abnormal security returns which persist after a particular type of event are inconsistent with the hypothesis that security prices adjust quickly to fully reflect new information”.

Assumption 2: *Abnormal (excess) returns indicate the market reaction to the unanticipated event. The event is unforeseen.*

Assumption 3: *The relationship between the firm and the reference index are not confounded by other events. The effect of other events is isolated.*

5 | Data

One decisive event in each crisis time line of the two companies has been selected. Both can be seen as a first approach of each company to deal with public communication. Firstly, Toyota presented an action plan after numerous recall announcements and apologized for the recall problems just after. Secondly, a Volkswagen U.S. executive sends an apology to citizens during testimony before congress. Furthermore, note that the chosen events happen after the crisis was realized by the public. Thus, the loss in market value due to negative implications in association to the crisis should have already happened. This makes it possible to analyze investors' reactions on communication, with a lower risk of bias by other simultaneous implications.

The financial data has been extracted from "Datastream". The asset price data is used to calculate the realized daily returns for the event dates. Firstly, the daily S&P 500 price index is used to proxy for the market portfolio. This American stock market index is based on the market capitalization of 500 large companies having common stock listed on the NYSE or NASDAQ. A high relevance of Toyota and Volkswagen equities on the German and Japanese national index defends the choice. Thereby, the risk of auto correlation can be reduced. Secondly, the daily share price of Toyota Motor Corporation (TYO), as traded in Yen on the Tokyo stock exchange, is used. Thirdly, the daily share price of the Volkswagen AG, as traded in Euro on the Frankfurt stock exchange, is used. Note that the National Bureau of Economic Research has classified common stocks as a leading indicator of business cycles (Moore & Shiskin, 1967).

5 | Methodology

This research was conducted to analyze immediate changes in the value of two firms after specific events. The events were implied by the companies' crisis response strategy. Given rationality in the marketplace, the effect of an event will immediately be reflected in security prices (MacKinlay, 1997). Abnormal returns can be inferred by separation of general stock market price movements from the effects of the confounding event.

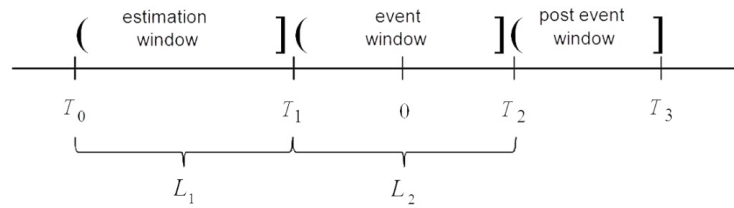
5.1 The Event Study Metrics

Existing literature concerning the estimation of abnormal returns typically employs the event study methodology constructed in 1969. Fama et al (Fama, Fisher, Jensen, & Roll, 1969) have utilized an event study to test the market's efficiency in response to stock split announcements. The rationale behind applying an event study design is: Although it may be impossible to measure the direct impact of announcements on organizational and operational matters on the future profitability of a corporate, one can investigate whether the decision to incur a certain change is viewed as wise by investors (Fama et al., 1969).

The event study metrics offers various models to calculate the normal return. The following study employs the capital asset pricing model (CAPM). It estimates the model parameters by using an ordinary least square time-series regression based on realized returns: Daily equity rates are being analyzed over a period surrounding the specific event of interest. The estimation window (L1) of the event study is 30 days wide and used to calculate the expected rates of return. Furthermore, an event window (L2) is set to 2 and 5 days for the Toyota and Volkswagen study respectively. The employment of an event window that includes days before and after the exact occurrence helps to account for prior information leakage and lingering effects. In general, the impact on shareholder wealth is focused on the actual event day itself: The financial markets are quick to respond to events that contain information relevant to a firm's future financial performance (Wright & Ferris, 1997). Moreover, a post-event window is assessed to analyze the development of excess return after the event has happened. The post-event window of the Toyota and Volkswagen study is set to 2 and 5 days respectively. The post-event window counts the same amount of days as the event window of the concerned study.

The following paragraph means to explain the calculation in greater detail. The CAPM needs an estimate for its market portfolio to calculate the sensitivity of an asset's return to the return of the market portfolio. A broad stock index is used to calculate the beta factor of the regression model over the estimation window. In

Figure 5.1: Event study time line



order to calculate the excess returns $E(R_{it})$, i.e. the returns that can be attributed to the event of interest, one first needs to estimate the expected return $E(R_{it})$ for the event date:

$$(1) \quad E(R_{it}) = \alpha + \beta * R_{mt}$$

Where:

- $E(R_{it})$ = The expected return for company i in period t;
- α_i = The intercept term;
- β_i = A regression constant; and,
- R_{mt} = The return of the market in period t.

