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Dealing with “prodromes” through social media: pre-crisis communication of Hyundai regarding its overestimated gas mileage issue

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Abstract

Compared to post-crisis communication, pre-crisis communication has received little attention in strategic communication research. As the population and use of social media platforms increase, so does the role they play in strategic pre-crisis communication. Based on a message framing approach, this study focused on examining how Hyundai Motor company (hereafter Hyundai) communicated with its publics through social media channels as a platform for their strategic pre-crisis communication response to the current technical issue, regarding its models' overestimated Miles Per Gallon (MPG) flaw. A content analysis of 303 social media messages posted by both parties produced three significant findings: i) Hyundai expressed its pre-crisis communication through *attribution of responsibility* and *economic* framings, while *human interest* was the most frequently used message framing by its publics; ii) Hyundai did not post any negative message framings while its publics indicated their negative concern mostly with *human interest*; and iii) Hyundai posted positive messages using *attribution of responsibility*, while its publics expressed their positive concern with *human interest* and *morality*. The findings of this study implied that the corporation did not respond the needs of the publics while there were significant differences between the two parties in terms of interactive message framing.

Keywords: pre-crisis communication, issue management, prodromes, social media, framing analysis, Hyundai Motor company

1. Introduction

Today, corporations are increasingly engaging in strategic communication activities (Jaques, 2010). In crisis times, in particular, strategic communication plays an important role in dealing with a crisis by mitigating loss of share price associated with, for example, damaged corporate image/reputation (Benoit, 1997; Coombs, 2007), product recall issues (Choi and Lin, 2009), and industrial disasters (Fearn-Bank, 2011; Holladay, 2009). The growth of strategic communication over the past two decades has seen the emergence of two approaches in the context of crisis – reactive crisis responses after a crisis occurs and proactive crisis prevention before an issue becomes a crisis (Jaques, 2007). The idea of reactive crisis responses through scholars such as Coombs (1999, 2012) argued that a crisis is unpredictable but not unexpected. This line of research suggested that smart organizations know crises will befall them, but they just do not know when. Developing a similar approach, Hearit and Courtright (2003) pointed out that communication strategists should assume that crises are not just

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inevitable but are unavoidable, and are just as likely to emanate from within the organization as without.

The contrary approach, called proactive crisis prevention, presented crisis management in an integrated continuum of strategic management activities proceeding from potential crisis identification and prevention through event response and on to long term post-crisis management (Jaques, 2007). Within this context, it is believed that the best strategic crisis management is to prevent a crisis from occurring in the first place, or that it is much better to anticipate crises than to manage crises (Heath, 1997). Building on this approach, this paper explores how a corporation deals with crisis warning signs, called prodromes, to attempt to stop a crisis in the first place, before it develops into a full-blown crisis, in terms of pre-crisis communication (Coombs, 2010; Fearn-Banks, 2011).

A salient example of pre-crisis communication is a current technical issue related to Hyundai, a Korean automobile manufacturer. On November 2, 2012, Hyundai faced a legal issue regarding its overstated gas mileages on its models from the past three years in an embarrassing blunder that could bring sanctions from the U.S. government. The Hyundai issue could be regarded as an important issue because the issue had a potential to become a crisis if the corporation was not able to deal with the issue in an appropriate manner. If not, it could seriously damage the corporation's image, credibility and reputation within its publics, such as consumers purchasing products, stakeholders, governments, media, etc. (Benoit, 1997; Choi and Lin, 2009; Coombs, 2007, 2010; Fearn-Banks, 2011).

When such a pre-crisis warning sign emerges, communication managers must detect and respond immediately and properly. Especially when an issue is business in nature, the managers should not only strive to reduce uncertainty, confusion, and equivocation, but they should also endeavor to affect public opinion and action through the dissemination of credible information (Coombs, 2007). The information should help stakeholders understand the potential crisis and build up resistance to a negative reaction (Coombs, 2010). Pre-crisis communication is important because it detects and responds to warning signs that would constitute in the first place of crisis (Doorley and Garcia, 2007). Notwithstanding such importance, there has been little research in pre-crisis communication (Coombs, 2010).

The gap gives the main impetus for this study. In order to fill the gap, this study adopts framing theory because tenets of framing theory provide corporations' communication managers with a guideline on how to effectively communicate with various key publics within the context of crisis communication (An and Gower, 2009; Choi, 2012; Hallahan, 1999). Since framing has been useful for identifying the strategic messages, framing research has helped communication managers minimize the damage of a corporation's image in the crisis response phase, as typologies of crisis response strategies have been developed and tested based on framing theory (An and Gower, 2009; Hallahan, 1999). This indicates that identifying what kinds of messages that crisis communication managers use when they detect a crisis warning sign can provide the managers with useful tips to use the appropriate strategies in pre-crisis phase (Benoit, 1997; Coombs, 2007; Doorley and Garcia, 2007; Fearn-Banks, 2011; Hallahan, 1999).

This study aims to track the challenging MPG issue by content-analyzing the communication messages between Hyundai and its publics through social media channels right after the issue (crisis warning sign) emerged (before the issue becomes a crisis). This study is an attempt to provide insight into the message framing as a pre-crisis communication strategy that corporate communication managers would take as a proactive step to mitigate the negative impact on the entrepreneurial success in the business.

2. Literature review

2.1 A case background

On November 2, 2012, the Environmental Protection Agency (EPA) announced that Hyundai overstated the gas mileage on most of its automobile models from the past three years. As a result, this released information could bring sanctions from the U.S. government and millions of dollars in payments to car owners. The EPA reported that it is the first case in which erroneous test results were uncovered in a large number of vehicles from the same manufacturer. The EPA noticed that it received about a dozen complaints from consumers that the mileage of their 2012 Hyundai Elantra compact cars did not match the numbers on the window stickers. So staffers at an EPA's vehicle and fuel emission laboratory included the Elantra in an annual audit that focused on cars that lead their market segments in mileage. The EPA finally suggested that the Korean automaker should retrofit the window stickers on the cars, reducing their fuel economy figures by one-to-six miles per gallon depending on the model.

