

The Source of the Story: Evaluating the Credibility of Crisis Information Sources

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ABSTRACT

In a highly connected world, information coming from different media sources and social relationships are more quickly disseminated than ever before. Natural disasters such as Typhoon Haiyan capture attention globally. Investigations of how people respond to the credibility of different sources have implications for policy making and information systems design. In this paper, we studied how different factors (strength of social ties and sources of crisis information) affect perception of credibility of crisis information about natural disasters. Our analysis and findings indicate that for crisis information about natural disasters, people tend to trust traditional media channels, such as printed news, and televised news. The type of social tie also influences the perceived credibility of the crisis information.

Keywords

Credibility, social ties, media types, sources of crisis information.

INTRODUCTION

In most crisis situations, the environment can be characterized as intense, unstable, and rapidly changing (*Disaster Relief 2.0*). “Crises are borne out of short chains of events, often unpredicted and unexpected, but they develop with dynamic and unfolding events over months, days, hours, and even minutes. They disrupt the routine events of life and governance, disturb established systems, and cause severe anxieties; they produce dynamics that no one can predict or control” (Farazmand, 2007). Crises often involve high risk (Carrithers, DeHart, & Geaneas, 1998) and high necessity for group coordination in order for the best outcomes to be reached, where the impact is often on whole communities which experience devastating impacts as can be seen with Hurricane Katrina and Typhoon Haiyan.

Social ties play an important role in the ways in which information dissemination occurs. Although social ties and social capital have long been a research focus (Brown & Reingen, 1987; Miritello, Moro, & Lara, 2011; Widen-Wulff, 2004), information dissemination through social ties in crisis situations is rarely addressed (Duggan & Banwell, 2004). “The strength of a tie is a combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the tie” (Granovetter, 1973). As the world is increasingly connected through different communication channels, social ties can play an even more important role for information dissemination. Particularly in crisis information dissemination, where information can be relayed in near real-time. However, in many cases the source of information from social media cannot be verified and thus misinformation is commonly distributed, whether by intention or by ignorance. For example, as a result of the recent nuclear meltdown at Japan’s Fukushima No. 1 (Daiichi) nuclear plant, Chinese citizens mobbed stores to purchase salt, fueled by a rumor sent via SMS. “People were

under the false impression that consuming enough iodized salt would protect against radiation and that China's sea salt supplies would be contaminated as a result of the unfolding Japanese crisis" (Pierson, 2011).

LITERATURE REVIEW

Responses to crisis situations require rapid communication to distribute resources, coordination amongst community members (search and rescue, non-governmental agencies, governments, and the general public) and, importantly, appropriate information to carry out those tasks. The aim of our current study is to evaluate the influence of social ties and different media sources on how individuals develop an understanding of events in a crisis situation and from whom they trust information. Information is the most important resource for those in a crisis (list key players that rely on it), as it allows for effective response and allocation of resources, particularly when infrastructure has been demolished and communication diminished as has been the case in Typhoon Hyian, where geographic dispersal of the Philippines has dramatically impacted the ability of responders to provide aid effectively to smaller towns. How members of an impacted community are able to effectively judge the believability and trustworthiness of information that is dispersed during a crisis event can play a dramatic role in outcomes, and in some cases survival. For the purposes of this study we examined how social ties and different media sources play a role in assessment of information in crisis situations. We presented two exaggerated natural disaster events and asked respondents to make judgments based on their perception of who sent them that information (how they received it), to evaluate the relevance of social relationships in evaluating information in these types of situations.

Besides social ties, the medium of communication is also rapidly changing how information is disseminated. 20 years ago, when the Internet was still not widely adopted, and the term 'social media' had not been invented yet, people relied solely on newspapers and television to receive the latest news. However, technologies have radically transformed how information is transmitted. News outlets have begun to host their own websites and people have started to read news from electronic sources, such as blogs, podcasts, etc. Recently, social media platforms, such as Twitter and Facebook, became major sources of information dissemination. With the advent of new technologies, the question of how the shift away from news outlets towards a more social media outlet for information sharing and gathering affect people's perception of credibility about crisis information. Recent studies focus on explaining information credibility on social media itself, such as Westerman et al. (2014), which considers that credibility of information on social media is mediated by cognitive elaboration. However, social media credibility in crisis situations as compared to other media channels is rarely addressed. Also, although researchers have developed algorithms to measure user credibility on social media (Abbasi and Liu, 2013), the extent to which such an algorithm is reliable in predicting source credibility and can be put into practice is still questionable. Therefore, in this study, we intend to enrich our understanding of credibility in crisis situations by studying different sources of crisis information.

