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EXPERT VIEWS ON CURRENT AND FUTURE USE OF SOCIAL MEDIA AMONG CRISIS AND EMERGENCY MANAGEMENT ORGANIZATIONS: INCENTIVES AND BARRIERS

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Abstract: *Our research explored the use of social media among crisis and emergency management organizations and we present the main incentives and barriers experts perceive in social media adoption by such organizations. The data were gathered via an international online questionnaire sent to crisis communication and management experts. The results indicate that crisis and emergency management organizations use social media specifically to disseminate information to citizens but also increasingly to receive it from citizens. They are motivated to use social media because of the possibility for communicating through them directly, rapidly, and widely, as well as for building responsible relationships and situational awareness. Lack of knowledge, time, and role models for implementation, as well as inflexible and old-fashioned organizational culture, were the main barriers mentioned for not utilizing social media. Based on the results, further effort should be put into promoting the dissemination of knowledge, best practices, and experiences of using social media across the various actors and organizations providing crisis response.*

Keywords: *crisis communication, emergency management, social media, technology acceptance.*

INTRODUCTION

Recent disasters, such as the 2011 Tohoku earthquake in Japan and Hurricane Sandy in the United States in 2012, have shown that both the public and the crisis and emergency management organizations have increasingly used social media in times of crises. For citizens, the availability of various applications of social media has enabled communicating with each other, as well as shifting between the roles of consumer and producer of information. This has led to a situation where the speed of diffusion and the amount of information available concerning acute societal events have increased substantially. For crisis and emergency management organizations, the availability of social media has provided additional channels through which they can communicate to and with stakeholders, as well as the possibility of using social media as a source of information to improve situational awareness. On the other hand, the role of citizens as producers of information has arguably led to a situation where the control of an event and the information related to crises no longer can be managed solely by the authorities, as in the past. Furthermore, because false information can diffuse widely and rapidly, crisis and emergency management organizations accustomed to using only information with high credibility can be discouraged from using social media as a source of information gathering.

The use of social media in crises and emergencies has gained interest in academia and has been the topic of several studies during recent years (e.g., Belblidia, 2010; Beneito-Montagut, Anson, Shaw, & Brewster, 2013; For-mukwai, 2010; Goolsby, 2010; Howe, Jennex, Bressler, & Frost, 2013; Hughes & Palen, 2009; Jennex, 2012; Lang & Benbunan-Fich, 2010; Latonero & Shklovski, 2011; Ruggiero & Vos, 2014; Tapia, Moore, & Johnson, 2013; White & Plotnick, 2010; Wybo, Fogelman-Soulié, Goultas, Freyssinet, & Lions, 2015). However, many of the articles published to date have concentrated on the use of social media by citizens in crisis situations (Reuter, Marx, & Pipek, 2012). Although some recent studies have examined crisis communication and management experts' perceptions of the use of social media (e.g., Hiltz, Kushma, & Plotnick, 2014; Plotnick, Hiltz, Kushma, & Tapia, 2015; Reuter, Pratzler-Wanczura, Spielhofer, & Drabble, 2014), research on experts' own perceptions of the incentives for and barriers to the use and adoption of social media among such organizations is still needed. Additionally, there has been criticism that the majority of research has focused on the use of social media in the United States (Reuter et al., 2012; Reuter & Schröter, 2015) and thus not necessarily representative of experts operating in other nations or regions or at the international level. However, although fewer in number, there are some studies addressing the organizational use of social media in European countries (e.g., Flizikowski et al., 2014; Procter, Crump, Karstedt, Voss, & Cantijoch, 2013; Reuter, Ludwig, Friberg, Pratzler-Wanczura, & Gizikis, 2015; Reuter et al., 2014; Reuter & Schröter, 2015; Tirkkonen & Luoma-aho, 2011).

In the context of expanding this knowledge, our aim in this article is to explore how crisis and emergency management organizations operating primarily in European countries use social media to promote citizen response. In addition, we aim to qualitatively deepen the understanding of crisis communication and management experts' perceptions of the factors that influence, either positively or negatively, the use and adoption of social media in various ways and for different purposes. To advance this understanding, the incentives for and barriers to using social media are further elaborated from the perspective of attribution theories (e.g., Spitzberg & Manusov, 2015; Weiner, 2014). Furthermore, experts' views on the future use of

social media among crisis and emergency management organizations are examined and the actions that should be taken for more efficient utilization of available solutions are suggested to contribute to the existing knowledge of the topic.

RELATED WORK

The primary objectives of emergency management are to save lives, minimize the damage caused, and prevent the occurrence of further incidences and additional consequences (Mileti & Sorensen, 1990). In this process, communication plays an integral role and is regarded to be one of the most critical factors as to whether or not the emergency management is ultimately successful (Ozceylan & Coskun, 2008). Emergency communication can be divided into communication (a) from authority to authority, (b) from authority to citizens, (c) from citizens to authority, and (d) from citizens to citizens. Crisis or emergency communication is generally understood to be top-down communication from authorities to citizens (e.g., Taylor & Perry, 2005). The purpose of this communication is to support the aforementioned objectives of emergency management. To this end, crisis communication has to be presented in a timely manner and must contain information of what has or is about to happen and what kinds of protective measures should be taken by those affected. In doing so, appropriate crisis communication should also reduce uncertainties among the citizens (Sutton, Palen, & Shklovski, 2008).

The traditional view of crisis communication depicts authorities in charge and citizens as rather passive beneficiaries of information (see, e.g., Eriksson, 2012; Falkheimer & Heide, 2010). However, this approach can be regarded as somewhat outdated; modern society is far more complex in practice (e.g., Tapia et al., 2013), and crisis communication is actually cocreated in a multiactor arena (Vos, Schoemaker, & Luoma-aho, 2014). The major change in the field is the recent availability of ubiquitous information and communication technologies (ICTs), such as the increase in various social media applications that allow almost anyone to produce and disseminate information. This change has altered the traditional one-way communication from authorities to the citizens into multidirectional communication. For crisis and emergency management organizations, this change can be viewed either as a risk or an opportunity. On one hand, the change has arguably reduced control over the communication and the situation management, as organizations can no longer expect that only their voice is audible. On the other hand, the ICTs enable authorities and organizations to collect data and information in a dynamic and timely fashion. Furthermore, as noted by both researchers (e.g., Helsloot & Ruitenbergh, 2004; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Vos & Sullivan, 2014) as well as practitioners (e.g., Federal Emergency Management Agency [United States of America; FEMA], 2011; United Nations International Strategy for Disaster Reduction [ISDR], 2011), authorities cannot solve crisis situations alone. To further incorporate citizens into emergency management as proactive coactors, social media seem to be a promising area and particularly well-suited for the purpose, as noted, for example, during the 2010 Haiti earthquake (see, e.g., Al-Akkad & Zimmermann, 2012).

Social media consist of various digital tools, platforms, and applications. The key characteristic of social media is that the content is, at least to some extent, user-generated.

Thus, by its nature, social media support and provide possibilities for two- and multidirectional communication by allowing users to be both consumers and producers of information. This is notable because earlier studies have shown that, in addition to receiving information, citizens also are willing to share information related to crises (see, e.g., Haataja, Hyvärinen, & Laajalahti, 2014). Some applications, such as wikis and blogs, and some specific content sharing sites, such as YouTube¹ (videos) and Flickr² (photos), can be useful in producing, sharing, collecting, and accumulating information. Compared to these kinds of content-sharing sites, social networking sites, such as Facebook,³ and microblogging sites, such as Twitter,⁴ offer platforms through which users can share and distribute information in near real-time to a wide audience, based on either social networks, content, or subject of interest. The shared content can consist of self-generated information, forwarded content from others published in the same or other social media, or links to external information sources, such as traditional media or organizations' websites. For the purposes of emergency communication, different forms and applications of social media can serve different purposes, for example, for educating, disseminating information, or providing a possibility for individuals to seek and receive emotional support (e.g., Choi & Lin, 2009; Reuter et al., 2012; Stephens & Malone, 2009).