A few days later on November 6, 2012, Hyundai executives apologized for the errors, said that they were unintentional, and promised that the company would have a program in place to reimburse customers for the difference between the mileage on the window stickers and the numbers from the EPA tests. The goal of the program would be designed to find out how many miles the cars have been driven, find the mileage difference and calculate how much more fuel the customer used based on average regional fuel prices and combined city-highway mileage.

When corporations face these types of technical issues, the previous communication research (Doorley and Garcia, 2007; Fearn-Banks, 2011; Hallahan, 1999; Semetko and Valkenburg, 2000) suggests that in the pre-crisis phase, communication managers focus on collecting information about crisis risks and then eventually making decision about how to strategically manage publics' responses toward the issues.

2.2 Theoretical background: framing theory and pre-crisis communication

Over the past decades, framing researchers have examined and demonstrated the theoretical concept of framing as the powerful mechanisms that help to define problems, solve them, and shape public opinions on them (An and Gower, 2009; Coombs, 2012; Entman, 1993, 2007; Hallahan, 1999; Matthes and Kohring, 2008; Muralidharan et al., 2011b; Semetko and Valkenburg, 2000). Framing allows publics to efficiently process new information by applying their interpretive schemas or "primary frameworks" which help to classify information and interpret it meaningfully (Goffman, 1974, p.24 ; Scheufele and Tewksbury, 2007). Framing can be defined by identifying media as "the central organizing idea for news content that supplies a context and suggests what the issues are through the use of selection, emphasis, exclusion and elaboration" (Tankard et al., 1991, p.3). Also, framing through selection and salience, as frequently cited, activates schemas that encourage target audiences to think, feel, and decide in a particular way (Entman, 1993, 2007).

Such framing theory has helped to know how to provide message strategies in crisis communication (An and Gower, 2009; Muralidharan et al., 2011b; Semetko and Valkenburg, 2000). Based on the framing definitions, many crisis communication researchers have analyzed media framing and its effects (An and Gower, 2009; Choi, 2012; Muralidharan et al., 2011b). Media framing research has indicated that a handful of frames are present in the news (An and Gower, 2009; Neuman, Just and Crigler, 1992; Semetko and Valkenburg, 2000). For example, Neuman et al. (1992) identified several different frames in U.S. news coverage on a range of issues, including conflict, economic consequences, human impact, and morality frames. Semetko and Valkenburg (2000)

extended Neuman et al.'s (1992) frames by investigating and elaborating on earlier studies' frames. They developed five frames, *attribution of responsibility*, *human interest*, *conflict*, *morality*, and *economic* to analyze national news, newspapers and television stories in the period surrounding the Amsterdam meetings of European heads of state in 1997 (Semetko and Valkenburg, 2000).

According to Semetko and Valkenburg (2000), *attribution of responsibility* frame is defined as "a way of attributing responsibility for [a] cause or solution to either the government or to an individual or group" (Semetko and Valkenburg, 2000, p.96). They found that the *attribution of responsibility* frame was most commonly used in serious newspapers. *Human interest* frame can be defined as a frame that brings a human face or an emotional angle to the presentation of an event, issue, or problem (Semetko and Valkenburg, 2000, p. 95). In crisis situations, the frame stimulates the psychological pulse of people, which ultimately leads them to have more negative attitude toward the crisis (An and Gower, 2009). Cho and Gower (2006) showed that the human interest frame influenced participants' emotional response, and that it was a significant predictor of blame and responsibility in a transgression crisis. *Conflict* frame is used in such a way as to reflect conflict and disagreement among individuals, groups, or organizations. Neuman et al. (1992) found that conflict was commonly used by U.S. news media. In Semetko and Valkenburg (2000) study, the conflict frame was the second most common frame, and the more serious the newspaper, the more the conflict frame was in evidence. *Morality* frame puts the event, problem, or issue in the context of morals, social prescriptions, and religious tenets. Neuman et al. (1992) found that the morality frame was commonly used by journalists indirectly through quotations or inference, rather than directly because of the journalistic norm of objectivity. *Economic* frame reports an event, problem, or issue in terms of the consequences it will have economically on an individual, groups, organizations, or countries. Neuman et al. (1992) identified it as a common frame in the news. The wide impact of an event is an important news value, and economic consequences are often considerable.

Nevertheless, although framing has provided useful insight into preparedness and prevention prior to the phase in which a crisis occurs, those framing studies have been heavily researched in the crisis response phase. Since framing is a continuous process in which corporations are always evaluating the impact of their messages on publics, framing research can be useful for identifying communication practitioners' strategic messages (Fortunato, 2008; Hallahan, 1999). Those practitioners base the framing of messages on the publics' reactions in order to maintain their organizations' current position, and to re-adjusts and re-frame their messages in the hope that a new frame might resonate with them (Fortunato, 2008). Consequently, "key messages or arguments" of pre-crisis communicators before a crisis occurs are important because they might be considered by the public in the discussion of topics of mutual concern (Hallahan, 1999, p.224). Thus, in the process of pre-crisis communication, framing can be used to be processed and disseminated for corporations to make decisions on how to detect and further manage potential crises through such key messages or arguments (Coombs, 2010, 2012; Fearn-Banks, 2011).

2.3 Issue management dealing with "prodromes" as a crisis prevention discipline

The strategic management approach in the pre-crisis phase is often called issues management and is an important management tool available to today's corporations. Issue management is defined as a business-based discipline designed to enable corporations to attempt to minimize surprises that accompany social and political change by serving as an early warning system for potential environmental threats, and to attempt to promote more systematic and effective responses to particular issues by serving as a co-ordinating and integrating force within the corporations (Heath, 1997; Jaques, 2007, 2010).

In terms of serving an early warning system, issues management is closely related to crisis communication.