ER_{it} attributes to the hypothetical return that would have occurred in the absence of the event in examination. The regression function in (1) can be applied in the following step: By subtracting the expected component of return from the observed rate, one is left with the excess return that can be attributed to firm-specific activity:

$$(2) \quad ER_{it} = R_{it} - E(R_{it})$$

Where:

- ER_{it} = The excess return for company i in period t;
- R_{it} = The actual return for company i in period t; and,
- $E(R_{it})$ = The expected return for company i in period t.

Moreover, in order to ascertain the magnitude of excess return over the entire event window, one calculates the cumulative excess return CERt:

$$(3) \quad CER_t = CER_{t-1} + ER_t$$

Where:

- CER_t = The cumulative excess return at time t;
- CER_{t-1} = The cumulative excess return at time t-1; and,
- ER_t = The excess return at time t.

5.2 Significance Testing

A statistical test is applied to test whether the excess returns are significantly different from zero on a statistical basis.

The so called “Student’s T-test” compares means and standard deviations to make a scientific comparison. The t-distribution is a univariate continuous probability distribution that arises in situations where the sample size is small and the population standard deviation is not known. The larger the sample, the higher resemblance the distribution has with the normal distribution. Due to the short term character of this event study, it is not necessary to account for a potential skewness bias by means of a skewness-adjusted t-test. The analysis employs an alpha (significance) level of 10%.

The one-sample t-statistics is calculated for each daily excess return using the following equation:

$$(4) \quad t_{AR} = \frac{ER_t}{\frac{\sigma_{ER}}{\sqrt{N}}}$$

Where: t_{AR} = The t-statistic;
 ER_t = The excess return at time t;
 σ_{ER} = The standard deviation of excess returns; and,
 \sqrt{N} = The sample size.

A “Paired Sample T-test” is used to compare the magnitudes of event window and post-event window cumulative excess returns. It compares two dependent means of the same sample. In the following study, absolute cumulative excess returns of the same sample are compared. The test can be applied, since the assumption of normal distribution around mean zero is satisfied. The alpha (significance) level employed in the analysis is 10%.

The paired sample t-statistics is calculated using the following equation:

$$(4) \quad t_{CER} = \frac{d}{\frac{\sigma_{ER}}{\sqrt{N}}}$$

Where: t_{CER} = The t-statistic;
 d = The difference between absolute cumulative excess returns;
 σ_{ER} = The standard deviation of excess returns; and,
 \sqrt{N} = The sample size.

6 | Results

The following section discusses suggestions of the Situational Crisis Communication Theory towards the crisis situation of Toyota and Volkswagen. Furthermore, the chosen crisis response event is explained in detail. Finally, the author assesses the proximity of the suggested strategy to the past response in each of the two empirical cases.

The current research uses the SCCT as theoretical framework. It can be seen as the only well-developed framework in the field of crisis response research. Furthermore, the model has been tested in a diverse portfolio of case studies. The proper categorization of a crisis into the framework of the theory is critical in determining the applicable response strategy for crisis management. The reader is advised to turn to the theoretical framework and appendix to fully understand the following qualitative analysis.

6.1 Hypothesis 1 (H1)

Firstly, the Toyota recall crisis can be classified as accident, which relates to the unintentional-internal dimension of the matrix. The reason for “sticking accelerator pedals” causing unintended acceleration has been named to be deficiencies in the Electronic Throttle Control System. Although a 2011 investigation of NASA scientists found no electronic defect in the vehicles, Toyota had to settle numerous lawsuits with a payment of over 1.2 billion US dollars. The associated investigation had been testified to not have completed investigations. Nonetheless, there are separate beliefs on who was to blame. Anyhow, the public expected Toyota to offer a solution. For the purpose of this research one can assume the veracity of evidence to have been true. The crisis induced damage on the organization itself as well as the public. Toyota had to implement a recall action of over 10 million affected cars. In addition, the unintended pedal failure led to a fatal accident and injuries in traffic. The individual consumer suffered from the decrease in value of its belonging, the Toyota car. Damage could therefore be classified as severe. Furthermore, the performance history could be described as positive. People had relied on the quality and safety of Toyota cars until the crisis happened. On the one hand, the latter evaluation leads “Mortification” or “Ingratiation” to have been optimal strategies in response to victims. On the other hand, the theory suggest “Excuse” or “Ingratiation” as appropriate response towards non-victims.

The crisis started to show presence in August, 2009 when a Lexus car driver, produced by Toyota Corporation, called the US emergency services to report that his accelerator pedal was stuck. All four people in the car died after a crash that followed. As expected, Toyota announced numerous recall actions and production

suspenses during the months after. On February, 1 the company faced public during a presentation of an action plan that had been set up. Parts had been shipped to dealers and were used to fix the accelerator pedals. The next day, the U.S. Transportation Secretary Ray LaHood sharply criticized Toyota's response, telling the Associated Press that Toyota may be "a little safety deaf". On February, 5 the president and CEO Akio Toyoda apologizes for the recalls at a news conference and promises to beef up quality control. This 5-day period marked the first approach towards Toyota's crisis communication strategy.