Various organizations have, in recent years, started to look into ways in which they can incorporate social media into their processes of crisis response (Graham, Avery, & Park, 2015; Tapia et al., 2013). Similarly, the amount of research into how authorities and various organizations use social media for the purposes of emergency management has increased (e.g., Latonero & Shklovski, 2011; Lindsay, 2011). However, much of this research has been limited to examining the use of a particular application of social media for a specific purpose, for example, aggregating data from Twitter (see, e.g., Starbird, Muzny, & Palen, 2012; Verma et al., 2011), or focused on use of social media in particular crisis events, such as the H1N1 flu in 2009 (Kim & Liu, 2012), the disruption of air travel caused by the eruptions of the volcano Eyjafjallajökull in Iceland in 2010, the stampede at the Love Parade music festival in Germany in 2010 (Reuter et al., 2012), the Great San Diego/Southwest Blackout in 2011 (Jennex, 2012), the Japan tsunami in 2011 (Tyshchuk & Wallace, 2013), or Hurricane Sandy in 2012 (Gupta, Lamba, Kumaraguru, & Joshi, 2013). For an overview of recent case studies, see, for example, Reuter et al. (2015). In this article, we argue that research also is needed in exploring more holistically the incentives for and barriers to organizational use of social media, thus improving the understanding of social media adoption among crisis and emergency management organizations beyond the particular social media applications or crisis situations studied.

According to a classification matrix for social media use in crisis management (Reuter et al., 2012), there are four types of cooperation between crisis and emergency management organizations and the citizens: (a) crisis communication from organizations to the citizens, aiming to inform and to assist citizens in regard to their individual needs, representing the classical approach, (b) self-help communities fostering aid and communication from the citizens to the citizens, (c) the integration of citizen-generated content and aggregation of information from the citizens to organizations, and (d) crisis communication from organizations to organizations. Relatedly, we emphasize that crisis and emergency management organizations may use social media for various purposes.

However, the classification utilized in this article is a little different from the classification used by Reuter et al. (2012). In our study, we concentrated on the use of social

media among crisis and emergency management organizations in connection with promoting citizen response. Thus, the interorganizational use of social media is not considered within this article, and we have reclassified the four main functions in use of social media as follows: (a) to provide information to citizens, (b) to interact with citizens, (c) to facilitate interaction among citizens, and (d) to monitor data and information exchange. Next, these categories will be discussed in more detail.

Disseminating Information via Social Media

Using social media as a broadcasting tool can be regarded as a step that requires the least effort from an organization. In this regard, social media simply provide additional channels through which messages can be displayed and disseminated to individuals. Most of the crisis and emergency management organizations that use social media use it mainly as a broadcasting tool (e.g., Currie, 2009; Lindsay, 2011; Plotnick et al., 2015; Reuter et al., 2014). The motivational factors for using social media to disseminate information are apparent. First, social media allow citizens with suitable devices to be reached directly (Latonero & Shklovski, 2011). Second, because social media are widely adopted by many citizens, and various mobile applications are used extensively throughout the day, the ability to reach individuals is enhanced. Also, many citizens are already accustomed to using social media; therefore, employing these channels for crisis communication will not require these citizens to adopt new ICTs. Some researchers (e.g., Al-Akkad & Zimmermann, 2012) argued that instead of using everyday services, such as Facebook or Twitter, for crisis-related communication, citizens would favor separate disaster specific applications of social media. The counter argument is that applications not in regular use face the risk of fading from the citizens' consciousness and may lack ease of use specifically when the reception of information is crucial (Agarwal & Prasad, 1998).

In times of crisis, many citizens have turned to social media in search of information (Latonero & Shklovski, 2011; Reuter et al., 2012; Sutton et al., 2008). Arguably, one major reason is that applications of social media have shown good scalability during past events (Reuter et al., 2012; Veil, Buehner, & Palenchar, 2011), thus being available and accessible when other information channels might not have been. Furthermore, mobile networks, the foundation for social media applications, allow citizens to access information easily from almost anywhere.

The general guideline for emergency communication is to quickly and efficiently reach the stakeholders affected by a specific incident while avoiding too much irrelevant information being presented to those who are not directly involved in the situation (United States National Science and Technology Council Subcommittee on Natural Disaster Reduction, 2000). However, as stated in earlier studies, people not personally involved in a crisis still might be interested in the event and/or may be concerned about the well-being of their family and friends (Haataja et al., 2014). Additionally, next to formal information from an authority, communication among one's close circle of family and friends is often the most trusted and impacts highly on individuals' perceptions of crises and on their reactions (Haataja et al., 2014). This type of word-of-mouth communication is not a recent innovation. Nevertheless, social media have increased the possibilities for communicating with networks of close friends and also with strangers over long distances, enabling electronic word-of-mouth communication. Thus, those who are not directly affected can collect information from various sources and, acting as "information brokers," pass on the information within their social networks to those

who need it (Hughes & Palen, 2009; Sutton et al., 2008) or who are equally interested. Such information intermediaries have also been called “evangelists of information” because they increase the probability that information reaches the ones affected more efficiently than a narrower dissemination process to smaller areas or groups (Currie, 2009, p. 2).

The decision concerning which applications of social media an organization should use can depend on the timing of its use (before, during, or after the crisis) and the topic of information (e.g., educative purpose, alerts, providing emotional support). In general, organizations are advised to communicate with the citizens throughout the life-span of a crisis. Moreover, communicating regularly in noncrisis situations can assist in educating the citizens concerning potential risks and threats, in helping to build social networks of individuals, and in establishing trustworthy relationships with the citizens (e.g., Beneito-Montagut et al., 2013). According to the literature, the majority of organizations still activate the dissemination of emergency information and guidance only when amid critical incidents (e.g., Currie, 2009), although a growing number of organizations have recently adopted the practice of communicating before and after crises as well as during. For example, in the United States, the Centers for Disease Control and Prevention⁵ and FEMA⁶ are regularly active on Twitter while, in Europe, the Finnish Police⁷ post notifications of lower priority with an educative approach between greater events.

Two-Way Communication with Citizens in Social Media

Social media facilitate two-way communication and interaction between and among users of specific platforms and services, thus allowing individuals to shift between the roles of consumers and producers of information (Currie, 2009). There are several reasons why authorities and crisis and emergency management organizations want to interact with citizens in relation to crises. First, engaging with citizens enables authorities to influence and shape the ongoing discourse (Currie, 2009) and to correct the spread of possible rumors and misinformation (Veil et al., 2011). Furthermore, crises and emergencies create the need for individuals to interact and share opinions with others; the participation of the authorities in this communication can reduce feelings of insecurity among citizens and provide the perception they are being listened to and taken account of (Sutton et al., 2008). Finally, the possibility of using social media as a channel for requesting assistance from the authorities has also been discussed (see, e.g., Latonero & Shklovski, 2011; Lindsay, 2011) and could potentially be utilized more thoroughly in the future.

An organization can communicate to the citizens as an organization (formal/official), a person (informal/unofficial), or a combination of the two. However, as Latonero and Shklovski (2011, p. 6) stated, mixing or alternating between these two roles can be confusing for citizens. Nevertheless, social media engagement—generally regarded as an area where actual individuals communicate, irrespective of their organizational affiliation—has been received favorably when employees of organizations have communicated in an informal/unofficial manner when presenting information to citizens. As a result, this type of decentralized communication strategy, where individuals of the organizations are given the responsibility for and the possibility of communicating directly with citizens and stakeholders via social media, can be quite distinct from the normal communication strategies of centralized management and the communication models generally used in crisis and emergency management organizations (Stephens, 2013).