In practice, issues management is a process that helps corporations identify challenges in the business environment before they become crisis (Doorley and Garcia, 2007). In addition, there are some notions of crisis prevention, which include issue management as one of crisis stages because crisis management would become more proactive when fused with issue management (Gonzalez-Herrero and Pratt, 1996). In terms of crisis researchers stressing “prodromes” as the early warning system, the issue management seems to be regarded as detection or prodromal stage and prevention or preparation (Doorley and Garcia, 2007; Fearn-Bank, 2011). Specifically, Fearn-Banks (2011) identified crisis stages and highlights that crisis could begin with warning signs, “prodromes,” in detection phase (p.5). Some crises have no noticeable prodromes, but many cases have demonstrated that a crisis entails prodromes (Barton, 1993; Coombs, 2012; Fearn-Banks, 2011; Fink, 1986). Fearn-Banks (2011) also stressed that ongoing communication programs and regular two-way communications build relationships with key publics and thereby prevent crises. Thus, issue management (dealing with prodromes) through continuous communication programs is necessary for preparing and preventing crises in the pre-crisis phase. Dividing the pre-crisis phase into these two elements – crisis preparedness and crisis prevention – is important as it not only distinguishes and separates the mechanistic from the strategic (Coombs, 2010; Fearn-Bank, 2011), but also crucially, it allows for increased focus on the area which is the subject of this paper – specifically that cluster of activities which together contribute to crisis prevention.

In addition, effective emergency response is an important element of crisis prevention as physical emergencies badly handled can and do lead to crises. However, the last decade has seen an increasing acceptance that a large proportion of organizational crises – often those which are most damaging or longer lasting – are crises triggered not by emergency events such as fires, floods and other specific incidents, but by a variety of crisis prodromes (e.g., social and political developments or by organizational and managerial mis-steps or failure) (Elliott et al., 2000; Fearn-Banks, 2011; Jaques, 2010; Smith, 2005). This reality reinforces the limitation of the event approach to crisis management and highlights the role of issue management, including dealing with prodromes, as a crucial discipline for crisis prevention. However, there is no much research that sheds light on how organizations manage issues by dealing with prodromes to prevent a crisis through their strategies in the pre-crisis phase.

2.4 Social media in pre-crisis

Increasingly growing prodromes and crises have led communication researchers to develop and test their message strategies based on framing theory (An and Gower, 2009). Furthermore, the researchers have investigated which communication channels the communication practitioners have primarily used to inform the publics on what and how organizations do to deal with crises. As social media has become the most utilized tool for corporations to prevent or cope with crises, their messages have been one of the frequently used channels for crisis managers to disseminate strategic messages (Fearn-banks, 2011; Kerkhof et al., 2011; Kim, 2013; Liu, Austin and Jin, 2011; Utz, Schultz and Glocka, 2013). More recently, crisis communication researchers have paid more attention to the analysis of social media messages, including Facebook posts and Twitter tweets, to examine how organizations’ social media are used to prevents or cope with crises (Heverin and Zach, 2010). For example, Kerkhof et al. (2011) found through an experiment study that crisis communication process using social media (Facebook) was similar to that of traditional crisis communication in many ways (e.g., the effects of apologies). Further, they concluded that tone of voice mattered in social media, and a personal tone of voice led to higher communicated relational commitment rather than a corporate tone of voice in a crisis situation (Kerkhof et al., 2011). Their findings corroborated previous crisis literature that a personal response led to positive effects in crisis communication (Kerkhof et al., 2011). Utz et al. (2013) compared communication

practitioners' messages to online media coverage in a crisis situation. They found that medium mattered more than crisis types through an experiment study to analyze the effects of medium (Facebook vs. Twitter vs. online newspaper) and crisis type (intentional vs. victim) (Utz et al., 2013). Liu et al.'s (2011) study indicated that social media played a more important role at post-crisis phases by conducting an experiment study to test their own model, social-mediated crisis communication model (SMCC). Muralidharan et al. (2011b) conducted a comparative analysis of social media messages (Facebook posts and twitter tweets) sent by nonprofits and media organizations. In addition, Kim (2013) found how an organization differently implemented a long-term post-crisis communication over time through a comparative analysis of press releases and social media messages. However, the majority of the crisis communication researchers have also overlooked the importance of strategic message framing in social media during the time of pre-crisis.

Based on the literature review, we raise the issue of how Hyundai framed pre-crisis messages via its social media channels and then communicated with its publics, and offer the following research questions (RQs):

RQ1: Which frame was most frequently and dominantly used through Hyundai's social media channels after the MPG issue emerged?

RQ2: Were there any differences between Hyundai and its publics in terms of message framing used?

RQ3: Were there any differences between Hyundai and its publics in terms of tones of message framing used?

3. Methods

3.1 Samples, coding categorization development and procedure

This study is descriptive as its purpose is to investigate message framing as a tool of strategic issue management through social media channels during a pre-crisis period. A content analysis of all comments posted from November 2, 2012 to January 31, 2013 by either Hyundai or its publics on Hyundai USA Facebook and Twitter was conducted in this study, while the unit of analysis was a single comment. The content analysis of social media comments is commonly regarded as a useful measurement technique to investigate how corporations and their publics attempt to inform, communicate, and persuade via these channels (Liu et al., 2011; Muralidharan et al., 2011a, 2011b; Utz et al., 2013). Particularly, this study focused on analyzing only English-written comments posted by either Hyundai or its publics, because the overestimated MPG case occurred and was initially issued by EPA in the U.S.

Content analysis is defined as a research technique for the objective, systematic, and quantitative description of the manifest content of communication (Riffe, Lacy and Fico, 2005). The key to any successful content analysis is the selection of the categorization scheme: because they reflect the formulated thinking, the hypotheses, and the purpose of the study, a content analysis is no better than its categories (Riffe et al., 2005). Because examining message framing for meanings can be a very subjective process, categories were defined so that analysts could apply them to the same body of content and gain consistency in the results. Each step in the process follows a strict set of rules and procedures to lessen the opportunity for subjective variation among the analysts. Multiple independent judges were used in order to enhance objectivity.

The major categorization scheme selected in this study was Semetko and Valkenburg's (2000) five framing categories. Although past framing studies examined other categories, including transparency, or trust (Basil and Weber, 2006), we mainly focused on these five categories because this current study tried to adopt relatively

more explicit than implicit categories, such as nuance presented on each comment. In other words, for all measures, we employed an etic (standard) measure to see any change of framing messages over time along the same objective criteria, which seems to be the appropriate method in the context of message framing on social media.