The apology can be regarded as a mortification strategy. Toyota attempts to win forgiveness of victims and non-victims, as well as create acceptance of what has happened. Moreover, the management sought for public approval with the set-up of an action plan. This can be seen as an ingratiation strategy.

As a result, one can confirm the first research hypothesis in association to the Toyota case: The response strategy suggested by the Situational Crisis Communication Theory matches with the selected response strategy of the firm.

Secondly, the Volkswagen diesel scandal could be classified as transgression, which relates to the internal-intentional dimension of the SCCT matrix. The trigger event, namely the development and installment of an illegal software to be used by the automotive product, was imposed by internal and intentional forces. Thereby, Volkswagen knowingly placed publics at risk or harm. Moreover, there was no doubt of the veracity of evidence: The major differences in emissions tests in test centers compared to tests on the road is striking and evident. The crisis induced damage on both the organization itself and the public. The management of Volkswagen announced the most costly restructuring process in the history of the firm. It reasoned the need for change with the damage the scandal had on the operations. The individual consumer suffered from a loss in value of the car it bought. Furthermore, the damage to the general public is the increased environmental harm due to an increase in emissions. Therefore, the damage of the Volkswagen emissions scandal could be classified as severe. Nonetheless, due to the exemplary quality of products until the date of the emissions scandal and the firm's image as German car maker, the performance history could be described as positive. The latter evaluation leads "Mortification" or "Ingratiation" to have been the optimal strategies in response to victims as well as non-victims respectively.

The crisis began on September, 18 with the U.S. Environment Protection Agency claiming that Volkswagen had installed a software on more than 475,000 cars sold in the United States that enabled the company to cheat on emissions tests. On September 22, Volkswagen admits that 11 million diesel vehicles worldwide were fitted with the deceptive software. The car brand appoints a new CEO and commissions an external investigation by U.S. law firm Jones Day. On October, 8 the U.S. executive, Michael Horn, testifies before congress and expresses an apology. Nonetheless, he puts the blame on "a couple of software engineers". This event marked the first approach towards Volkswagen's crisis communication strategy.

The apology can be regarded as a mortification strategy. Volkswagen attempts to win forgiveness of victims and non-victims, as well as create acceptance of what has happened. Moreover, the linkage between the crisis and the organization is weakened by claiming that only a small group of employees is responsible for the scandal. This can be regarded as a distance strategy.

As a result, one can confirm the first research hypothesis in association to the Volkswagen case: The response strategy suggested by the Situational Crisis Communication Theory matches with the selected response strategy of the firm.

6.2 Hypothesis 2 (H2)

Table 6.1 and 6.2 include data on the chosen event windows associated to the Toyota recall scandal and the Volkswagen emissions scandal respectively. Furthermore, Table 11.3 and 11.4 include data on the chosen post-event window associated to the Toyota and Volkswagen study respectively.

The date of each day of the concerning window is shown in the first column. Asset prices of the concerning firm and market index are depicted in the second and third column. Furthermore, the realized returns on the equities are presented in the fourth and fifth column. The excess returns are calculated by means of the regression model that is set up in the methodology section. A t-test leads one to (dis)confirm significance of the obtained daily excess returns. The last column calculates the aggregate excess return starting from the first day of the concerning event or post-event window.

Date	TYMO(P)	S&PCOMP(MV)	TYMO(P)RET	S&PCOMP(MV)RET	ER	T-Statistic	Significance	AER
01.02.2010	3450	1089,19	-1,15%	1,42%	-1,08%	-0,52	NO	-1,08%
02.02.2010	3605	1103,32	4,39%	1,29%	4,48%	2,16	YES	3,40%
03.02.2010	3400	1097,28	-5,85%	-0,55%	-5,58%	-2,68	YES	-2,17%
04.02.2010	3280	1063,11	-3,59%	-3,16%	-3,04%	-1,46	NO	-5,21%
04.02.2010	3280	1063,11	-3,59%	-3,16%	-3,04%	-1,46	NO	-5,21%
05.02.2010	3315	1066,19	1,06%	0,29%	1,25%	0,60	NO	-3,96%

Table 6.1: Toyota - Event Window

Date	TYMO(P)	S&PCOMP(MV)	TYMO(P)RET	S&PCOMP(MV)RET	ER	T-Statistic	Significance	AER
08.10.2015	117,5	2013,43	-1,10%	0,88%	-1,06%	-0,20	NO	-1,06%
09.10.2015	125	2014,89	6,19%	0,07%	7,35%	1,40	NO	6,28%
12.10.2015	133,5	2017,46	6,58%	0,13%	7,66%	1,46	NO	13,94%

Table 6.2: Volkswagen - Event Window

The statistically significant excess returns on day 1 and day 2 of the event window that concerns Toyota point into different directions. On February 2, 2010 the share of Toyota increased by significantly more percentage points than the regression formula expects. Furthermore, on February 3, 2010 the share of Toyota decreased significantly more percentage points than the regression expects. No certain direction in the reaction effect of investors can be analyzed. Therefore, this result is not supportive of the hypotheses of the study. Anyhow, the aggregate excess return on the last day of the event window depicts a negative trend. Reasons for this finding will be discussed in the Discussions section.