Facilitating Interaction Among Citizens in Social Media

Because the abilities and resources of crisis and emergency management organizations can be limited, more and more researchers have concluded that, to be better able to cope with crises and emergencies, the potential of the citizens could and should be further utilized (e.g., Helsloot & Ruitenbergh, 2004; Norris et al., 2008). For this purpose, organizations can use social media not only to communicate with the citizens but also to facilitate interaction among citizens themselves by providing platforms on which citizens can network and help each other. These types of activities may include, for example, crowdsourcing activities. According to Su, Wardell, and Thorkildsen (2013, p. 67), crowdsourcing refers to “the practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, especially from an online community,” whereas Burns and Shanley (2013, p. 5) consider it as “tasking a large number of distributed, uncoordinated individuals with a particular task, which could include data production, data processing, problem solving, or devoting computing resources.” In brief, crowdsourcing covers the processes of coordinating, requesting, and providing of information, knowledge, expertise, or resources in addressing situational demands. Social networking and microblogging sites can assist individuals in their willingness and ability to provide help by facilitating the identification of tasks and areas where help is needed, soliciting action on the tasks or circumstances, and allocating resources according to those needs.

Monitoring Social Media

Traditionally, crisis and emergency management organizations have relied on their own information channels and sources with high credibility, particularly during ongoing events (Gunawan, Fitriani, Brinkman, & Neerincx, 2012). Credibility is essential because decisions on how to respond to crises and allocate resources in life-critical situations cannot be made on the basis of information that could be false or incomplete. In fact, veracity, accuracy, and legitimacy of information have been regarded as the most important criteria in decision making among crisis and emergency management organizations (Tapia, Bajpai, Jansen, Yen, & Giles, 2011). In the past, these requirements have been favored even at the cost of speed when officially reacting to events. The aforementioned reasons arguably exert significant influence on organizations by constraining them, at least for important decision making, from easily using data and information acquired from social media during dynamic crisis situations, when the likelihood of incorrect or incomplete information sharing increases. However, in the discipline of emergency management, a clear need for improving the timeliness of information has been identified, thus making topical the monitoring of real-time discussion on social media (Tapia et al., 2011).

Recently, a great amount of research has concentrated on studying how data and information available in social media could be used to enhance situational awareness among organizations dealing with crisis response (e.g., Gunawan et al., 2012; Li & Goodchild, 2010; Tapia et al., 2011). Situational awareness refers to the “ability to identify, process, and comprehend critical elements of an incident or situation” (Lindsay, 2011, p. 4). Situational information concerns answers to event-related questions such as, What is the magnitude? Who is affected? and What are the needs and status in the impacted area? In addition, crisis

and emergency management organizations usually need background information (e.g., culture, politics, geography), operational information (who is doing what), and analysis information on the assessment of causes, trajectories, and future responses (King, cited in Tapia et al., 2011). Usable information related to all these categories is arguably available on social media, and the pool of information is vast.

In contrast to the traditional top-down response models, the affected population is capable of acting rationally and often is willing to assist in various ways (e.g., Andersen & Spitzberg, 2009; Gunawan et al., 2012; Haataja et al., 2014; Helsloot & Ruitenberg, 2004). However, historical events have shown that false, inaccurate, and outdated information has been disseminated across social media either by accident or on purpose with malicious intent (e.g., Gupta et al., 2013; Lindsay, 2011), which can complicate the traditional organizational response processes. In a study of 14 high impact events, Gupta et al. (2013) found that, on average, 30% of the event-related information posted on Twitter contained situational awareness information. Yet, 14% of the total number of tweets were spam, and just 17% of the tweets contained information of situational awareness that was evaluated as credible. Given the validity requirements of information by crisis and emergency management organizations, two key issues involve how to identify and filter out the relevant and accurate information from the noise of incorrect and unreliable information and how to validate accurate information for further utilization.

Tapia et al. (2011) identified three possible solutions to overcome validity-concern issues. First, using bounded networks, where information providers are preauthenticated and evaluated as suitable and trustworthy participants, reduces the majority of problems related to the reliability and trustworthiness of the information acquired. With this approach, there is a trade-off between the validity and the amount of information that can be acquired because not all potential information providers can participate if an automatic or instant authentication mechanism is not extant. The second solution involves narrowing the use of information acquired from social media to ambient or contextual purposes as an add-on for traditional and trusted lines of information gathering. For this purpose, the process of authenticating and validating information would not have to be as rigorous. Third, computational solutions can be developed to identify and filter out potentially relevant information and to conduct the verification and validation of information, thus reducing concerns over the information that can be used to support decision making in crises and emergencies.

Concerning the computational solutions, automated methods and algorithms already have been developed, tested, and employed for initially filtering relevant data and then assessing the validity and trustworthiness of this information (Tapia et al., 2011). Basically, the available attributes concerning the information are used for both identifying and validating the content and evaluating whether or not the information is interesting, reliable, and credible for the organization. According to Starbird et al. (2012), identifying locals and those citizens likely to be in the proximity of the event can serve as a collaborative filter for identifying individuals who are more likely to have a better view on the situation and existing conditions and also a knowledge of the local geographical and cultural area (Sutton et al., 2008). In addition to geo-locating, information extracting and classifying criteria previously used as filtering tools include keywords and the analysis of the content of messages (e.g., Verma et al., 2011), the form of the message (O'Donovan, Kang, Meyer, Höllerer, & Adali, 2012), the amount of similar or identical content posted, and URLs (Castillo, Mendoza, & Poblete, 2011; O'Donovan et al., 2012). Further, data concerning the source of information, such as the number of messages posted, reposts of these

messages, and the social networks of these sources (e.g., friends and followers) have also been used for analyzing and classifying the data (Castillo et al., 2011; Gupta et al., 2013).

Nevertheless, even though research has shown positive indications that computational and other solutions can assist in transforming an unclear mass of social media data into usable information (see, e.g., Castillo et al., 2011; Gupta et al., 2013; Yardi, Romero, Schoenebeck, & Boyd, 2010), two issues still can restrict crisis and emergency management organizations in using this information for their own purposes. First, the identification and validation solutions are still immature, often tested with limited data, and lacking extensive use in real-life and real-time situations (Tapia et al., 2013). Second, the positive attitude towards innovations and technology adoption among crisis and emergency management organizations is characteristic of more recent adopters of social media, as noted by Tapia et al. (2011) and Beneito-Montagut et al. (2013).

METHODS

This study was conducted to explore experts' perceptions of the current and future use of social media among organizations working in the field of crisis response. The aim was to build further knowledge on which factors, either positive or negative, can be identified among crisis and emergency management organizations as influential in their acceptance and adoption of social media for promoting citizen response. The research questions were as follows:

RQ1: To what extent and for which purposes are social media used by crisis and emergency management organizations to promote citizen response?

RQ2: What are the primary incentives and barriers among crisis and emergency management organizations concerning the acceptance and adoption of social media?

The research task explored crisis communication and management experts' perceptions as a means to examine social media use in crisis and emergency management organizations. The data were gathered via an international online questionnaire with a mostly qualitative approach that included many open-ended, but also some multiple-choice, questions. The method was chosen because it enabled the collection of extensive and international research data (see, e.g., Dillman, Smyth, & Christian, 2009; Leeuw, Hox, & Dillman, 2008).

The research data were collected between June and September 2012. Before gathering the data, the questionnaire was tested on two crisis communication and management experts, and the phrasing of a few questions was clarified based on the feedback received. Once tiny adjustments in language were made, an email invitation to participate in the questionnaire was sent to all 493 crisis communication and management experts that had participated in the annual International Disaster and Risk Conference (IDRC) in 2006–2010, organized by the Global Risk Forum, and whose e-mail addresses were available. The language of the questionnaire was English. However, even if experts in the various organizations invited were not all native English-speakers, it was assumed that their competence in English was sufficient to complete the questionnaire because they had participated in the IDRC where the operating language is English.

