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Social media mapping innovations for crisis prevention, response, and evaluation

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ABSTRACT

Social media has had a noticeable influence on the practice of crisis communication. Crisis managers are becoming increasingly attracted to social media because of the ability to expand the communication options available to organizations and their publics during a crisis. Previous researchers have identified a variety of benefits and challenges presented by the use of social media for crisis communication. Two new social media mapping applications, SituMap and PhotoSorter, were recently developed to cultivate participation, collaboration, and conversation specifically for crisis communication. The purpose of the present investigation is to explore the features of these applications and discuss the potential benefits of these features for crisis managers in each stage of the crisis lifecycle.

1. Introduction

It can be argued that, in the past decade, the Internet is the single factor that has had the largest impact on the way that organizations communicate with their publics. According to Gonzalez-Herrero and Smith (2008),

> In only a few years, the Internet has evolved to become the most popular way to communicate with customers, investors, analysts, employees, the media, and the many other stakeholders any company has, transforming the practice of corporate communicators and public relations (PR) professionals. (p. 143)

Perhaps the Internet feature that has been the greatest contributor to this shift in communication is social media: a form of communication where users, rather than organizations or media gatekeepers, control the creation, use, and distribution of information.

The pervasiveness of social media in American culture has had a noticeable impact on the practice of crisis communication in particular. A study commissioned by The American Red Cross (2010) found that social media sites rank as the fourth most popular source to access emergency information, with more users obtaining emergency information from social media than from governmental websites, National Oceanic and Atmospheric Administration (NOAA) weather radio, or emergency text message systems. This is due to the ability of social media to expand the communication options available to an organization and its public during a crisis (Vielhaber & Waltman, 2008). Social media platforms are "intuitive for even less-experienced web users," (Veil, Buehner, & Palenchar, 2011) thus making it easy for organizations and their publics to update and upload information and engage in a collaborative dialog with one another. Crisis managers are also attracted to social media platforms because they are pervasive, inexpensive, flexible, collaborative, and involve the community in crisis response efforts (Perkins, 2010; Veil et al., 2011; Vielhaber & Waltman, 2008). Social media empowers users through active participation and can "generate a sense of ownership" (Colley & Collier, 2009, p. 35), allowing individuals to "recognize themselves as members of a *public*" (Center for Social Media, 2009) enabling them to be "better able to cope with the enormity of the situation" (Sutton, Palen, & Shklovski, 2008, p. 5).

Despite the many potential benefits that social media presents for crisis managers, only 13% of communication practitioners reported incorporating social media in their organizations' crisis communication plans (Russell Herder & Ethos Business Law, 2009). This may be due, in part, to the time required for educating and

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training crisis managers on how to use social media tools (Schuwerk & Davis, 2013), as well as uncertainty about the credibility of information presented and shared through social media platforms (Lindsay, 2011). While concerns about credibility are valid and important to address, crisis managers must recognize that social media is an important tool that cannot be ignored in their efforts to prevent and respond to crises and evaluate organizational effectiveness after a crisis has occurred. Accordingly, Craig Fugate, FEMA Administrator, presented an argument advocating for the creation of applications using social media to facilitate communication between citizens, first responders, volunteer groups, the private sector and all levels of government (Department of Homeland Security, 2011).

Two social media mapping applications, SituMap and PhotoSorter, were recently developed in response to Fugate's call. In the present investigation, the authors sought to analyze the potential benefits of these applications for improving communication before, during, and after crisis events based on social media and crisis communication research. The purpose of this manuscript is to present a descriptive exploration of the technical features of SituMap and PhotoSorter and their capabilities for enhancing face-to-face group communication among emergency responders and organizational crisis teams throughout the crisis lifecycle.[1]

2. Social media and crisis communication

Social media has been recognized in crisis communication research as facilitating both the spread and mitigation of crises. Consequently, several researchers have studied the role that social media plays in a crisis, as well as the ways that it may be used as a tool for crisis communication (Austin, Liu, & Jin, 2012; Jin, Liu, & Austin, 2014; Ruggiero & Vos, 2014; Westerman, Spence, & Van Der Heide, 2014).