The reaction on day 0 of the event window that concerns Volkswagen is negative. Furthermore, the study shows insignificant positive excess returns on day 1 and day 2 of 7,35% and 7,66% respectively. A high standard error in the regression design leads to non-significance. These results surmise a certain direction in the reaction effect of investors that can not be scientifically confirmed. Therefore, the results

are not supportive of the hypotheses of the study. Anyhow, with regard to the cumulative excess returns of the Volkswagen share price, the decreasing volatility in share price movement that followed after the event are discussed in section 6.3.

As a result, one cannot confirm the second hypothesis of the research. Firstly, the change in share price is both significantly increasing and decreasing in the Toyota study. Secondly, the scientifically insignificant increase in share price of Volkswagen provides an insufficient basis to a scientifically valid answer, that is in line with the Situational Crisis Communication Theory.

6.3 Hypothesis 3 (H3)

Date	CER	Paired Sample T-Test	Significance
05.02.2010	3,96%		
12.02.2010	5,30%	0,642	NO

Table 6.3: Toyota - Paired T-Test

Date	CER	Paired Sample T-Test	Significance
12.10.2015	13,94%		
15.10.2015	4,05%	-1,888	YES

Table 6.4: Volkswagen - Paired T-Test

The absolute cumulative excess return of day 5 of the post-event window concerning Toyota reads 5,30%. In comparison, the absolute cumulative excess return of the event window reads 3,96%. According to the paired sample t-test, these numbers are insignificantly different. Respectively, the absolute cumulative excess return of day 3 of the post-event window concerning Volkswagen reads 4,05%. In comparison, the absolute cumulative excess return of the event window reads 13,94%. According to the paired sample t-test, these numbers are significantly different at a 10% significance level.

As a result, one cannot confirm the second hypotheses of this research in association to the Toyota case. On the other hand, one can confirm the hypothesis in association to the Volkswagen case. The magnitude of excess returns in the period after the chosen event has been decreasing for Volkswagen. The result suggests the notion that adaptive learning behavior or changes in investor expectations were responsible for the decrease in cumulative excess volatility in share price. The intensity of learning decreased.

7 | Discussion

The results of this empirical analysis partially support the original hypotheses. The variety in suggested notions does not lead the author to extract a definite conclusion about the underlying theory. The efficiency theory posits the share price as indicator of business cycles as it quickly and fully reflects new information. Investors' reaction on a company's first approach to crisis communication must therefore be partly responsible for a realized return.

Toyota was accused of a late reaction on the recall crisis that started in September 2009. Between the outbreak of the recall crisis and the first company reaction in February 2010, the share price rose until it experienced a major drop in value during the first months of 2010¹. The loss in market value due to the recall scandal did not happen immediately after the recalls were announced, since the investors were not expecting a mechanical flaw to be a reason for the failure. The positive effect of an accurate choice of crisis response could have been outweighed by negative reactions on the admittance of flaws by the car manufacturer in February 2010. One can argue about a failure in event window placement. Nonetheless, the research concentrated on the first approach to public communication, which undeniably has been the chosen event.

The recall came at a difficult time for Toyota, as it was struggling to emerge from the recession in 2008. The company announced that it could face losses of 2 billion US dollar from lost output and sales worldwide. In 2012, Toyota regained its spot as largest auto manufacturer in the world.

The drop in market value of Volkswagen happened immediately after the crisis was announced to the public. Therefore, a major confounding effect such as in the Toyota study can be suspended. The decrease in share price at day 0 of the event window can be ascribed to the fact that the testimony before the US congress happened after the Frankfurt stock exchange closed at 17.30 CEST time. Anyhow, the insignificant positive results on day 1 and 2 do not support the theoretical framework. Nonetheless, the recognizable positive trend in share price as well as the decrease in magnitude of the volatility in returns can lead one to ascribe the crisis response to a positive effect on the market value of the firm.

In 2016, the Volkswagen management has announced a restructuring of the Volkswagen Group as consequence to the emissions scandal. Furthermore, the firm will settle claims in the United States by paying more than \$14 billion.

The Toyota recall crisis arose from a car accident, for which the car mechanics got accounted for. The real causes of the incident had never been completely revealed by investigators. A certain group of people blamed the government for false accusations,

¹The share value of Toyota Motor Corp. (TM) dropped by 22% between January 21 and February 9

until the scandal had settled. In comparison, the wrongdoer publicly confessed an intentional fraud in association to the Volkswagen emissions scandal. Moreover, next to the individual car owners as victims, the general population can be seen as affected. Emission levels of diesel cars were proven to be up to 40 times higher than the acceptable levels. This difference is seen to be the main reason for the greater damage that Volkswagen will have to sustain compared to what Toyota endured in the past.