The online questionnaire opened with an informed consent form and comprised demographic information and four thematic sections: (a) current state of enhancing citizen

response, (b) best practices of enhancing citizen response, (c) chemical, biological, radiological, and nuclear crises, and (d) social media and citizen response, which is the focus of this article. For this article, the research data consisted of the answers to four multiple-choice questions with open-ended explanations and one open-ended question, all addressing social media in crisis preparedness, response, and recovery. First, the respondents were asked to indicate which social media are currently used by their organization to perform the functions of (a) providing information about crises for citizens, (b) interacting with citizens about crisis-related matters, (c) facilitating interaction among citizens in crisis-related contexts, and (d) monitoring social media discussion about crises. The respondents were asked to check all the relevant options to each of these questions (i.e., multiple answers were allowable). The options were Social networking sites (e.g., Facebook), Microblogs (e.g., Twitter), Discussion forums, Crowdsourcing, Other(s) (please specify), and None. After each multiple-choice question, the respondents were asked to describe in the space provided how and why certain social media tools are used for these specific purposes and if they are not used, why not. At the end of the section, the respondents were asked to consider how the use of social media could be further developed to enhance citizen response in crisis-related contexts.

Of the 42 experts who returned a completed questionnaire, 29 filled out the section on social media and citizen response. In order to protect the anonymity of the respondents, the completed questionnaires were coded numerically from R(espondent)1 to R29. The respondents ($N = 29$) were experts in crisis or emergency management ($n = 15$), crisis communication ($n = 12$), and/or other related fields ($n = 10$),⁸ including disaster reduction and management; emergency risk analysis, assessment, and management; public education for disaster prevention; recovery planning; and security crises. All the respondents had between 1 and 40 years work experience, with an average of 12 years; the majority ($n = 14$) of the respondents had worked in their respective field between 5 and 10 years.

The types of the organizations represented were governmental organizations (e.g., municipality, ministry) or authorities ($n = 14$; noted as a *governmental agency* in the balance of this paper); police or rescue services ($n = 1$); health care ($n = 1$); expertise centers, universities, or research organizations ($n = 9$; noted as a *research organization* in the balance of this paper); nongovernmental organizations (e.g., Red Cross; $n = 4$); enterprises (e.g., energy company; $n = 6$); and other organizations ($n = 3$). Thirteen of the represented organizations had international operations, 18 national, 5 regional, and 8 local. Most of the respondents ($n = 22$) worked in one or more European countries, whereas some worked both in European countries and in Africa, Asia, Latin America, or Oceania ($n = 2$) or exclusively in non-European countries in the above regions ($n = 5$). The majority of the respondents worked most often in a combination of urban and rural areas ($n = 20$), whereas some of them worked mostly only in urban ($n = 7$) or in rural areas ($n = 2$). In all of these data, respondents could identify more than one mission for their organizations and locations of operation.

The response rate was not high (i.e., 8.5% overall; 5.9% for those completing the social media questions) because the questionnaire consisted of many open-ended questions and required creating a login, which was time consuming. Furthermore, the section concerning social media was presented at the end of the questionnaire and, following strict ethical guidelines, respondents were allowed to leave any of the questions unanswered. However, the method yielded appropriate data that provided valuable qualitative insights into the use and adoption of social media among crisis and emergency management organizations.

The responses for multiple-choice questions were calculated quantitatively; the responses for open-ended questions were analyzed using qualitative content analysis (see, e.g., Frey, Botan, & Kreps, 2000; Mayring, 2000). The authors first familiarized themselves independently with the data through repeated readings. Then, the data were discussed collaboratively among the researchers and arranged according to main themes, including the ways and reasons for using or not using certain social media for specific crisis communication purposes. The themes were derived step-by-step from the data and revised if necessary. The final steps in the analysis involved exploring the contents of these themes in more detail, interpreting the findings, and drawing conclusions.

FINDINGS

The Use of Social Media to Provide Information About Crises for Citizens

Of the 29 respondents, 24 (83%) reported that they are using social media at least for one purpose, whereas 5 (17%) answered that their organizations are not using social media in any way for crisis-related purposes. Twenty experts (69%) said their organizations use social media specifically for the purpose of disseminating information about crises to citizens, whereas 9 respondents (31%) said their organizations do not use any social media for this crisis communication purpose. The most commonly used social media for providing information to citizens were social networking sites ($n = 14$) and microblogs ($n = 11$), as indicated in Table 1.

Based on our results, crisis and emergency management organizations that use social media to provide information seem to deploy a multichannel approach, using various social media tools for this purpose. Of the 20 organizations that utilize social media to provide information about crises to citizens, most ($n = 19$; 95%) employ more than one social media for the purpose, whereas only 1 expert said her organization uses just a single social media type (i.e., social networking sites) for this purpose. In addition to social media, the respondents reported that their organizations use websites and mobile phones, as well as more traditional media, such as television, radio, and newspapers, to provide information about crises for citizens.

According to the respondents representing organizations using social media, social media are used to disseminate emergency information and guidance mainly during an actual crisis

Table 1. Social Media Used by Crisis and Emergency Management Organizations for Providing Information to Citizens (using: $n = 20$; not using: $n = 9$).

Social Media	Frequency mentioned
Social networking sites (e.g., Facebook)	14
Microblogs (e.g., Twitter)	11
Discussion forums	5
Crowdsourcing	4
Other (e.g., Google Maps, Wikis, YouTube)	10
All social media (total)	44

Note: Multiple answers were permitted.

event or in the early warning phase. However, based on our results, social media are used also in other crisis phases, including preparedness and recovery, to inform and educate the citizens about potential threats and risks and how to prepare for them. This was said to be done by publishing regular updates and sharing tips and links to educational materials, as described by a crisis communication expert representing a governmental agency working in both urban and rural areas in the Netherlands: “*We make YouTube videos to help people help themselves, [sic] we give tips through Facebook and Twitter*” (R28).⁹ The reason for adopting this type of social media strategy was seen as important because regular updates enable citizens to learn beforehand where they can find information that can be regarded as trustworthy during crises.

With regard to the question about why crisis and emergency management organizations use social media to provide information for citizens about crises, the main incentive reported was the general popularity of the applications. As a communication management expert working in Finnish governmental agency described, social media are “*an easy way to reach many people at the same time*” (R21). By presenting information in social media, the message is shared quickly and effectively across social networks of individuals. Such practice also “*allows quick and easy access to opinion leaders who share it with others,*” explained R25, a crisis and risk management expert representing enterprises and working mainly in the mountain regions of Austria. Thus, social media were seen as “*the strongest and quickest way to reach people; [sic] and therefore reaching our goals*” (R28). Furthermore, the possibility of communicating directly with citizens, rather than only through traditional media, was mentioned as a great motivational factor.

Factors restricting the use of social media mentioned by the respondents representing organizations not using social media were that the target population may not be familiar with using social media or that their organizations are not responsible for providing crisis information to citizens, at least via their own channels. In addition, an organization’s lack of knowledge about and experience in using social media were mentioned as barriers. For example, an expert representing a research organization that has international operations in urban areas described that her organization was using social media “*gingerly, experimentally*” and that the utilization of social media still “*needs more research, cooperation, training, planning, and standards*” (R10). Furthermore, organizational culture was mentioned as a barrier, as one respondent working in a research organization in Germany stated: “*Authority structures impede using new technologies. They prefer press conferences and leave disseminating activities to the media (with room for interpretation)*” (R7).

The Use of Social Media to Interact with Citizens about Crises-Related Matters

Of the 29 respondents, 17 experts (59%) answered that their organizations use social media to interact with citizens about crisis-related matters, while 12 respondents (41%) answered that their organizations are not using any social media for this purpose. The most commonly used social media to interact with citizens were social networking sites ($n = 10$), microblogs ($n = 9$), and discussion forums ($n = 7$; see Table 2).

Based on these results, crisis and emergency management organizations that use social media for the purpose of interacting with citizens most often deploy a multichannel approach, but not as often as when using social media for the purpose of disseminating information. Of

Table 2. Social Media Used by Crisis and Emergency Management Organizations for Interacting with Citizens (using: $n = 17$; not using: $n = 12$).