After the coding sheet and written coding instructions were developed, three coders were selected in order to analyze the data. The three coders consisted of an author of this study who is a professor of a communication department at an U.S. university, and two graduate students (one male and one female who are English native speakers) majoring new media and communication. Based on the coding instructions, the first coder trained the two graduate coders for a week in terms of the coding technique and the analysis. First, the coders reviewed and discussed the coding categories, previewed a sample of comments, and practiced using the coding instructions in the same way. The coders independently conducted a pilot test of thirty comments (approximately, ten percent of the total sample). Each comment was coded in two ways. First, based on Semetko and Valkenburg's (2000) framing categories that consisted of a series of 15 questions, the coders codified each comment into each framing category by either yes (1) or no (0). In other words, each question was meant to measure all of the five pre-crisis response frames individually. Second, after each dichotomous decision (yes/no) for each category, s/he selected the most salient frame among the five categories. For example, if a coder read a comment, the coder coded if it contained each aspect of the five framing categories individually. And then, although the comment presented two or three frames, the coder chose just one as the most salient frame. In addition, each comment was coded as one of the three emotional tones; negative, neutral, or positive. Coding negative tone referred to any message that condemned Hyundai or others supporting Hyundai or that criticized Hyundai's comments or replies as ineffective, insufficient, or improper. Neutral tone was coded for messages that did not express strong feeling or that gave clarifications. Positive tone accounted for messages that were in support of Hyundai and its efforts to solve the problem or in praise of Hyundai and its cars (Rogers, 2012).

We are well aware of the fact that this type of methodological approach has limitations due to a loss of nuance as a participant is said to comply or not, or to perform or not certain crisis prevention activities where the degree or intensity by which the corporation does so is not taken into consideration (Basil and Weber, 2006). However, please note that there is no standard procedure for message framing; therefore, we had to rely on comments/messages provided by the corporation and its publics themselves while assuming they were concerned with a particular framing category via their social media messages. Unclear and disputed items were discussed and clarified, and changes were made. When disagreements arose, the coders discussed their interpretations and a final decision was made by consensus.

After the pilot coding, the three coders independently analyzed all posted comments and tweeted messages right after November 2, 2012 until January 31, 2013 using the same coding book. The data collection was terminated on January 31, 2013 because there were no more following comments or messages of the two parties from the middle of the month. Table 1 lists the operational definitions and examples of the five categories used for this study. Overall, a total of 408 messages shown from both channels within approximately a three month time period were collected and analyzed. Of them, a total of 105 were excluded later because they did not contain any of the five framing categories. Among 303 messages, 285 (94.1%) were posted on Hyundai USA Facebook while the rest (N=18, 5.9%) were posted on its USA Twitter page.

Table 1. Operational definitions of framing categories

Category	Definitions/descriptions	Examples
Attribution of Responsibility	<ol style="list-style-type: none"> 1. Does the story suggest that some level of government or Hyundai has the ability to alleviate the problem? 2. Does the story suggest that some level of the government or Hyundai is responsible for the issue/problem? 3. Does the story suggest solution(s) to the problem issues? 	<ul style="list-style-type: none"> – “We apologize for any confusion. Select model year 2011, 2012, 2013 Hyundai vehicles are affected, but some of the 2011 model year vehicle were sold in 2010. Please reach out to our Hyundai Customer Connect Center with any questions: http://hyundaimgpinfo.com/contact.” – “I bought my Sant Fe expecting to average 27 miles per gal on the hwy as printed on the sticker. I’ve never been able to get better than 24 on the highway. Very disappointing since I commute 40 miles a day. Happy to hear Hyundai is taking responsibility for false advertisement.” – “That is excellent customer service!” – “We apologize for the inconvenience Please visit our site to see if your Elantra is eligible for reimbursement and find additional info on our fuel economy reimbursement plan: http://hyundaimgpinfo.com/overview/compesation.”
Human Interest	<ol style="list-style-type: none"> 1. Does the story provide a human example or “human face” on the issue? 2. Does the story emphasize how individuals and groups are affected by the issue/problem? 3. Does the story go into the private or personal lives of the actors? 	<ul style="list-style-type: none"> – “I love my Hyundai. Glad to get some cash back. I seem to get better mileage on the freeways.” – “I owned a Hyundai sonata YF and it’s disappointing me...my care has a lot of problem and the service centre fix the problem...about 2month the air cond have problem.” – “I am a loyal Hyundai owner...2 Sonotas, a Santa Fe which my son is now driving and a 2012 Elantra Limited. I love Hyundai’s But I did mention several times to may service dept, who knows me from being a long time customer, that I was not coming near what gas mileage I should be. The main reason I got the Elantra was gas saving, I’m getting 29 miles to a gallon...much better than Santa Fe but expected more.” – “I bought my Veloster in June, and my average mpg is 32. I am totally happy with my car, and a 2 mpg discrepancy won’t change my mind!”
Conflict	<ol style="list-style-type: none"> 1. Does the story reflect disagreement between parties-individuals-groups-countries? 2. Does one party-individual-group-country reproach another? 3. Does the story refer to two sides or to more than two sides of the problem or issue? 	<ul style="list-style-type: none"> – “We DIDN’T HEAR from you FIRST, we heard from EPA. You had no choice! You should have did an internal investigation within the last 2 year especially after the class action suit against you started last year.” – “It would have been nice if Hyundai had reported this BEFORE they got sued. I know here in Canada that a class action lawsuit has already been filed by Siskinds.” – “I bought it because I drive highway mostly and now the rating has dropped 4 mpg or~13%!!! Not happy about that and probably would not have bought if I had known the real hwy mpg rating!” – “People should educate themselves. This is actually a sad situation, cause now people with older Hyundai are going to also start a big stink over nothing. So annoying. Even techs at my work rolled their eyes.”
Morality	<ol style="list-style-type: none"> 1. Does the story contain any moral message? 2. Does the story make reference to morality, God, and other religious tenets? 	<ul style="list-style-type: none"> – “Fantastic, ethical, stand-up thing to do. I’m proud to own a vehicle from such a socially responsible company. Thanks, Hyundai.” – “How awesome is this...very honest of them!” – “Thank you for not only being honest but taking steps to rectify the error. Honesty in business (and life in general) is always the best policy and being able to admit a mistake and take steps to correct it is very admirable. I appreciate that your morals and ethics are in the right place.”