The literature review of this research paper addresses the cost and benefit reconciliation that an organization needs to act on. On the one hand, openness during rehabilitation of a crisis might lead to stakeholder appreciation. On the other hand, voluntarily revealed information can lead to monetary costs in association to subsequent lawsuits. Therefore, it is a question of subjective appropriateness that an organization should pose when choosing the crisis communication strategy. During the congressional testimony in October 2015, Michael Horn, as Volkswagen head executive in the United States, blames the scandal on “a couple of software engineers”. In July 2016, new allegations claim that high ranking executives as well as senior management had known about the fraudulent behavior much longer than first indicated. The dilemma might have led Volkswagen to create the picture of corporate innocence when social attention was wide and confidence of the public and authorities was low. This might not have been perceived as honest and transparent in 2015, but could have saved Volkswagen from greater legal compensation. Insofar, there has been no “cure-all response” (W. T. Coombs, 1999). Therefore, a credible but wrong statement might be chosen as an appropriate public communication strategy in certain cases.

At the time, these circumstances will certainly have had repercussions on thereaction by analysts and actors in the financial markets and their decisions of buying or selling VW shares. Considerations on the right communication strategy in view of ongoing lawsuits in different legal environments and the struggle to regain consumer confidence as well as to restore the company’s reputation are highly complex and subjective. Therefore, the resulting reaction of financial markets are and will be difficult to anticipate. The results of this research as regards hypothesis 2 and 3 reflect the underlying difficulties of financial actors to clearly judge the long term effects of a communication strategy. Furthermore, it is difficult to translate such results into an economic outlook for the company. Image restoration as a key success factor of a communication strategy (W. Benoit, 1995) can only be achieved in the long term and should therefore, from a scientific point of view, be analyzed only after the most important lawsuits have been settled.

There is no doubt that the diesel emissions scandal will not only have consequences on operations and the overall strategy of the Volkswagen enterprise. The problems car makers have to develop cars that meet regulations in the United States or Europe are striking. Therefore, car makers have announced plans to move away from motor fueled cars, towards sustainable transport with more efficient and less polluting vehicles. The emergence of battery electric vehicle models will presumably change the transport industry on the whole. The race towards a green economy has taken over the automotive industry and certainly has enough relevance to have an impact on other sectors of the economy.

8 | Limitations & Future Research

8.1 Limitations

The following section discusses limitations of this research paper. In general, the application of an event study builds upon numerous theoretical assumptions. Thereafter, it becomes possible to link conclusions to obtained results. Shleifer and Vishny (Shleifer & Vishny, 1991) do not believe in the reliability of the efficiency theory. The researchers demonstrate that “using the stock market as a gauge of profitability of corporate actions can lead one seriously astray”. Investors can and do make systematic mistakes. Furthermore, the financial market is a complex system that is affected by numerous factors. Therefore, short-window event studies might not accurately capture the economic impact of complex strategic actions (Oler, Harrison, & Allen, 2008). This can be regarded as limitation of the third assumption of the event study metrics. The isolation of an effect on the share price is a necessary simplification of the market. Anyhow, researchers need to face conclusions with caution as unforeseeable uncertainty can distort the results: Abnormal returns are not entirely the result of market reactions to the specific event of interest (Sitthipongpanich, 2011). As an example, antitrust policies of the governments can have large unintended effects (Shleifer & Vishny, 1991).

Furthermore, the data suffers from limitations. An event study forecasts expected returns after a regression model on the data in the estimation window. In economic theory, a high R-Square shows how well the model fits in-sample data. Ultimately, a higher R-Squared results in better out of sample forecasts in empirical analysis. Both regression models of this study are characterized by an R-Square below 1%. Furthermore, the market index assessed to proxy for the market portfolio must not be the optimal representation. The S&P 500 solely contains American equities. Toyota and Volkswagen are traded on the Japanese and German stock market. Furthermore, no price data on weekends is given. This can lead to misinterpretation, as price increases or decreases on weekends are accounted for on Monday only. Another issue arises from the nature of information arrival (Eckbo, 2008). Investors can anticipate actions or receive information about an upcoming event. Thereafter, the event window might not be optimally chosen. This would lead to wrong results and interpretation of excess returns. Moreover, the length of the estimation period is subject to a trade-off between improved estimation accuracy and potential parameter shifts (Sitthipongpanich, 2011). Therefore, false application can lead to flaws in the results.