Social Media	Frequency mentioned
Social networking sites (e.g., Facebook)	10
Microblogs (e.g., Twitter)	9
Discussion forums	7
Crowdsourcing	2
Other (not specified)	4
All social media (total)	32

Note: Multiple answers were permitted.

the 17 organizations employing social media to interact with citizens, most ($n = 11$; 65%) utilized more than one social media. The remaining six experts (35%) said their organizations use only one social media (e.g., discussion forums) for this specific purpose. However, the overall trend towards a multichannel approach in social media was also apparent in interacting with citizens. In addition to their social media use, the respondents mentioned that they interact with citizens via, for example, emergency call centers, dedicated hotlines, interactive websites, and by using SMSs.

According to the respondents representing organizations using social media, their organizations use social media to interact with citizens about crisis-related matters before, during, and after crises. For example, one respondent stated that his organization “*informs the people on different matters, interacts with them on a personal level if they have questions, and also tries to identify and use social influences to help [them to] communicate on a specific crisis*” (R28). In addition to engaging as an organization, experts reported that they may engage in interaction with citizens on a personal level as individuals, as explained by another crisis communication expert representing a governmental agency working in the Netherlands: “*Social media are used by employees to interact (a bit), but not (yet) by the organization*” (R29).

The motivational factors for using social media for two-way communication with citizens were, for the most part, the same as those for providing one-way information to citizens: social media were described as a fast and direct channel for reaching citizens. From the organizational standpoint, other key motivational factors for establishing channels for ongoing dialogue and interaction with citizens include advances in building citizens’ trust in the organization and with authorities and in creating responsible relationships, which was seen as an important issue needed in crisis and emergency communication. Furthermore, it was indicated that interaction with citizens can be used for crowdsourcing purposes, thus providing benefits not only for citizens but for organizations as well. A crisis communication expert representing a research organization and working mainly in Romania, but also in Ukraine, Finland, Armenia, Moldova, and Georgia, described the situation as follows: “*It is a two-way communication, with interested people; during crisis it is almost real-time communication; communication is personalized and the bound [sic] between organization and the citizens is stronger*” (R5).

In the context of the factors restricting the use of social media in interacting with citizens, the respondents representing organizations not using social media emphasized that it is not that their organizations do not want to interact with citizens. Rather, the primary reason

for not doing so is that engaging in interaction requires an increased investment from the organization in terms of time and workforce than is available: It “*demands time*” (R6) and is “*too labour-intensive*” (R18). However, the respondents acknowledged that the citizens could and should be more involved and offered the possibility to participate proactively, as an expert working globally in public education for disaster prevention stated: “*PLEASE ASSUME that the public WANTS to be part of the solution, not that the public is stupid and can be ignored*” (R10; emphasis provided by the respondent). In addition, the respondents mentioned that their organizations do not use social media to interact with citizens due to their inflexible and old-fashioned organizational culture or because their organizations do not view interaction as their role.

The Use of Social Media to Facilitate Interaction Among Citizens in Crisis-Related Contexts

Based on our results, crisis and emergency management organizations generally do not use social media to facilitate interaction among citizens as often as for the purposes of providing information or interacting with citizens by themselves. Of the 29 respondents, only 11 experts (38%) noted that their organizations use social media for the purpose of facilitating interaction among citizens, whereas most of the respondents ($n = 18$; 62%) reported that their organizations are not using any social media for this purpose. The social media options offered in the questionnaire were used less often for this specific crisis communication purpose, as seen in Table 3.

Although only slightly more than a third of the responding experts noted that their organizations used social media to facilitate interaction among citizens, their organizations notably deployed a multichannel approach. All 11 organizations used more than one social media in facilitating interaction among citizens. These respondents described that they are using social media to facilitate interaction among citizens by supporting crowdsourcing and, as described by an expert representing a nongovernmental organization and working in Europe and in rural areas of Southern Asia and Southern Africa, by “*mobilizing the people to take common actions and to have a common understanding about the crisis*” (R22). In addition, it was described that organizations “*facilitate the public in using social media by encouraging them to do so by joining the conversation with them on social media*” (R28). However, no specific motivational factors for this social media use were mentioned.

Table 3. Social Media Used by Crisis and Emergency Management Organizations for Facilitating Interaction Among Citizens (using: $n = 11$; not using: $n = 18$).

Social Media	Frequency mentioned
Social networking sites (e.g., Facebook)	7
Microblogs (e.g., Twitter)	6
Discussion forums	4
Crowdsourcing	4
Other (not specified)	1
All social media (total)	22

Note: Multiple answers were permitted.

The main reason given for not facilitating interaction among citizens, as noted by the experts representing organizations not using social media for this purpose, was that it was not regarded as part of the organization's mission. As a crisis management expert from Switzerland working in a governmental agency stated, "*The aim is to communicate between the authorities and the population, not to facilitate communication among the citizens*" (R8). In addition, the respondents highlighted that, in fact, they do not have enough knowledge and understanding of how it could be done and what the possible benefits could be for citizens and organizations. However, two of the respondents for organizations currently not using social media for this purpose, one working in Finland and the other in Germany and both representing governmental agencies, explicitly mentioned that they hope to start this type of activity in the near future.

Monitoring Social Media

Of the 29 respondents, 18 experts (62%) reported that their organizations monitor discussions in social media about crises, whereas the rest ($n = 11$; 38%) said their organizations are not monitoring any social media for crisis communication and management purpose. The most commonly monitored social media were social networking sites ($n = 11$), but microblogs ($n = 9$) and discussion forums ($n = 7$) also were monitored frequently (see Table 4).

Similarly, as with the other purposes of using social media, organizations had deployed a multichannel approach for utilizing social media for monitoring purposes. If they monitored discussion about crises in social media at all, they typically monitored it on many social media platforms. Of the 18 organizations monitoring social media, most ($n = 16$; 89%) monitored multiple social media, whereas only two experts (11%) stated that they monitor only one channel of social media. One notable observation was that two organizations used social media solely for monitoring and data acquisition purposes. Other than social media, the respondents reported that their organizations are monitoring, for example, articles in specialized magazines and discussion on websites that are relevant to them.

Based on our results, crisis and emergency management organizations are interested in aggregating and making use of information from citizens, media, and other organizations available on social media. The main motivational factor was that, by monitoring social media, they can increase their situational awareness about a crisis. In addition, these respondents highlighted that crisis and emergency management organizations need to know and understand the citizens' opinions and thoughts, particularly amid the dynamic situation associated with a

Table 4. The Monitoring of Social Media by Crisis and Emergency Management Organizations (using: $n = 18$; not using: $n = 11$).

Social Media	Frequency mentioned
Social networking sites (e.g., Facebook)	11
Microblogs (e.g., Twitter)	9
Discussion forums	7
Crowdsourcing	3
Other (e.g., "online keyword fishing," Google Alerts)	4
All social media (total)	34

Note: Multiple answers were permitted.

crisis or emergency. An expert from a risk management enterprise working primarily in Germany but also globally elaborated this motivation as follows: *“It is vital for our own risk management to know what public thoughts are (e.g., on special topics, products and/or substances)”* (R15). These respondents conveyed that they also are monitoring social media in order to be able to better meet the wishes and requirements of citizens, to tailor the advice they provide to the citizens, and to actively engage if social media are used to *“provide wrong information on the consequences of the crisis or disseminate rumors”* (R22). In addition, it was stated that organizations are utilizing the information gained by monitoring social media in their decision making and in aligning their internal actions, as one expert illustrated, *“This is an important ingredient for decision-making during a crisis. Why? In this way we can adapt quickly in what the public wants and needs”* (R28).

However, the utilization and the awareness of the tools and methods suitable for monitoring public discussion and validating data seem to vary across the organizations. For example, one expert elaborated that his organization has *“specifically trained employees in monitoring by using various tools”* (R28), while an expert from Italy reported that his organization does not monitor social media because *“nobody has it done”* (R19) and an expert from Germany stated that there simply are no *“appropriate tools”* (R18) available to do so. Further factors restricting social media monitoring mentioned by the respondents include lack of experience or expertise within their organizations, lack of knowledge, and insufficient workforce to enable utilization of any data gathered from the monitoring.