Category	Definitions/descriptions	Examples
Morality	3. Does the story offer specific social prescriptions about how to behave?	– “You know I never bought a new car no matter the make that actually got the gas mileage that was listed on the window so I’m not sure why this is a big deal. To me the big deal is Hyundai apologizing and sending out reimbursements. What other company has ever done that?”
Economic	1. Is there a mention of financial losses or gains now or in the future? 2. Is there a mention of the costs/ degree of expense involved? 3. Is there a reference to economic consequences of pursuing or not pursuing a course of action?	– “They’re reimbursing based on miles already driven and a projection using those based miles to determine how much they should reimburse?” – “We purchased our 2013 Accent hatchback 3 weeks ago and LOVE it. How long should we wait to register if for the reimbursement? We want to make sure we are getting more than the minimum \$25 annually.” – “I’d pay the \$100 for a spare for my Elantra. Where do you store it?” – “I had this same problem with my 2008 Santa Fe with 75,000. It cost me \$100 at the dealer. So how about reimbursing me\$”

Note: The operational definitions are from Semetko and Valkenburg’s (2000) framing categories.

3.2 Intercooder reliability

Intercooder reliability statistics were computed using percentage of agreement, which is the ratio of agreements to the total number of coding decisions. As a reliability check, approximately 10 percent (N=30) of the total samples were randomly selected and coded by the coders. The three coders had a high percentage of agreement (over 81% agreement) on all categories. In addition, Perreault and Leigh (1989)’s reliability index (*Ir*) was employed as a more rigorous reliability test. Table 2 presents reliability indices by variable. Estimates based on *Ir* ranged from .79 to .90 for the list of the five framing categories and the tones of message framing (negative, neutral, and positive tones).

Table 2. Intercooder reliability indices

Framing	Percentage of Agreement	Perreault and Leigh (<i>Ir</i>)
Attribution of Responsibility	85.1%	.87
Human Interest	89%	.9
Conflict	85.5%	.87
Morality	87%	.88
Economic	81.2%	.82
No Framing	82%	.82
Negative Tone	89%	.9
Neutral Tone	78.7%	.79
Positive Tone	84.3%	.86

Note: $Ir = [(F/N - (1/k)) / (k/(k-1))]^5$ for $F/N \geq 1/k$, $Ir = 0$ for $F/N \leq 1/k$; where F is the frequency of observed agreement, N is the total number of pairwise judgment, and k is the number of categories into which the responses can be coded.

4. Results

RQ1 investigates which frame was most dominantly used by Hyundai and its publics through the corporation's social media channels after the MPG issue emerged. As reported in Table 3, of the total of 303 messages, *human interest* (N=120, 39.6%) was the most frequently used message frame, followed by *attribution of responsibility* (N=60, 19.8%), *conflict* (N=43, 14.2%), *economic* (N=43, 14.2%), and *morality* (N=37, 12.2%).

In addition, RQ2 looked for seeing if there were any differences between Hyundai and its publics in terms of dominant message framing used. Of the total of 303 messages, Hyundai posted 28 comments (9.2%) while its publics posted 275 comments (90.8%) on the corporation's social media channels. In the 28 comments, Hyundai expressed its pre-crisis communication through *attribution of responsibility* (N=16, 57.1%) and *economic* (N=12, 42.9%) framings. On the other hand, of the total of 275 messages of the publics, *human interest* (N=120, 43.6%) was the most frequently used message framing, followed by *attribution of responsibility* (N=44, 16%), *conflict* (N=43, 15.6%), *morality* (N=37, 13.5%), and *economic* (N=31, 11.3%). As a result, the use of pre-crisis message framings between Hyundai and its publics showed a significant difference after the issue emerged ($\chi^2(5)=59.9, p<.01$).

Table 3. Dominant message framing

Framing	Hyundai (N/%)	Publics (N/%)	Total (N/%)	χ^2 (df), <i>p</i>
Attribution of Responsibility*	16/57.1	44/16%	60/19.8%	59.9 (4), <i>p</i> <.01
Human Interest*	0	120/43.6%	120/39.6%	
Conflict*	0	43/15.6%	43/14.2%	
Morality*	0	37/13.5%	37/12.2%	
Economic*	12/42.9%	31/11.3%	43/14.2%	
Total**	28/9.2%	275/90.8%	303	

* Percentage figures were calculated based on the total number of each framing category divided by the total number of each party's message framing (e.g., 57.1% of 'Attribution of Responsibility' column in Hyundai was from a total of 16 framing messages divided by a total of 28 framing messages posted on Hyundai's social network channels).

** Percentage figures were calculated based on the total number of each party's framing messages divided by the total number of framing messages (e.g., 9.2% in the Hyundai's total column was from a total of 28 Hyundai's messages divided by the total of 303 messages).

Furthermore, considering each framing individually by multiple coding, Table 4 shows that Hyundai's pre-crisis communication was more likely to focus on *attribution of responsibility* (N=27, 96.4%) and *economic* (N=22, 78.6%) framings. Unlike Hyundai, its publics were more concerned with *human interest* (N=210, 76.4%) than any other framing. As a result, it was observed that there were significant differences between Hyundai and its publics in each message framing (*attribution of responsibility*: $\chi^2(1)=22.2, p<.01$, *human interest*: $\chi^2(1)=57.9, p<.01$, *conflict*: $\chi^2(1)=14.8, p<.01$, *morality*: $\chi^2(1)=6.8, p<.01$, and *economic*: $\chi^2(1)=31.9, p<.01$).