Moreover, the created procedure model by Coombs must not lead to the desired results due to some limitations in approach. Coombs initiated the concentration of research on the symbolic approach of crisis communication by integration of ideas

from the relational management perspective (W. T. Coombs & Holladay, 2001). Therefore, he stresses the allowance for possible differences between the guidelines of the SCCT and those that premise on financial or social responsibility objectives. Moreover, the guidelines treat pre-crisis planning and descriptive strategies as given, due to the emphasis being on communication during the later stages of the crisis life cycle (Sturges, 1994). Reason for failure of the prescribed crisis-management efforts include “the psychological barrier (e.g. selective exposure, selective perception, selective retention) and the existence of contrary messages being sent by the government, the media, or influential members of the community” (W. T. Coombs, 1995). No crisis-management model should promise success (Newsom, Turk, & Kruckeberg, 2012). However, systematic, integrative processes to control for risks are a proper and attainable goal for organizations (Pearson & Mitroff, 1993).

8.2 Future Research

The capital asset pricing model uses two variables to build a regression. A next step could be the inclusion of other factors to build a multiple variable event study. This could lead to better forecasting of expected returns. As an example, an industry index can be included in the regression estimation. Furthermore, the integration of and future research into affection and SCCT should be “an intellectually profitable venture” (W. T. Coombs & Holladay, 2005). The role of consumer emotions generated by an accidental crisis can have impact on the effectiveness of the various crisis response strategies in terms of their ability to protect the organization’s reputation (W. T. Coombs & Holladay, 2005). Specifically, the emotions of consumers as a result of the Volkswagen emissions scandal had a great impact on the corporate’s reputation. As a start, Coombs proposes to code actual crises for both the strategy used and the nature of the crisis. In turn, one can compare the obtained attribution scores to determine if crisis response strategies affect attributions as predicted (W. T. Coombs, 1995).

In general, the research of crisis communication is momentarily emerging in two specific areas:

Firstly, internal crisis communication is about creating an internal framework to which an organization communicates with its employees during a crisis. It mainly focuses on analyzing about the relatedness of a private or public organization to its internal stakeholders to find out to what extent it differs from external crisis communication. It is proven that internal stakeholders have a more complex psychological dimension in a crisis situation, characterized by emotional and cognitive reactions and feelings (e.g. insecurity and feeling of betrayal) (Frandsen & Johansen, 2011). Sometimes it is best to apply a strong, at other times a more flexible integration as contribution to the “rhetorical agenda, in which many corporate and non-corporate voices meet, compete, collaborate or negotiate” (Frandsen & Johansen, 2011). While now illuminating employees as ambassadors (an asset) during a crisis (Frandsen & Johansen, 2011), prominent academics moreover stress the consideration of the complexity and dynamics in organizational crises, with both managers and employees as active elements (Johansen, Aggerholm, & Frandsen, 2012). Empirical research in Italy has shown that employees can help to reinforce the organization’s commitment to safety, if supplied with information about actions the organization is taking to address the crisis (Goodman, Mazzei, & Ravazzani, 2011; Mazzei, Kim, & Dell’Oro,

2012).

Secondly, stealing thunder marks the importance of timing in reporting the crisis to the public. The same crisis does less damage to the reputation when the organization reports it before the news media or any other sources do. This mainly has to do with higher credibility ratings for the firm and less severe perceptions of the crisis, as well as higher levels of intent to purchase the product involved (Arpan & Roskos-Ewoldsen, 2005; Arpan & Pompper, 2003). According to a recent work by Claeys & Cauberghe (Claeys & Cauberghe, 2012), reputation restoring crisis response strategies may not be necessary in case an organization steals thunder. Nonetheless, it remarks that an organization is better counselled to apply a strategy instead of only providing information about what happened in case it does not steal thunder.

9 | Conclusion

This paper has applied an event study methodology on two events during crises. Both events were a first approach to public communication since the beginning of the concerning crisis. A capital asset pricing model has been used to form regression equations to calculate expected returns. Abnormal (excess) returns were tested on significance to answer three hypotheses. Firstly, the crisis responses of Toyota and Volkswagen matched the suggestions of the Situational Crisis Communication Theory. Second, the crisis response led to no significant gain in financial value of Toyota and Volkswagen. Third, the volatility, in other words magnitude, of the difference in realized return and expected return decreased over time.

An event study has not been used in context of a crisis in scientific research before. The insignificance of the results and limitations of this research indicate that an application of event study metrics in other situations than mergers and acquisitions, earnings announcements or corporate reorganization must be met with caution. It is crisis situations in which numerous known and unknown factors have an effect on the share price. Therefore, the isolation of a specific effect is difficult.

Nonetheless, the corporates did not choose a crisis response in line with the SCCT without a reason. The public announcement as chosen event in the Toyota study is set during a period of a major decline in share price. Reasons for this were accusations of managements' wrongdoing and the belief that the pedal problem might have been caused by a mechanical flaw. Thus, a positive trend in share price due to appropriate public communication is hard to analyze. The excess returns associated to the Volkswagen study are positive. A high standard error of the regression model causes scientific insignificance. Anyhow, the significant difference in magnitudes of the event and post-event window cumulative excess returns is an argument for a positive investors' reaction. In general, the theory posited by Coombs enjoys broad acceptance and will be essential in future research on crisis communication.