Developing the Use of Social Media to Enhance Crisis Communication

The respondents had many insights regarding the issue of how social media use could be further developed to enhance citizen response in crisis-related contexts. For example, the respondents highlighted how social media could be used more extensively as an educational tool before crises occurred, that is, in the preparedness phase. In addition, they thought that the utilization of a geographic information system (GIS) and the development of targeted alerts and notifications should be examined more closely so that organizations could *“inform only people in the affected area,”* as stated by R8, a crisis management expert working in a governmental agency in Switzerland. In addition, the respondents considered the possibilities of creating *“official real-time crisis communication products”* that could, by utilizing citizens’ geo-locations (e.g., GPS), *“respond to issues as citizens face them,”* as described by a research organization crisis expert working both in Switzerland and Australia (R27).

Based on our results, a multichannel approach for utilizing social media alongside traditional communication channels seems to be most effective in reaching as many citizens as possible. For example, an expert representing a governmental agency with crisis management experience from Estonia, the Netherlands, Spain, Colombia, Guatemala, India, Sri Lanka, and Vietnam thought that *“a full range of media will enhance the penetration of the message”* (R3). However, R3 also recognized that, during an active crisis, *“high fragmentation of media may also cause confusion, unnecessary apprehension and speculation,”* a concern also acknowledged by other respondents. Thus, the respondents emphasized the essential need for crisis and emergency management organizations to be present in social media at every phase of a crisis and to promote their social media and other communication channels beforehand so that citizens will learn *“from where they can find trustworthy information,”* as

stated by a crisis communication expert representing a governmental agency with experience also from media and disasters (R14). To minimize the problem of the diffusion of false information, a crisis expert working in an enterprise in Austria suggested that crisis and emergency management organizations should collaborate to “*make sure that there is one reliable source of information instead of many smaller ones that cannot be clearly identified by local population*” (R25).

In addition to providing information to citizens, the respondents pondered the possibilities of involving citizens more actively in crisis communication and of collecting crisis-related information from them. This could be done, for example, by asking citizens to share information on social media, as one respondent from Germany stated, “*There are some projects that use social media to collect information on ongoing emergencies (up to the point where users are asked to post / provide e.g., photos on acute emergencies) [which] looks promising*” (R18). Moreover, the respondents highlighted that crisis and emergency management organizations should “*empower the people by really listening [to them] and adopting [sic; their] organization to what they say*” (R28). Furthermore, the possibilities for using social media to facilitate interaction among citizens, “*helping citizens to help others*” (R29), was seen important, even though the respondents did not have any concrete suggestions of how to do it.

As the respondents noted, continuous work, collaboration, and discussions on standardization are needed in order to support the further development and utilization of potential social media solutions already available and to develop new ones. Crisis and emergency management organizations should engage citizens and IT experts in this discussion, as one expert working globally in public education for disaster prevention stated: “*We also really badly need all communications providers (e.g., telephone companies, Facebook, Google, Twitter) to sit down and figure out public communications messages so that these systems can be used effectively and efficiently without crashing*” (R10). Thus, our results suggest that further effort is needed to promote multiactor collaboration and the dissemination of knowledge, results, and good practices of social media use across the various actors and organizations taking part in crisis planning, response, and aftercare.

Summary of the Findings

Based on the results, crisis and emergency management organizations use social media for many crisis-related purposes. Of the 29 respondents, only 5 (17%) answered that their organizations are not using social media in any way for crisis-related purposes, while the rest ($n = 24$; 83%) reported that they are using social media at least for one purpose. Of these 24 social media users, 10 organizations (42%) used social media for one purpose, 3 (12%) for two purposes, 5 (21%) for three purposes, and 6 (25%) for all four purposes mentioned in the questionnaire (i.e., using social media in crisis situations to disseminate information to the citizens, to interact with citizens, to facilitate interaction among citizens, and to monitor social media). The most common purposes for using social media among the 24 organizations were providing information about crises for citizens ($n = 20$; 83%), monitoring social media ($n = 18$; 75%), and interacting with citizens ($n = 17$; 71%); facilitating interaction among citizens was less common ($n = 11$; 50%), although half of the organizations using social media for any purpose do invest in this type of crisis communication process.

Another overall trend found in the data was that the nominal order of the three most widely used social media to fulfill all four functions was the same: (a) social networking sites, (b) microblogs, and (c) discussion forums. A final observation is that if crisis and emergency management organizations use social media at all for crisis-related purposes, it is probable that they have adopted a multichannel approach.

We must acknowledge a quite notable variance between organizations. For example, a crisis communication expert representing a governmental agency in Belgium stated that “*excluding it [social media] is not an option anymore*” (R6), whereas other experts did not see incorporating social media into their crisis response strategies as essential or lacked the competence or other resources required for their utilization. No matter their current status of social media use, the respondents generally tended to have positive attitudes towards the use of social media. For those not currently employing social media as part of their crisis communication package, the intention and/or plans to initiate activities in social media is on the horizon, as stated by, for example, a crisis management expert from Italy working both in health care and in a research organization both nationally and internationally: “*In [the] future we are studying how to use social media communication in this field*” (R23). Table 5 summarizes the main motivational and restricting factors for social media use among the crisis and emergency management organizations in our study. It also illustrates the differences and similarities between the main incentives and barriers of using and adopting social media in crisis communication in relation to its pursued goal.

DISCUSSION

The results are largely consistent with previous studies while also adding to the existing knowledge of the topic by deepening the understanding of the main incentives for and barriers to using social media for specific crisis communication purposes. First, our results indicated that crisis and emergency management organizations typically have positive beliefs towards using and integrating social media into their communication toolkits; several responding organizations already use social media. This supports earlier studies (e.g., Flizikowski et al., 2014; Reuter et al., 2014; Su et al., 2013) indicating that crisis and emergency management organizations have positive attitudes towards the use of social media in general and that the majority of emergency service staff expect their organizations to increase their use of social media in the future (Reuter et al., 2014).

Also, as expected and supporting earlier research (e.g., Currie, 2009; Lindsay, 2011; Plotnick et al., 2015; Reuter et al., 2014), the use of social media to provide information about crises to citizens, as well as to monitor public discussion and to interact with citizens in social media, were reported to be the more common ways of using social media for crisis-related purposes. Organizations facilitating interaction among citizens via their social media is less likely.

In the context of crisis communication, it appears that social media have not replaced traditional or other complementary communication channels; rather, the different forms of social media have been used as parallel communication channels. Yet, regardless of generally positive attitudes and the potential recognized, it seems that some crisis and emergency management

Table 5. The Main Incentives for and Barriers to Crisis and Emergency Management Organizations to Use Social Media.

Purpose of use	N = 29		Incentives	Barriers
	Using n (%)	Not using n (%)		
Disseminating information	20 (69)	9 (31)	Easy, fast, and effective channel to distribute information Reaching citizens directly, access to opinion leaders Wide diffusion among citizens via their own social networks	The target population does not use social media Lack of competence and experience Not seen as the organization's role to provide information Inflexible, old-fashioned organizational culture
Interacting with citizens	17 (59)	12 (41)	Fast and direct channel Two-way communication by default, personalized messages Enables building mutual trust, creating responsible relationships, and crowdsourcing	Too time consuming Demands a workforce that is not available Not seen as the organization's role to interact with citizens Inflexible, old-fashioned organizational culture
Facilitating interaction among citizens	11 (38)	18 (62)	<i>[No motivational factors mentioned]</i>	Not seen as the organization's mission Lack of expertise and understanding of the possible benefits
Monitoring	18 (62)	11 (38)	Increases situational awareness Vital to know citizens' views and opinions Meeting citizens' needs and requirements, adapting own actions Correcting false rumors Assists in decision making	Lack of expertise, tools, and workforce Lack of awareness of the possibilities and knowledge how to utilize data

organizations encounter difficulties in adopting social media into their overall practices and/or are not fully exploiting the capabilities of social media, as has also been noted in previous studies (e.g., Plotnick et al., 2015).