Table 4. Multiple-coded message framing

Framing		Hyundai* (N/%)	Publics* (N/%)	Total* (N/%)	χ^2 (df), <i>p</i>
Attribution of Responsibility	Yes	27/96.4%	137/49.8%	164/54.1%	22.2 (1), <i>p</i> <.01
	No	1/3.6%	138/50.2%	139/45.9%	
Human Interest	Yes	2/7.1%	210/76.4%	212/70%	57.9 (1), <i>p</i> <.01
	No	26/92.9%	65/23.6%	91/30%	
Conflict	Yes	0	98/35.6%	98/32.3%	14.8 (1), <i>p</i> <.01
	No	28/100%	177/64.4%	205/67.7%	
Morality	Yes	3/10.7%	96/34.9%	99/32.7%	6.8 (1), <i>p</i> <.01
	No	25/89.3%	179/65.1%	204/67.3%	
Economic	Yes	22/78.6%	73/26.5%	95/31.4%	31.9 (1), <i>p</i> <.01
	No	6/21.4%	202/73.5%	208/68.6%	
Total		28/9.2%	275/90.8%	303	

* Percentage figures were calculated based on the total number of each framing category divided by the total number of each party's each message framing (e.g., 96.4% of 'Attribution of Responsibility-Yes' column in Hyundai was from a total of 27 framing messages divided by a total of 28 framing messages delivered by Hyundai).

RQ3 asks if there were differences between Hyundai and its publics in terms of the tone of message framings. Table 5 revealed that, of the total of 303 sampled messages, 99 messages (32.7%) were negative toned and 121 messages (39.3%) were positive toned while 83 (27.4%) were neutral. In detail, as expected, Hyundai did not post any negative message framings on its social media channels. On the other hand, the publics expressed their negative concern most frequently with *human interest* (N=35, 35.4%), followed by *attribution of responsibility*

Table 5. Tones of dominant message framing

Framing	Negative (N/%)			Neutral (N/%)			Positive (N/%)			χ^2 (df), <i>p</i>
	Hyundai	Publics	Sub-Total	Hyundai	Publics	Sub-Total	Hyundai	Publics	Sub-Total	
Attribution of Responsibility*	0	28/28.3%	28/28.3%	7/38.9%	5/7.7%	12/14.5%	9/90%	11/9.9%	20/16.5%	82.9 (8), <i>p</i> <.01
Human Interest*	0	35/35.4%	35/35.4%	0	36/55.4%	36/43.4%	0	49/44.1%	49/40.5%	
Conflict*	0	23/23.2%	23/23.2%	0	10/15.4%	10/12%	0	10/9%	10/8.3%	
Morality*	0	2/2%	2/2%	0	0	0	0	35/31.5%	35/28.9%	
Economic*	0	11/11.1%	11/11.1%	11/61.1%	14/21.5%	25/30.1%	1/10%	6/5.4%	7/5.8%	
Total**	0	99	99/32.7%	18	65	83/27.4%	10	111	121/39.9%	26.6 (2), <i>p</i> <.01

* Percentage figures were calculated based on the total number of each framing category divided by the total number of each party's message framing (e.g., 28.3% of Negative 'Attribution of Responsibility' column in Publics was from a total of 28 framing messages divided by a total of 99 framing messages posted by publics on Hyundai's social network channels).

** Percentage figures were calculated based on the total number of each party's framing message tone divided by the total number of framing message tone (e.g., 32.7% in the 'Negative' total column was from a total of 99 Negative messages divided by the total of 303 messages).

(N=28, 28.3%), *conflict* (N=23, 23.2%), *economic* (N=11, 11.1%), and *morality* (N=2, 2%). However, Hyundai posted positive messages on its social media channels, using *attribution of responsibility* (N=9, 90%). On the other hand, the publics expressed their positive concern most frequently with *human interest* (N=49, 44.1%) and *morality* (N=35, 31.5%) framings.

Considering the tone of each framing individually by multiple coding, Table 6 indicates that as mentioned above, there was ‘no comment’ type of negative message framing used by Hyundai, while its publics negatively saw the MPG issue by *attribution of responsibility* (N=81, 81.8%), followed by *human interest* (N=81, 81.8%) and *conflict* (N=65, 65.7%). On the other hand, Hyundai provided more positive pre-crisis message framing by emphasizing *attribution of responsibility* (N=10, 100%) and *economic* (N=8, 80%) framings. Unlike Hyundai, its publics were more positively concerned with *human interest* (N=89, 80.2%) than any other framing. As a result, it was observed that there were significant differences between Hyundai and its publics in tones of each message framing used through social media channels (*attribution of responsibility*: $\chi^2(2)=47.3, p<.01$, *human interest*: $\chi^2(2)=11.7, p<.01$, *conflict*: $\chi^2(2)=75.7, p<.01$, *morality*: $\chi^2(2)=46.7, p<.01$, and *economic*: $\chi^2(2)=20.9, p<.01$).

Table 6. Tones of multiple-coded message framing

Framing		Negative (N/%)			Neutral (N/%)			Positive (N/%)			χ^2 (df), <i>p</i>
		Hyundai (N/%)	Publics (N/%)	Total (N/%)	Hyundai (N/%)	Publics (N/%)	Total (N/%)	Hyundai (N/%)	Publics (N/%)	Total (N/%)	
Attribution of Responsibility	Yes	0	81/81.8%	81/81.8%	17/94.4%	12/18.5%	29/34.9%	10/100%	44/39.6%	54/44.6%	47.3 (2), <i>p</i> <.01
	No	0	18/18.2%	18/18.2%	1/5.6%	53/81.5%	54/65.1%	0	67/60.4%	67/55.4%	
Human Interest	Yes	0	76/76.8%	76/76.8%	1/5.6%	45/69.2%	46/55.4%	1/10%	89/80.2%	90/74.4%	11.7 (2), <i>p</i> <.01
	No	0	23/23.2%	23/23.2%	17/94.4%	20/30.8%	37/44.6%	9/90%	22/19.8%	31/25.6%	
Conflict	Yes	0	65/65.7%	65/65.7%	0	10/15.4%	10/12%	0	23/20.7%	23/19%	75.7 (2), <i>p</i> <.01
	No	0	34/34.3%	34/34.3%	18/100%	55/84.6%	73/88%	10/100%	88/79.3%	98/81%	
Morality	Yes	0	34/34.3%	34/34.3%	2/11.1%	2/3.1%	4/4.8%	1/10%	60/54.1%	61/50.4%	46.7 (2), <i>p</i> <.01
	No	0	65/65.7%	65/65.7%	16/88.9%	63/96.9%	79/95.2%	9/90%	51/45.9%	60/49.6%	
Economic	Yes	0	33/33.3%	33/33.3%	14/77.8%	26/40%	40/48.2%	8/80%	14/12.6%	22/18.2%	20.9 (2), <i>p</i> <.01
	No	0	66/66.7%	66/66.7%	4/22.2%	39/60%	43/51.8%	2/20%	97/87.4%	99/81.8%	
Total		0	99	99	18	65	83	10	111	121	

* Percentage figures were calculated based on the total number of each framing category divided by the total number of each party’s message framing (e.g., 81.8% of the Negative ‘Attribution of Responsibility’ column in Publics was from a total of 81 ‘Attribution of Responsibility-Yes’ framing messages divided by a total of 99 framing messages posted by publics on Hyundai’s social network channels).