10 | References

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11 | Appendix

Date	TYMO(P)	S&PCOMP(MV)	TYMO(P)RET	S&PCOMP(MV)RET
18.12.2009	3740	1102,47		
21.12.2009	3720	1114,05	-0,54%	1,04%
22.12.2009	3800	1118,02	2,13%	0,36%
23.12.2009	3800	1120,59	0,00%	0,23%
24.12.2009	3890	1126,48	2,34%	0,52%
25.12.2009	3850	1126,48	-1,03%	0,00%
28.12.2009	3860	1127,78	0,26%	0,12%
29.12.2009	3890	1126,2	0,77%	-0,14%
30.12.2009	3880	1126,42	-0,26%	0,02%
31.12.2009	3880	1115,1	0,00%	-1,01%
01.01.2010	3880	1115,1	0,00%	0,00%
04.01.2010	3890	1132,99	0,26%	1,59%
05.01.2010	3805	1136,52	-2,21%	0,31%
06.01.2010	3900	1137,14	2,47%	0,05%
07.01.2010	3850	1141,69	-1,29%	0,40%
08.01.2010	3960	1144,98	2,82%	0,29%
11.01.2010	3960	1146,98	0,00%	0,17%
12.01.2010	4115	1136,22	3,84%	-0,94%
13.01.2010	4055	1145,68	-1,47%	0,83%
14.01.2010	4135	1148,46	1,95%	0,24%
15.01.2010	4200	1136,03	1,56%	-1,09%
18.01.2010	4190	1136,03	-0,24%	0,00%
19.01.2010	4140	1150,23	-1,20%	1,24%
20.01.2010	4105	1138,04	-0,85%	-1,07%
21.01.2010	4190	1116,48	2,05%	-1,91%
22.01.2010	4055	1091,76	-3,28%	-2,24%
25.01.2010	3970	1096,78	-2,12%	0,46%
26.01.2010	3870	1092,17	-2,55%	-0,42%
27.01.2010	3705	1097,5	-4,36%	0,49%
28.01.2010	3560	1084,53	-3,99%	-1,19%
29.01.2010	3490	1073,87	-1,99%	-0,99%

Table 11.1: Toyota - Estimation Window

Figure 11.1: Faux pas decision flowchart by Coombs

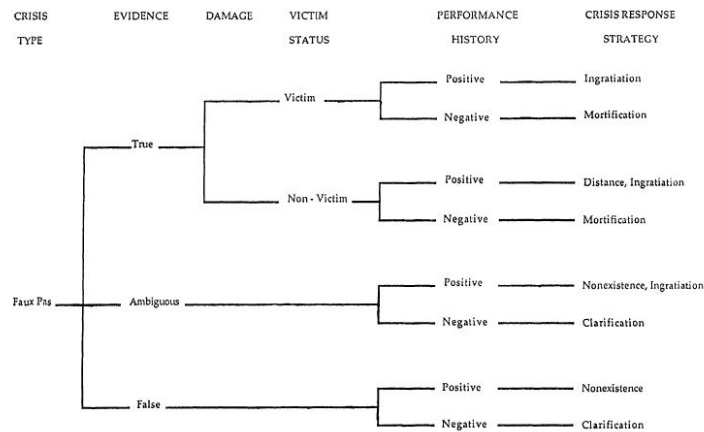


Figure 11.2: Terrorism decision flowchart by Coombs

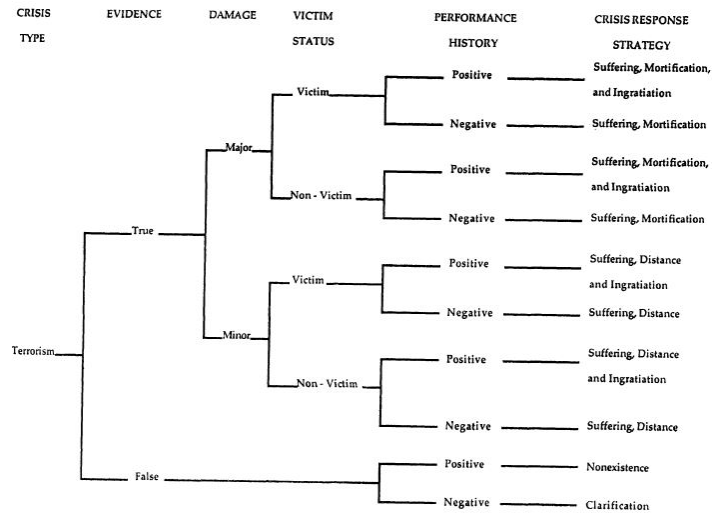
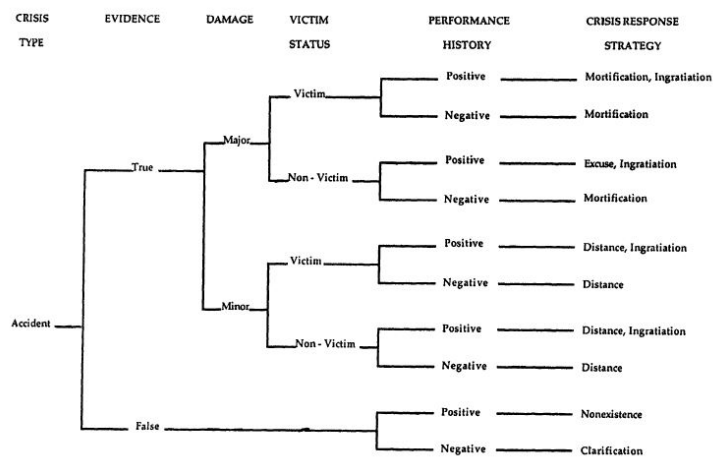