The main incentives for and barriers to using social media reported in this study are primarily in line with those reported in previous studies. Based on our results, crisis and emergency management organizations are motivated to use social media because these channels allow them to communicate with citizens directly, rapidly, and widely, as well as to

build responsible relationships and situational awareness. Similar motivational factors for using social media among crisis and emergency management organizations have been described in previous studies: the possibility of reaching citizens directly (Latonero & Shklovski, 2011), of building social networks and establishing trustworthy relationships with the citizens (e.g., Beneito-Montagut et al., 2013), of influencing and shaping the ongoing discourse (Currie, 2009), and of correcting the spread of possible rumors and misinformation (Veil et al., 2011).

The barriers to using social media identified by our respondents also were largely consistent with previous studies. A lack of knowledge, time, and role models for implementation, as well as an inflexible and old-fashioned organizational culture, are the main barriers of not using social media among crisis and emergency management organizations. This confirms, for example, the results of Hiltz et al. (2014), Plotnick et al. (2015), and Su et al. (2013), which collectively state that frequently described barriers are lack of personnel, time, knowledge, and experience in the use of social media. However, none of our respondents mentioned a lack of policies and guidelines for the use of social media, concerns about the credibility and trustworthiness of citizen-generated data, or the possibility of information overload as a barrier of using social media, restricting factors described commonly in previous studies (e.g., Flizikowski et al., 2014; Hiltz et al., 2014; Plotnick et al., 2015; Reuter et al., 2015; Su et al., 2013). Instead, the respondents mentioned that inflexible and old-fashioned organizational culture is one of the main barriers of their use of social media, a factor that is not often elaborated in previous studies.

Incentives for and barriers to using social media can be examined from the perspective of attribution theories (see, e.g., Heider, 1958; McDermott, 2009; Spitzberg & Manusov, 2015; Weiner, 2014). Attribution theories are interested in how and why people explain events and reasons for occasions as they do, as well as for their own and others' actions. Explanations for why something is happening and why people are behaving as they do differ based on whether the cause is attributed to an internal or external characteristic, is seen as stable or changing, and/or is viewed as controllable or not (Heider, 1958; Weiner, 2014).

Based on the results of this and previous studies, the main incentive for crisis and emergency management organizations to use social media is that these channels assist the organizations in achieving their objectives of efficiently and appropriately saving lives, minimizing the damage caused, and preventing further incidences and additional consequences from happening. On the other hand, the barriers to using social media may be (a) individual barriers, (b) organizational barriers, (c) external barriers, or (d) technological barriers, as mapped in Figure 1.

Understanding the locus of barriers to using social media by organizations is important because it indicates where concerns or gaps exist and what actually needs to and can be developed when encouraging crisis and emergency management organizations to develop their social media capabilities. Thus, based on the results of this and previous studies (e.g., Flizikowski et al., 2014; Hiltz et al., 2014; Plotnick et al., 2015; Reuter et al., 2015; Su et al., 2013), there is a clear need to develop both the competence of individual experts and the awareness, policies, guidelines, and culture within crisis and emergency management organizations. In addition, external barriers to the adoption of social media need to be addressed, as does an ongoing process for developing the technological aspects of social media tools and various applications to better meet the requirements of crisis and emergency management organizations. However, although the aforementioned barriers require significant

<p style="text-align: center;">Individual barriers</p> <p>Lack of competence (e.g., knowledge and skills), time, and experience</p>	<p style="text-align: center;">Organizational barriers</p> <p>Lack of sufficient workforce, policies, and guidelines</p> <p>Lack of awareness and understanding of the means and benefits of utilizing</p> <p>Inflexible, old-fashioned organizational culture</p>
<p style="text-align: center;">External barriers</p> <p>The target population does not use social media</p> <p>Potential for information overload</p> <p>Lack of credibility and trustworthiness in citizen-generated content</p>	<p style="text-align: center;">Technological barriers</p> <p>Lack of appropriate tools/software</p>

Figure 1. The locus of main barriers to the use of social media among crisis and emergency management organizations.

future effort, it is encouraging that many of the barriers to the use of social media by crisis and emergency management organizations seem to be neither stable nor uncontrollable by their nature.

The results of our study, supported by previous studies (e.g., Plotnick et al., 2015), demonstrate that barriers to using social media for disseminating and collecting information are, to some extent, contradictory. In other words, a condition that may be considered a barrier to using social media for one specific purpose may be an incentive for using them for another specific crisis communication purpose. For example, concerns about the credibility and trustworthiness of citizen-generated content may restrict an organization's desire to use social media to build situational awareness, but may simultaneously spur interest in participating in active discussion social media, particularly in crisis situations.

As noted in earlier studies (e.g., Currie, 2009; Veil et al., 2011), interacting with citizens enables crisis and emergency management organizations to shape the ongoing discourse and to correct false rumors and misinformation. In addition, such interaction enables the building of mutual trust, the creation of responsible relationships, and crowdsourcing. However, interaction and cooperation with citizens is not always easy and necessitates specific interpersonal crisis communication competence (Laajalahti, Hyvärinen, & Vos, 2016). In other words, to support organizational interaction with citizens, crisis communication and management experts must possess the appropriate level of knowledge, skills, and motivation required to successfully engage with citizens, particularly amid changeable emergency and crisis circumstances. Thus, a shift from focusing on developing experts' crisis communication practices to elaborating on dialogical "crisis interaction" is needed to strengthen crisis management capabilities (see also Laajalahti et al., 2016).

In the context of facilitating interaction among citizens, crisis and emergency management organizations do not seem to have placed this possibility on their agenda as extensively as for other purposes of using social media. This can result from the perspective that citizens perhaps do not need this type of facilitation as they are capable of using existing social media applications, networking, and self-organizing when needed, or from the authorities' stance that

citizens are capable of taking care of crises on their own (Reuter, Heger, & Pipek, 2013). Nevertheless, further involvement of the citizens as a resource and as active coactors in coproducing safety should be investigated and elaborated in more detail to improve crisis and emergency management, as also suggested in previous studies (e.g., Laajalahti, Hyvärinen, & Vos, 2015, p. 80). Further research could, for example, clarify resources, knowledge, and expertise of the citizens by using social media and various crowdsourcing applications. To ensure the acceptance of such services and participation by citizens, focus should be placed on designing and developing means of participation that are easy, convenient, and require little technical competence and effort from individual users. In addition, crisis and emergency management organizations also can quite passively facilitate interaction among citizens simply by being present across a variety of social media platforms. Their social media profiles may help in bringing together citizens who are affected by or interested in a particular incident or potential condition. Thus, without explicitly or systematically doing anything, crisis and emergency management organizations' social media presence may help individuals to connect, share, and exchange opinions, information, and equipment, as well as possibly assist each other in coping with different events and incidents.

In addition to participating as active coactors, citizens can also function somewhat passively as informants during incidents, providing information (e.g., status combined with positioning data) to authorities and organizations that can use the data to improve their situational awareness, as was demonstrated, for example, during the regional floods in the Czech Republic in 2013 (see, e.g., Valuch, 2013). The human factor should not be undervalued because citizens can process, refine, and deepen the understanding of an incident through providing local aspects for consideration. This is a key benefit for organizations that may not have direct, on the ground knowledge during a crisis. As noted in our data, crisis and emergency management organizations, by monitoring the needs of the citizens more actively, can provide constituents with the information and the other resources that citizens need for empowered self-help and for helping others. To reach this goal, various crisis and emergency management organizations should also be willing and flexible enough to align their own actions to better meet the requirements of the citizens.

Although available for some time now, the more advanced solutions of social media (e.g., automated methods and algorithms for monitoring) can be regarded as relatively new to the field of crisis and emergency management. Thus, it is no surprise that many crisis and emergency management organizations, which traditionally are later adopters of innovations (e.g., Beneito-Montagut et al., 2013; Tapia et al., 2011), have not yet started to utilize all the possibilities of social media to their full potential. However, as these solutions mature and gain more usage in other domains in life, following the general pattern and theory of innovation diffusion (see, e.g., Rogers, 2003), it can be expected that more crisis and emergency management organizations will start adopting them as well.