Organizations have identified a myriad of uses for social media prior to the occurrence of a crisis. These uses include proactively providing citizens with preparedness and readiness information, issuing warnings, providing news and updates, and soliciting feedback on public-safety related topics (Lindsay, 2011; Veil et al., 2011). For example, the U.S. Centers for Disease Control and Prevention used social media to raise awareness about the H1N1 virus during the 2009 pandemic (Reynolds, 2010). Organizations have also realized the benefit of using social media to establish a positive reputation prior to a crisis event. This proactive approach emphasizes relationship management (e.g. Ulmer, 2001) and can be used to distribute positive messages, dialog with the public, acknowledge vulnerabilities, and address changes that are being made. As Wan and Pfau (2004) argue, doing so allows the organization to "enable publics to believe that it is honest, responsible, and well prepared for a potential crisis" (p. 320).

Organizations have also used social media applications for environmental scanning, or recognizing the warning signs of a potential crisis, such as identifying a pattern of consumer complaints about an organization (Gonzalez-Herrero & Smith, 2008; Ruggiero & Vos, 2014). The thin boundaries between social media and traditional news media, coupled with the fact that digital/mobile technology is now accessible to anyone with a cell phone, allows any member of the general public to break news at any time. This makes using social media for environmental scanning especially important, as social media may exacerbate unresolved issues (Gonzalez-Herrero & Smith, 2008).

During crisis situations, organizations have used social media to establish participatory dialog with their publics (Veil et al., 2011). Organizations can use social media to respond directly to posted public concerns, evaluate hashtag conversations to identify how the public perceives them, and benefit from gathering information from the public. For example, a smartphone application has been used to help the Army Corps of Engineers in Kansas identify and report structural weaknesses in levees (Homeland Security Newswire, 2011). Corps officials have been cited as stating that the application helps increase efficiency, speed, and accuracy while eliminating human error (Homeland Security Newswire, 2011). Toyota has also benefited from engaging in dialog with its stakeholders on social media during their recall of 2.3 million vehicles in 2010 (Auffermann, 2010).

Social media also changes the way that the public gathers information about crises, increases the visibility of crisis situations, and impacts the expectations that the public has for organizational crisis response efforts (Austin et al., 2012; Spence et al., 2006; Westerman et al., 2014). In September 2010, the Boulder Fourmile Fire, the worst wildfire in the history of Colorado, burned roughly 6385 acres and damaged over 200 structures. During this crisis, the community used social media to mobilize and spread information about the crisis. According to Orange Insights (2010), the fire was first reported on September 7, 2010 at 10:07am and by 11:33am, Andrew Hyde began using #boulderfire. Just one minute later, Sandra Fish began tweeting the fire dispatch reports (Orange Insights, 2010). By 1:17pm, University of Colorado student, Amanda Pingel, created a collaborative Google map—that eventually received 1.8 million views—to identify fire areas, evacuation areas, photos, and emergency response efforts (Stephens, 2010). While a positive contribution to emergency response, the collaborative efforts made by this community are also illustrative of a challenge presented by social media: the public expects organizations to be visible on social media during a crisis. The American Red Cross (2010) reported that 69% of the adults that participated in their survey expected social media responders to monitor social media sites, and 74% expected help to come less than an hour after tweeting or posting a message to Facebook. As Stephens (2010) explains, "if you don't provide interactive, real-time information to the public they will find it elsewhere and then wonder—loudly, 'Why didn't the government provide this information!'" (n.p.).

The use of social media to monitor the effectiveness of an organization's response following a crisis event has also been considered by crisis communication researchers. A review of social media posts provides real-time feedback to an organization, which is useful in gaging stakeholder reactions to crisis communication strategies. For example, in 2009, Amazon.com experienced a crisis when they realized that a third party had sold copies of George Orwell books through their website without holding the copyright to the books. Without explanation, Amazon.com immediately deleted the books from its servers and reimbursed customers who had purchased the books. Angry customers took to social media, tweeting about their experience. According to Coombs and Holladay (2012), this type of data may allow organizations "to assess the effectiveness of the crisis response, identify potential weaknesses in the response, and determine if additional crisis responses are needed" (p. 292).

It is clear that social media presents a variety of opportunities and obstacles for crisis managers. In the present study, we seek to add to the discussion regarding the uses of social media before, during, and after a crisis by exploring the features of two new social media applications that have been designed with the purpose of

[1] This technology was developed at Texas A&M University-Corpus Christi by the second author of this manuscript. The first author is an independent third-party researcher. At the time this article was written, the SituMap technology was in the process of being licensed to a private company, so software cost has not yet been determined. PhotoSorter is still in the research and development phase at the university.

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