5. Discussion

This study revealed findings that may contribute in several ways to our understanding of pre-crisis communication strategies by illustrating how the prodromes, Hyundai’s current MPG issue in this study, was dealt with in order to prevent a crisis. The present study first found that compared to its publics, Hyundai implemented different pre-crisis communication strategies via social media channels. For example, Hyundai expressed its pre-crisis communication more frequently through *attribution of responsibility* and *economic*

framings, while *human interest* was the most frequently used message framing by its publics. One reason for this significant finding could be that the nature of Hyundai's current technical error, although not an intentional error, prompted the corporation to show its full responsibility. Consistent with the existing research which examined crisis response strategies (Semetko and Valkenburg, 2000), this finding demonstrates that *attribution of responsibility* frame was one of the most frequently used strategies for communication managers in pre-crisis communication as well. In crisis communication, a similar result was offered by An and Gower (2009) who found that *attribution of responsibility* frame was the most predominantly used in crisis news coverage, and indicated that the use of frames depended on the crisis type and the level of responsibility (An and Gower, 2009). As previous research showed, *attribution of responsibility* has been used as the most dominant frame when the media covered how corporations dealt with crises. Such tendency of the media reporting crises may have helped Hyundai frame their strategic messages to deal with prodromes as potential crises.

Second, as the prodromes was also related to an economic aspect with the efficiency of gas mileage of the corporation's models of vehicles, Hyundai strategically posted and indicated many messages aiming at *economic* matters (i.e., reimbursement). In other words, Hyundai attempted to demonstrate its concern for its publics (mainly its current and potential customers) in its pre-crisis communication by using *economic* frames (Choi, 2012; Coombs, 2007; Rogers, 2012). This result is somewhat similar to previous post-crisis research on some current cases such as the BP oil spill and Toyota's recall that affected many victims. For example, Kim (2013) found that BP's post-crisis communication was differently implemented from its crisis response communication by emphasizing human interest and ecological issues, indicating the corporation's efforts into information of people and the environment, and its concern for victims in post-crisis communication through its social media (Muralidharan et al., 2011a; Rogers, 2012; Schultz et al., 2012). An and Gower's (2009) study also indicated that accidental crisis news (e.g., challenges, mega-damage, and technical error accidents) were more likely to use *economic* frame. Additionally, a study that analyzed BP's press releases framing during crisis response phases found that US news media (i.e., eight various newspapers, including *the New York Times* and *USA Today*) used *economic* frame far more than other frames (Mehta, 2012). Hyundai perhaps have acknowledged that news media would interplay with other media, including social media (Schultz et al., 2012). Such journalistic practice focusing on *economic* frame in the crisis response stage might have advised Hyundai strategically to use *economic* frame of social media in the hope that the message frame (*economic*) could be effectively disseminated by the media, informing the public what and how the corporation was doing and planed to do to resolve the MPG issue (Choi, 2012; Choi and Park, 2011).

Third, Hyundai's strategic pre-crisis management focusing on *attribution of responsibility* and *economic* frames in social media could be interpreted as its proactive prevention efforts for its potential reputation damage in the future (Coombs, 2010). Previous literature of post-crisis communication demonstrated that showing full responsibility was an effective strategy for extending reputation repair efforts beyond the crisis and be required for corporations to put long-term efforts (Coombs, 2010; Seeger and Padgett, 2010; Ulmer et al., 2007). Practically, while social media allow a corporation to bypass traditional media channels, strategic communication practitioners can engage in two-way communication directly with the publics in real time during a pre-crisis phase (Muralidharan et al., 2011a; Rogers, 2012). Social media have been regarded as a fast and efficient way to relay vital pre-crisis information through re-tweets and re-posts by the publics (Muralidharan et al., 2011a; Rogers, 2012). Accordingly, corporates responding quickly to alarms with social media can stop the outcry before it spreads and becomes a crisis (Doorley and Garcia, 2007). In addition, social media messages can have the most positive effect on secondary pre-crisis communication and pro-action as well as play a more important role at the post-crisis stages (Liu et al., 2011; Schultz et al., 2011). To effectively preserve its reputation, Hyundai seemed to use *attribution of responsibility* and *economic* frames in its social media messages as a tool of strategic

issue management before the issue became a crisis.

Hyundai's message strategies, however, failed to resonate with their publics throughout its pre-crisis communication. Although Hyundai's communication practitioners would tend to make messages based on the publics' reactions in order to maintain the corporation's current position, and to re-adjust/re-frame their messages, there was a significant message gap between the corporation and its publics. For example, in order to appeal to the publics' positive emotion in an attempt to prevent a crisis, Hyundai mainly framed its messages through *attribution of responsibility*, but the publics negatively responded to those messages framed by *attribution of responsibility*. Rather, the publics posted more positive messages based on their personal experiences (i.e., *human interest*), that is, Hyundai's loyal customers shared and forwarded their positive experiences through social media (Utz et al., 2013).

The message gap between Hyundai and its publics indicates that the corporation did not utilize the strengths of social media well. This result implies how communication practitioners use "social media in the same ways they used the old as a means of duping messages on the general population rather than as a strategic means of interacting with publics" (Grunig, 2009, p.1). Further, this result bears out why communication practitioners are skeptical for effectiveness of social media (Lovejoy, Water and Saxton, 2012). The practitioners, including Hyundai communication managers, might overlook the primary values of social media that they should have had to listen and respond to what the publics were saying, not just to disseminate information (Coombs, 2012). For this reason, Hyundai's social media messages were easily buried under an avalanche of publics' messages (Helsloot and Groenendaal, 2013). It is possible that such invisibility of the corporation's social media messages could lead communication practitioners to raise the doubt about the effectiveness of social media. This finding underpins and extends findings of previous research that corporations in crisis situations often failed to take advantages of the innate two-way communication nature of social media during the process of pre-crisis communication (Coombs, 2012; Muralidharan et al., 2011b). In this sense, it is advisable that communication managers in the pre-crisis practice should be savvy through monitoring and interacting with the publics when using social media strategically to deal with prodromes and to better prevent a crisis as a result.