Even if crisis and emergency management organizations are unwilling or unable to adopt social media solutions themselves, they could possibly benefit from available solutions by collaborating with other organizations, such as volunteer or technical communities, that possess better capabilities and understanding of the available technology. The approach of utilizing external expertise and knowledge has been received favorably by, and well suits, the noncompetitive environment of emergency management (Tapia et al., 2013). In addition to utilizing external professional and technological resources and capabilities, social networks

(e.g., volunteer organizations) can help form and extend relationship chains or networks of trust across wider groups of actors in social media. As the network of trust grows, this arguably reduces uncertainties over the reliability of information (Tapia et al., 2013). For these reasons, we suggest that more collaboration and communication are needed, not only among crisis and emergency management organizations but also among academic research experts, for appropriating social media in multiple settings or with various audiences. This collaboration should be interdisciplinary, drawing not only on technical knowledge but also on insights from disparate disciplines, such as the fields of sociology, psychology, and communication (Vos & Sullivan, 2014).

Additionally, motivations for and barriers to sharing knowledge and social media experiences among crisis communication and management experts should be further studied (see, e.g., Ardichvili, Page, & Wentling, 2003). Collaboration and knowledge sharing is essential among experts, as well as between experts and practitioners, planners, managers, policy and decision makers, representatives from NGOs and the private sector, and researchers from multiple disciplines. Specific effort should be placed on assisting all parties in achieving success in knowledge management, that is, in “capturing the right knowledge, getting the right knowledge to the right user, and using this knowledge to improve organizational and/or individual performance” (Jennex, Smolnik, & Croasdell, 2009, p. 174; see also Jennex & Olfman, 2005; 2006; Murphy & Jennex, 2006).

Based on our research results, organizations differ in awareness, knowledge, and willingness to invest in social media. Organizational culture also was noted to influence the adoption of social media. To enhance social media utilization within crisis and emergency management organizations, the incentives for and barriers to the use raised in our data should be examined more profoundly. However, social media use should not be a presumption because, for some organizations, adopting social media in crisis-related situations might not be appropriate and/or relevant. Various organizations have specific or unique expectations and needs for and roles in online crisis communication and management. They have also various responsibilities. For example, expertise centers, universities, and research organizations can be (voluntarily) present in social media and use, for example, their Facebook and Twitter accounts for educative purposes, popularizing science, and/or disseminating information about crisis-related matters. However, it is not their obligation to do so, whereas governmental organizations and authorities have a statutory duty to provide certain services and to protect and rescue citizens.

Moreover, it is important to remember that not all citizens (e.g., people with disabilities, the elderly) are able or willing to use social media and that geographic and demographic differences exist in social media adopters. Therefore, when making the decision on which social media application(s) to use, crisis and emergency management organizations should consider various citizen groups and other stakeholders with different needs, interests, motives, values, digital awareness, and abilities, as well as with different cultural and linguistic backgrounds and media habits (see also, Liu, Austin, & Jin, 2011; Vihalemm, Kiisel, & Harro-Loit, 2012).

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

As with most research, this study has a number of limitations. First, the number of respondents was small. The 8.5% response rate can be partly explained by the length of the

questionnaire, which included many sections and primarily open-ended questions. Participation was quite time consuming. Furthermore, the section on social media was presented at the end of the questionnaire and respondents were allowed to leave any of the questions unanswered. As a result, the quantitative findings derived from the data cannot be generalized. However, the objective of this research was to deepen the understanding of the current use and future possibilities of social media, as well as of the experts' views on the incentives for and barriers to using these channels. To that end, the open-ended responses provided valuable qualitative insights into the topic. Thus, even with its limitations, this study contributes to previous research by elaborating on the ways and reasons that crisis communication and management experts characterized their organizations' use or lack of use of social media to promote citizen knowledge and response in crises or emergencies.

The thorough literature review for the study was conducted using research articles from multiple electronic databases (e.g., EBSCOhost, ScienceDirect, SpringerLink, Wiley Online Library, ProQuest, and Web of Science) that were identified using multiple appropriate search terms and their combinations (including, e.g., "social media" and "crisis" or "emergency communication"). In addition, the snowballing method was used and new relevant references were found from the reference lists of already found articles. Nevertheless, the literature review was limited to articles published in academic journals in English and to the availability of the full articles either in the Jyväskylä University Library database or on Internet. Thus, it is likely that not all the relevant studies on the topic were incorporated into the grounding of this research.

Previous studies in the field of crisis and emergency communication have most often concentrated on studying the use of specific social media applications (e.g., Facebook or Twitter) for particular purposes, for example, for increasing emergency management organizations' possibility of using social media origin data (see, e.g., Starbird et al., 2012; Tapia et al., 2013). This study provided expert views on the use of social media, as well as on the incentives for and barriers to using social media beyond a particular application or crisis situation. However, social media are not only platforms for formal crisis communication by authorities and experts but also platforms for the dissemination of crisis-related data produced by citizens as meaningful and active coproducers of crisis information. Thus, because crisis communication and management experts need to understand both themselves (e.g., their own attitudes toward, incentives for, and barriers to using of social media) and the use of social media from the citizens' perspective, continued research is needed to deepen both of these areas, as already achieved in some recent studies (e.g., Austin, Liu, & Jin, 2012; Liu et al., 2011). In addition, it would be crucial to combine the understanding of these various actors' views to further develop the use of social media related to crises, and thus to also enhance cocreated, multidimensional crisis communication. In addition, observing the actual online presence of crisis and emergency management organizations and their activities in social media would deepen the understanding of the topic.

This study did not pursue a comparison of the use and adoption of social media between different types of organizations, a topic also appropriate for future research. Additionally, no hypothesis was made regarding variations in online presence or social media practices by crisis and emergency management organizations operating in various regions in the world, even though it is known that there are geographical differences in the use of social media (e.g., We Are Social, 2014). The same is true for the attitudes towards social media in terms of gender, age (Reuter et al., 2014), or socioeconomic conditions. Indeed, comparative analysis on

any particular demographic or geographic condition was not the aim of this research study. However, a more detailed understanding of these issues in regard to the use of social media for crisis and emergency communication purposes, as well as differences between various social media (e.g., between Twitter and Chinese microblogging services, also known as Weibos, such as Sina Weibo and Tencent Weibo), could improve the utilization of social media in global crisis preparedness, response, and recovery.

IMPLICATIONS FOR THEORY AND APPLICATION

This study provided insights into the current and future use of social media among crisis and emergency management organizations and further elaborated the incentives for and barriers to using social media from the perspective of attribution theories. We suggest that understanding the locus, stability, and controllability of incentives for and barriers to the use of social media is critical because these indicate what actually is happening and how, what needs to and can be developed, and what conditions impact crisis and emergency management organizations considering the use of social media. The findings can be utilized for developing various components of crisis communication (individual, organizational, external, and technological), as well as in promoting multiactor collaboration by, knowledge dissemination for, and results sharing and good practices for social media use among multiple actors and organizations and across diverse circumstances requiring a crisis response. In addition, the findings can assist further advancement in ongoing crisis communication theory development and in incorporating various perspectives, such as attribution theories.

ENDNOTES

1. For more information, see <http://www.youtube.com>.
2. For more information, see <http://www.flickr.com>.
3. For more information, see <https://www.facebook.com>.
4. For more information, see <https://twitter.com>.
5. For more information, see <https://twitter.com/CDCemergency>.
6. For more information, see <https://twitter.com/readygov>.
7. For more information, see <https://www.facebook.com/Suomenpoliisi>.
8. Multiple answers were permitted for all questions, including demographic information, as was the option of leaving any of the questions unanswered.
9. In the data quote source code, *R* is the abbreviation for the respondent, i.e., R1 denotes the 1st respondent in the data, R2 the 2nd respondent etc. The quotations are presented exactly as the respondent answered, with no editing unless explicitly noted.

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