Social ties were found to serve rich purposes in social life. Immediate family, relatives, and friends were categorized as strong ties, while acquaintances were categorized as weak ties (Granovetter, 1983). Flanagin and Metzger (2000) operationalized the credibility of Internet information "as a multidimensional concept, consisting of believability, accuracy, trustworthiness, bias, and completeness." How credibility of information is assessed presents an important aspect of crisis communication that elicits further research to determine how information sharing in regards to crises can be effectively disseminated with high credibility.

H1: *The sources of information will influence perceived credibility in crisis events.*

H1a: *Crisis information that comes from different types of social ties will be perceived to have different levels of credibility*

H1b: *Crisis information that comes from different media channels will be perceived to have different levels of credibility.*

We theorize that the source from which crisis information is received will directly affect how credible the information is perceived by an individual. While weak ties effectively disseminate information, the information shared may not necessarily be perceived as more credible than information received from strong ties. Moreover, studies have shown that individuals perceive the credibility of traditional media higher than that of online media for general news coverage (Vieweg, Hughes, Starbird, & Palen, 2010; Castillo et al., 2011). We are interested in discovering if this holds true for crisis situations, as well.

METHOD

Within the current study the independent variable is sources of crisis information. The dependent variable

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measured was the trustworthiness of the crisis event which was operationalized on a 9 point likert scale for each of the following measures: believable, complete, bias, accurate, trustworthiness. The current study was conducted via a survey. Every participant received one of the two scenarios (volcano and earthquake) for each of the location conditions (foreign or home). To control for ordering effects, the survey software (Qualtrics) randomly selected one of the scenarios located in one of the conditions, and order of receipt was counterbalanced. The second scenario was created such that the second presented scenario was the opposite scenario (i.e. if scenario 1 was volcano, participants would receive the hurricane for scenario 2 and vice versa) in the opposite location from that of the first present scenario (i.e. if the first scenario location was home country, then scenario 2 would be for foreign country and vice versa). Both scenarios were based on ground truth research conducted by looking at two past natural disasters, the 2010 Earthquake in Haiti, and the 2010 volcanic eruption of Eyjafjallajokull in Iceland. The scenarios that we created were modeled to be newspaper like in terms of information presentation. However, for the purposes of the study, and in order to test the relevance of social ties in trusting information, the facts presented in each scenario were greatly exaggerated beyond reasonable (and documented) possibilities, in order to assess whether participants would find information more credible from certain sources (i.e. print media versus family members).

Following each scenario, participants were asked to rate the credibility of the information conveyed in the scenario by each possible communication source (i.e. Online official news, televised news, etc.), on scales of believability, trustworthiness, accuracy, bias, and completeness. Scenarios were displayed for participants' reference while responding to the questions. Following these questions, participants were asked for personal demographic information (i.e. age, gender, major, years spent in the US, native country, languages spoken) and were debriefed at which time they were notified that the scenarios were completely fictional.

Participants were collected from a Mid Atlantic University through convenience sampling methods, and were contacted via their course instructors. Of those collected, 65 students reported Undergraduate class standing, while 20 reported Graduate class standing. Participants were unpaid, however some course instructors offered extra credit for participation. Their identity information was collected in a different survey in order to maintain anonymity.

The current survey consisted of 85 participants, 60 female and 25 male (mean age=23.64 years, SD=6.54, range=19-53 years). Participants were from the United States of America (n=84), and Canada (n=1). English (n=85) was reported as the primary language spoken.