Overall, it seems logical to assume that simply implemented pre-crisis communication strategies may not work for every organization. For example, a number of researchers have emphasized that pre-crisis response messages have the desired impact only while directly reaching the target audience (Coombs, 1999, 2010). However, as the results of this study suggest, publics did not necessarily interpret and perceive the messages in the same way that the corporation intended. Communication practitioners should therefore consider the different levels of needs toward the corporation that each individual holds in the tests of pre-crisis response messages.

On a practical level, communication managers always seek ways to better inform and protect publics before facing with crises. Specifically, Berman (1999) attributes the increase in, for example, product recalls to a number of factors, including the increased complexity of products, higher expectations for product quality and safety by consumers, global production, and closer monitoring by companies and government agencies. Communication managers should consider these factors in order to design better pre-crisis response strategies. Specifically, the managers who deal with technical errors in the automobile industry should understand that public safety and protection should be the first priority. Therefore, they should balance the safety needs of their consumers with their organizational reputation.

There are some limitations that should be addressed in the future. First, as a deductive approach, which theoretically derives frames from the literature and categorizes them in standard content analysis, this study is limited to already established frames, Semetko and Valkenburg's (2000) five frames (Matthes and Kohring,

2008). Due to an inflexible method, this current study was not able to comprehensively conduct framing analysis regarding the identification of newly emerging frames. For example, framing through other media outlets (e.g., news/news paper media contents and their message theme) in pre-crisis communication was not examined (Kerkhof et al., 2011; Rogers, 2012). Further, since the framework was originated from news media coverage, the coding categories were not perfect to analyze some social media messages.

Second, future studies may consider how the message framing strategically implemented by Hyundai influenced their publics (e.g., reinforcement of brand loyalty, brand image changes, etc.), because Hyundai's pre-crisis efforts might not be always perceived in the same way by a variety of different publics. In addition, individuals tend to counter-argue new information that contradicts their preexisting position (Aday, 2006). Therefore, only if publics had previously established generally positive perceptions toward Hyundai is the strategic use of message framing validated. On the other hand, if publics have negative prior perception toward Hyundai, their perception would remain the same, regardless of the information in its pre-crisis messages and they may become more skeptical toward the practice (Lee et al., 2012). Therefore, a future study may incorporate the prior perception toward the corporation and its effects on publics' perception toward the company's intention and other related important outcomes.

Moreover, this study's results failed to identify whether or not the corporation's social media messages had any influence on the audiences' understanding of the issue per se. It was hard to understand the framing effects because this study was a content analysis alone through framing of social media messages. More specifically, it was hard to know whether or not Hyundai's message strategies, which would differ from various types of media over time, were effective as the pre-crisis strategies. In addition, this study is also limited in its methodology. Unlike previous studies in post-crisis communication, this study was not able to predict if the current Hyundai issue would become a crisis or not. Thus, a more appropriate period in a longitudinal fashion for analysis of message framing patterns over time should be retested by future research.

Future research that uses more comprehensive framework and considers public response and news media would extend the findings from this study and contribute to theoretical development of pre-crisis communication. Future research studying corporations' messages framing used by other social media forms (e.g., Blog and YouTube) as well as ones via traditional media (e.g., television-based corporate advertising, print-based messages including press releases and financial reports) should be needed in order to extend and confirm the results of this study. Furthermore, other types of publics' response on social media should be considered in future research. For instance, this study found that compared to the number of messages on Facebook, publics replied much fewer messages on Twitter. One reason for this tendency would be that Twitter might not be a tool for corporations yet to interactively communicate with their publics in pre-crisis communication. Instead, the social medium would be used for interactions (e.g., retweeting, sharing, etc.) among publics, not between corporations and their publics (Heverin and Zach, 2010).

Additional research is also needed for all crisis phases, including the pre-crisis, during a crisis, and the post-crisis, to provide a more thorough and comprehensive picture of the crisis cycle of crisis communication (Liu et al., 2011). In addition, different pre-crisis situations should be taken into account because this study is limited in one type of pre-crisis issues (i.e., "industrial accidents" or "accidental crisis") (An and Gower, 2009; Seeger, 2006; Schultz et al., 2011; Utz et al., 2013).

6. Conclusion

Adopting framing theory, this study explored how Hyundai could cope with the prodromes, the MPG flaw

as a pre-crisis warning sign, via social media before it developed into a full-blown crisis. The current study corroborated how social media provided an opportunity to find and deal with the warning signs in pre-crisis stage (i.e., prodromal stage or signal detection and crisis prevention) (Coombs, 2012; Fearn-Banks, 2011; Fink, 1986). The findings of this study provided important implication into how the organization's loyal customers could play the key role in containing and preventing the crisis at the pre-crisis stage. While Hyundai failed to resonate with the publics via social media as the publics were in the negative response to the organization's messages (i.e., a message gap between the organization and the publics), the prodromes was retained within its social media platform. This could be attributed to that the loyal customers shared and forwarded their positive experiences (i.e., human interest framed messages with positive tone) through social media (Utz et al., 2013). On the other hands, the message gap between the corporation and the publics indicated the direction how crisis communication practitioners could be savvy communicators to prevent crisis. In other words, the result implies that the primary values of social media are listening to and interact with the publics should be taken into consideration to deal with prodromes, thereby resulting in more effective pre-crisis communication. In line with the result, Coombs (2012) stressed the importance of listening to the publics when using social media in the pre-crisis phase by addressing "listening is what scanning for crisis warning signs is all about" (Coombs, 2012, p.25). By doing so, the potential value of social media can be expanded and noticeable to communication practitioners by coupling it with the steps of crisis preparation and prevention.

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