



Social media in emergency management: Twitter as a tool for communicating risks to the public



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ABSTRACT

One of the main challenges of emergency management lies in communicating risks to the public. On some occasions, risk communicators might seek to increase awareness over emerging risks, while on others the aim might be to avoid escalation of public reactions. Social media accounts offer an opportunity to rapidly distribute critical information and in doing so to mitigate the impact of emergencies by influencing public reactions. This article draws on theories of risk and emergency communication in order to consider the impact of Twitter as a tool for communicating risks to the public. We analyse 10,020 Twitter messages posted by the official accounts of UK local government authorities (councils) in the context of two major emergencies: the heavy snow of December 2010 and the riots of August 2011. Twitter was used in a variety of ways to communicate and manage associated risks including messages to provide official updates, encourage protective behaviour, increase awareness and guide public attention to mitigating actions. We discuss the importance of social media as means of increasing confidence in emergency management institutions.

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1. Introduction

When Hurricane Sandy hit the east coast of the United States in late October 2012, the popular microblogging application Twitter was extensively used as a hub of timely information provision to help people stay informed and safe. Public authorities such as the New York Fire Department were able to provide essential support and even target the rescue of victims through the effective use of their Twitter account (CNN, 2012). This is only one of the highly visible cases where the immediacy of Twitter has proven valuable in emergency communication; others include tsunamis, floods and man-made violent incidents like terrorist attacks or food contamination (Al-Saggaf and Simmons, 2014; Gaspar et al., 2016; Heverin and Zach, 2012; Oh et al., 2013). Twitter Alerts (2015), the network's official warning system launched in 2013, helps users receive official emergency alerts from registered authorities such as police forces, ambulance services, meteorological and environment agencies.

As a major technological innovation of recent years, social media applications have reshaped the nature of digital information sharing

and networking. As part of this, they have come to function as spaces where both officials and citizens seek to interpret emergency situations and intervene accordingly (e.g. Macias et al., 2009; Neubaum et al., 2014; Palen et al., 2010). The relevance of social media has become evident in different aspects of communication before, during and after emergency events with Comfort et al. (2012, p. 547) noting that channels like Twitter and Facebook 'are being rapidly integrated into disaster environments and warrant systematic study of their viability in support of improved public response. Compared to previous work in information and knowledge management applications for emergency support (e.g. Dorasamy et al., 2013), social media have created much more open and ubiquitous information flows between authorities and the public. This is one of the reasons why Turoff et al. (2013) more specifically suggest that social media merit further attention with regard to their potential to engage with the public during emergencies.

This paper focuses on the role of social media in communicating risks to the public during emergency events. Management of risk to the public is one of the major challenges in emergency communication. It involves diverse strategies in terms of gathering information, setting standards and enforcing or suggesting particular behaviours to mitigate risks (e.g. Lodge, 2009; Mileti, 1999; Sellnow and Seeger, 2013). Risk communication requires providing timely and reliable information to signal that authorities have the situation under control. Using this information, community members interpret emergency risks and make

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decisions about their own actions (Comfort, 2007; Kapucu, 2008). As a result, on some occasions, risk communicators might seek to increase awareness over emerging risks and alert the public, while on others the aim might be to reduce uncertainty and avoid escalation of reactions (Smith and McCloskey, 1998; 't Hart, 2013).

This challenge is increasingly addressed using social media platforms like Twitter. Within the technical confines of the particular social media platform being used, planning is required that attends to, anticipates and integrates increased levels of public engagement as well as framing risk messages that are attuned to public perceptions of the issue. Although studies have shown the importance and relevance of social media in emergencies, there is much to learn about how social media technologies enable – or constrain – risk communication and how they might best be deployed at different stages in the development and management of a crisis.

To situate our consideration of how social media can be used to communicate during emergency events, we draw on two theoretical perspectives in risk and emergency communication: the Social Amplification of Risk Framework (SARF) (Kasperson et al., 1988) and the Crisis and Emergency Risk Communication model (CERC) (Reynolds and Seeger, 2005). The combination of these perspectives facilitates an integrated consideration of risk communication themes and message framing (SARF) with the different emergency stages and risk reduction strategies suggested by CERC.

The empirical part of the study focuses on the use of Twitter by local government authorities in the UK during the heavy snow of December 2010 and the summer riots of August 2011. These two high-impact emergencies of national reach required different types of responses from local government authorities (LGAs: known as councils in the UK). In December 2010, adverse weather over a long period of time required constant alertness to increase and maintain awareness of a range of risks. In the 2011 riots, authorities had to deal with uncertainty while actively attempting to reduce the effects of public disorder. Following an analysis of 8274 LGA tweets from the 2010 snow and 1746 from the 2011 riots, we identify the risk communication strategies that were used to influence public perception and actions as events unfolded during the two emergencies. On the basis of this analysis, we identify the scope and limitations of communicating risks to the public using social media. First, we outline the relevant literature and theoretical perspectives on emergency and risk communication.