STIMULI

Two fictional scenarios were developed for the purposes of this study. Both scenarios were based on ground truth research conducted by looking at two past natural disasters, 2005 Hurricane Katrina, and the 2010 volcanic eruption of Eyjafjallajokull in Iceland. The scenarios that we created were modeled to be newspaper-like in terms of information presentation. However, for the purposes of the study, and in order to test the relevance of social ties in trusting information, the facts presented in each scenario were greatly exaggerated beyond reasonable (and documented) possibilities, in order to assess whether participants would find information more credible from certain sources (i.e. print media versus family members)

RESULTS

Credibility is measured using five items - believable, accurate, bias, complete, and trustworthy (Flanagin & Metzger, 2000) - for all types of sources. The Cronbach's alphas of the measurement of credibility for social media news, televised news, and online official news are less than 0.4 when bias as a measure of credibility is included. However, after keeping only believable, accurate, complete, and trustworthy, all Cronbach's alphas rise to more than 0.8. Therefore, our analysis eliminates bias as a measure for credibility. Then a single score that represents credibility for a crisis information source is calculated by averaging the rest of the four values, which are believable, accurate, complete, and trustworthy.

Location (home or foreign) was found not significant in predicting credibility of crisis event, $F(1, 1) = 0.0225$, $p = 0.88$. Therefore, in the following analysis, the measures for credibility were combined by averaging the scores of home crisis event and foreign crisis event.

A one-way Analysis of Variance (ANOVA) showed that there was a significant relationship between types of information sources and perceived credibility, with printed news leading to highest credibility ($M=6.82$, $SE=0.18$) and information from acquaintances leading to the lowest credibility ($M=3.86$, $SE=0.18$), $F(7, 588) = 82.40$, $p < 0.0001$. And a Tukey HSD test yields the following results (Table 1) of how scores of credibility vary

for different sources of crisis information.

Source of Crisis Information	Mean
Printed News	6.82 ^a
Online Official News	6.71 ^a
Televised News	6.46 ^a
Information from Immediate Family	5.92 ^b
Information from Relatives	5.20 ^c
Information from Friends	5.15 ^c
Information from Social Media	4.50 ^d
Information from Acquaintances	3.86 ^d
<i>a,b,c,d: Numbers with different superscripts are significantly different from each other</i>	

Table 1. Perceived Credibility

DISCUSSION

The Analysis of Variance on the credibility of different sources of information for the crisis event yields significant results. Table 1 exhibits that the most credible sources of crisis information comes from traditional medium, which are printed news and televised news, and online official news. The next credible sources are strong social ties, which include immediate family, followed by the weaker social ties, which are relatives and friends. The least credible information sources are social media and acquaintances.

In general, people's perception of credibility of crisis information differs as it comes from different sources. The types of social ties as sources of crisis information affect the credibility of the information: crisis information that comes from traditional media channels, such as printed news, televised news, and official news sources are perceived more credible than social media news; also, the stronger the tie is, the more credible the crisis information that comes from it is perceived. However, the strength of a single type of social tie does not affect the crisis information that generates from it. For instance, how strongly one is related to their immediate family does not affect how credible the crisis information heard from their parents. But generally speaking, crisis information heard from immediate family is more credible than crisis information heard from relatives or friends, which in turn is more credible than crisis information heard from acquaintances. That is to say, complementary to Granovetter's (1983) findings, although weaker ties mainly function as sources for information dissemination, under natural crisis situation, when credibility is crucial, they are less effective as compared to stronger ties. The results indicate that although people may be highly connected by social media, during a crisis event when people are seeking information, it becomes the least credible source. Rather, people are more likely to believe crisis information coming from traditional media, such as newspapers and TV news. Also, the source of information (different types of social ties) affects perceived credibility. In general, crisis information that comes from stronger ties is perceived more credible than crisis information that comes from weaker ties.

These findings have important implications for how information should be broadcasted during natural disaster situations. When natural disasters happen, people need to know the truth about the event as it is occurring. Although social media highly connects people, and it serves as a major platform for information dissemination, information generated from it is least credible in a crisis. Therefore, in order to broadcast authentic news about natural disasters after they happen, official organizations should rely on traditional news media channels, like newspapers, television, and their own official site.

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