Figure 11.3: Accident decision flowchart by Coombs



Date	VOW(P)	S&PCOMP(PI)	VOW(P)RET	S&PCOMP(PI)RET
26.08.2015	166,65	1940,51		
27.08.2015	171,851	1987,66	3,07%	2,40%
28.08.2015	170	1988,87	-1,08%	0,06%
31.08.2015	166,8	1972,18	-1,90%	-0,84%
01.09.2015	160,9	1913,85	-3,60%	-3,00%
02.09.2015	159,3	1948,86	-1,00%	1,81%
03.09.2015	163,588	1951,13	2,66%	0,12%
04.09.2015	159,243	1921,22	-2,69%	-1,54%
07.09.2015	161,46	1921,22	1,38%	0,00%
08.09.2015	165,45	1969,41	2,44%	2,48%
09.09.2015	169,12	1942,04	2,19%	-1,40%
10.09.2015	167,964	1952,29	-0,69%	0,53%
11.09.2015	166,975	1961,05	-0,59%	0,45%
14.09.2015	165,9	1953,03	-0,65%	-0,41%
15.09.2015	166,663	1978,09	0,46%	1,27%
16.09.2015	167,312	1995,31	0,39%	0,87%
17.09.2015	167,6	1990,2	0,17%	-0,26%
18.09.2015	161,169	1958,03	-3,91%	-1,63%
21.09.2015	134,5	1966,97	-18,09%	0,46%
22.09.2015	114,59	1942,74	-16,02%	-1,24%
23.09.2015	122,749	1938,76	6,88%	-0,21%
24.09.2015	119,595	1932,24	-2,60%	-0,34%
25.09.2015	115,943	1931,34	-3,10%	-0,05%
28.09.2015	107,1	1881,77	-7,93%	-2,60%
29.09.2015	104,4	1884,09	-2,55%	0,12%
30.09.2015	105,966	1920,03	1,49%	1,89%
01.10.2015	105,95	1923,82	-0,02%	0,20%
02.10.2015	102,5	1951,36	-3,31%	1,42%
05.10.2015	103,9	1987,05	1,36%	1,81%
06.10.2015	108	1979,92	3,87%	-0,36%
07.10.2015	118,8	1995,83	9,53%	0,80%

Table 11.2: Volkswagen - Estimation Window

Date	TYMO(P)	S&PCOMP(PI)	TYMO(P)RET	S&PCOMP(MV)RET	ER	T-Statistic	Significance	CER
08.02.2010	3280	1056,74	-1,06%	-0,89%	-0,75%	-0,36	NO	-0,75%
09.02.2010	3375	1070,52	2,86%	1,30%	2,94%	1,41	NO	2,19%
10.02.2010	3390	1068,13	0,44%	-0,22%	0,69%	0,33	NO	2,88%
11.02.2010	3390	1078,47	0,00%	0,96%	0,12%	0,06	NO	3,00%
12.02.2010	3460	1075,51	2,04%	-0,27%	2,29%	1,10	NO	5,30%

Table 11.3: Toyota - Post-Event Window

Date	TYMO(P)	S&PCOMP(PI)	TYMO(P)RET	S&PCOMP(MV)RET	ER	T-Statistic	Significance	CER
13.10.2015	129,6	2003,69	-2,96%	-0,68%	-0,76%	-0,14	NO	-0,76%
14.10.2015	130	1994,24	0,31%	-0,47%	2,22%	0,42	NO	1,47%
15.10.2015	124	2023,86	-4,73%	1,47%	-5,51%	-1,05	NO	-4,05%

Table 11.4: Volkswagen - Post-Event Window

Single Factor Model	
Intercept	-0,00221
Slope (Beta)	0,104236
Standard Error	0,020792
R-Square	0,002012

Table 11.5: Toyota - Regression Model

Single Factor Model	
Intercept	-0,012583058
Slope (Beta)	1,388775388
Standard Error	0,052418365
R-Square	0,117508511

Table 11.6: Volkswagen - Regression Model

Figure 11.4: Transgression decision flowchart by Coombs