2. Emergency management, risk communication and social media

Emergency management deals with a wide range of events that are unexpected, undesirable, disturb everyday life and affect a large number of people (Boin and 't Hart, 2010). Examples range from weather-related incidents (e.g. floods and fires) to transportation accidents, intentional events and civil disorders. Emergency management research has focused on issues such as inter-organisational coordination, integrated planning risk mitigation, response and recovery, as well as how community resilience can be developed and sustained (Comfort et al., 2010, 2012; Zulean and Prelipcean, 2013).

Relevant to several of these areas, communicating with the public during emergencies is a research domain in its own right. When unexpected events occur, there is high demand for information from the media, and from publics that may be affected, engaged or simply observing. Channels of timely, actionable and reliable information are of vital importance, especially in situations that involve high fear and uncertainty (Horsley and Barker, 2002; Ansell et al., 2010). For information flows and high transparency to be established during emergencies, an open and flexible approach to communications is required (Harrald, 2006; Somers and Svara, 2009). However, lack of time, limited resources, inter-organisational barriers and coordination difficulties commonly hinder organisations' ability to meet the challenge (Hale, 2005; Ansell et al., 2010). Alongside dealing with the actual events of an emergency, public organisations are increasingly required to exhibit

transparency in the use of resources and manage expectations about how they are dealing with a situation (Henstra, 2010). It is in this context that social media have become increasingly part of the armoury of communication practitioners.

2.1. Social amplification of risk

Organisational communication in emergencies in part will be shaped by the imagined characteristics and requirements of those to whom communications are directed (Barnett et al., 2012). Such perceptions influence responses by authorities and the framing of risk messages. For example, one characteristic often attributed to the public – for which in fact there is little evidence – is that people are likely to panic in response to a warning (Mileti and Peek, 2000). The Social Amplification of Risk Framework (SARF) focuses on the discrepancies between public, stakeholder and organisational appraisals of risk events. The frequent lack of alignment between expert assessments of the situation and those of key actors constitute one of the major challenges in risk communication that SARF seeks to explain (Kasperson et al., 1988; Pidgeon et al., 2003).

SARF was developed in order to systematise the findings of a disparate risk perception and communication literature and in particular to help explain why patterns of socio-political attention that surround a risk event are often of a different order (both in terms of the focus of that attention and its scale) than experts consider to be warranted. Thus, hazard events may attract considerable social attention and expressions of concern by publics, media or stakeholders yet experts may consider them to present a low risk (risk intensification) and, conversely, hazards designated as serious by experts might receive comparatively little attention (risk attenuation). SARF makes it clear that both individuals/experts, organisations as well as informal interactions can serve as 'stations of amplification' as they communicate in ways that may intensify or attenuate risk signals (Brenkert-Smith et al., 2013) or may indeed simply 're-present' them (Breakwell and Barnett, 2003). Although organisations, viewed within SARF as social stations of amplification, cannot predict the impact of a risk message during emergencies, they need to accommodate diverse communication needs. They may view the nature of public concern and behaviour to warrant alerts about what are seen as emerging risks, seek to raise concern and generate action or seek to reduce uncertainty and avoid the escalation of reactions (Smith and McCloskey, 1998; 't Hart, 2013). Renn (1991) notes that in seeking to communicate risk, institutions frame messages using a combination of factual (simple information dissemination), inferential (inferring or directly mandating particular behavioural responses) and other more specialised components (e.g. value-related or symbolic that have particular meanings within a community).

SARF provides a broad backdrop against which to consider organisational preparedness, highlighting the often wanted consequences of risk amplification (i.e. intensification or attenuation), and the required adaptation in the communication strategies of risk managers that are required as the flow of public and stakeholder actions are seen to exemplify amplification processes. However, SARF does not specify what characteristics of the information flow around an event are indicative of managerial competence, even though it is recognised as a major determinant of both public behaviour and of the broader impacts of the event (Burns et al., 1993; Rickard et al., 2013). To more fully consider these indicators of competence, we turn to a second framework: the Crisis and Emergency Risk Communication model (CERC) (Reynolds and Seeger, 2005).

2.2. The Crisis and Emergency Risk Communication model

The Crisis and Emergency Risk Communication (CERC) model was developed by the Centers for Disease Control and Prevention as a tool to structure and manage risk communication activities during public

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