Chapter 2
The Use of Social Media in Disaster Situations: Framework and Cases

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ABSTRACT
Recent disasters highlight the importance of social media supporting critical information gathering and dissemination efforts by members of the public. Given that disasters pose unique challenges and social media are evolving rapidly, how can one compare the effectiveness of social media in different disaster situations? Drawing from prior work on e-participation, this paper proposes a novel framework for social media use based on four key modules: selection, facilitation, deliberation, and aggregation. A comparative analysis of social media use following a man-made disaster (the 2007 Virginia Tech tragedy) and during a natural disaster (the 2009 Britain blizzard) exemplifies the value of the proposed framework. Future research can build on and leverage the present work by analyzing and incorporating additional cases on the use of social media in disaster situations.

1. INTRODUCTION

The emerging use of information and communication technology (ICT) as social media, including blogging, tagging, and content sharing, facilitates critical information generation and dissemination activities by members of the public during the phases of a disaster (Palen & Liu, 2007). Scholars in the field of crisis informatics (Palen et al., 2007b) recently investigated the public’s elaborate use of social media following various natural and man-made disasters, including the Indian Ocean earthquake and tsunami, London bombings, Avian influenza outbreak, hurricane Katrina, Virginia Tech shootings, Minneapolis bridge collapse, and Southern California wildfires (Hughes et al., 2008;
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Liu et al., 2008; Palen et al., 2007a; Shklovski et al., 2008; Sutton et al., 2008; Vieweg et al., 2008). In essence, findings suggest that “social media support critical information distribution activity among members of the public that (...) needs to be better integrated with official disaster response activities” (Palen, 2008, p. 78). This call for attention to social media in disaster management is in line with the overall objective of emergency response information systems, which consists of “providing relevant communities collaborative knowledge systems to exchange information” (Turoff, 2002, p. 29, cited in Van de Walle & Turoff, 2007, p. 31).

However, given that disasters pose unique challenges and social media are evolving rapidly, how can one compare the effectiveness of social media in different disaster situations? In addition, the grassroots nature of social media challenges conventional organization processes and structures in typical incident command centers (Turoff et al., 2008), thus further complicating its integration with official disaster response activities. In an effort to overcome these challenges, a combination of policy reform and technology design research has been encouraged (Palen, 2008). Current work seems to focus primarily on technology design, mainly proposing advanced web-based artifacts such as a dynamic voting wiki (White et al., 2007), an emergency domain online social network (Plotnick et al., 2009), and a mega-collaboration tool (Newlon et al., 2009).

In this vein, this paper aims to further the understanding of social media use by members of the public in disaster situations. In the absence of a generally accepted body of knowledge on social media use, we draw from prior work that addresses a similar issue: e-participation. In the fields of policy and political science, e-participation generally refers to the use of web applications for public participation in policy making (Macintosh, 2006). E-participation can be seen as a subset of the general mechanisms underlying public participation, which denotes the practice of integrating citizens in the political decision-making activities of organizations (Rowe, 2005). Also in this field, scholars seem to focus now on efforts to design more efficient and effective public participation processes that make use of social media (Abelson et al., 2003).

The intent of the following subsections is to highlight the variety and limitations of the existing concepts in e-participation, which have not yet led to the development of a significant theory of “what works best when” (Rowe & Frewer, 2000). In an effort to overcome these limitations, the last subsection proposes a novel framework for social media use in disaster situations.

2. THEORETICAL BACKGROUND

Due to the lack of an established body of knowledge on the use of social media by members of the public, we draw from prior work that addresses a similar issue: e-participation. In the fields of policy and political science, e-participation generally refers to the use of web applications for public participation in policy making (Macintosh, 2006). E-participation can be seen as a subset of the general mechanisms underlying public participation, which denotes the practice of integrating citizens in the political decision-making activities of organizations (Rowe, 2005). Also in this field, scholars seem to focus now on efforts to design more efficient and effective public participation processes that make use of social media (Abelson et al., 2003).

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2.1. Integration of E-Participation

Arnstein (1969) is one of the first researchers to provide what can be seen as probably the most enduring metaphor of variations in public participation. Her so-called ladder of public
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