

A Comparison of Emergency Management Social Media Use in the United States and England

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Abstract

A survey was distributed to U.S. county-level emergency managers in 2014 which included questions exploring the importance of barriers to use of Social Media (SM) for dissemination and collection of information during disasters. Key questions were replicated in a survey of emergency responders in England in 2015-2016. There are many similarities in the perceived importance of various specific barriers, but also many significant differences in results. For example, in both samples, trustworthiness of data and information overload are among the top barriers to collecting SM data. However, agencies in England are more likely to have official policies prohibiting the use of SM (58% in England vs. 25% in the U.S.). The differences suggest that software enhancements to deal with the technical problems of trustworthiness and information overload may be universally useful, but other barriers to use need to be addressed through organizational and policy measures.

Keywords

Social Media, emergency management., disaster response

Introduction

With global warming and increasing incidents of terrorism around the world, emergencies that reach the level of a “disaster” or “crisis” are occurring more frequently. It has been demonstrated in numerous case studies that Social Media (SM) can be very helpful for all phases of emergency preparedness and response. In natural disasters such as severe storms, floods, and fires, SM reports by citizens can pinpoint the location and nature of specific problems that emergency managers (EMs) and other citizens need to be aware of, such as where roads are closed, bridges are out, or victims are in need of evacuation (e.g., Gray, Weal and Martin, 2017; Hughes, St. Denis, Palen and Anderson, 2014; St. Denis, Palen, and Anderson, 2014). A 2015 study of over 1,000 citizens across 30 European countries (Reuter and Spielhofer, 2017) showed that many citizens across Europe are already using SM to share and look for information during emergencies, expect their usage to increase in future, as well as have a growing expectation for emergency services to communicate with citizens via SM and to make use of information shared by citizens via SM.

Nevertheless, as documented for the U.S., EMs face many barriers to the use of SM, including agency policies that prohibit the use of SM on the job (Plotnick et al. 2013). In interviews with representatives of large international disaster response organizations, Tapia and Moore (2014) found only “pockets of use and acceptance,” with issues of trustworthiness a major concern. Based on semi-structured interviews in one Italian region, Comunello and Mulargia (2017) found that cultural considerations prevailed, with a perceived inconsistency between the formal role and nature of Italian government agencies, and the informal nature of SM communication. A case study of response to three severe storms in the north of

England in December and January 2014- 2015 (which overlaps with the period of the English survey described in this paper), describes considerable use of Twitter for many useful purposes. However, only a small number of accounts from official government agencies, mostly the Cambria Police department, created and disseminated on Twitter information related to the storms (Gray et.al. 2017).

This paper uses data from two of a series of studies focused on the use of, and barriers to use of, SM by EMs. The studies were first conducted in the United States with interviews and surveys (Hiltz et al. 2013, Hiltz et al. 2014, Plotnick et al. 2015, Rao et al. 2017). Colleagues in England then modified the survey reported on in (Plotnick et al. 2015) which had been distributed to U.S. U.S. county-level EMs, and deployed it to emergency management organizations in England. This paper compares the results of the two surveys.

It is important to understand what sorts of barriers to use of SM by government agencies seem to be “universal” and which strongly differ according to national context. We chose England for a first comparative study because, although it shares a language, similar culture, and “first world” developmental status with the U.S., the government structure (with associated policies and laws) is quite different. Thus, we can gain insight into how these differences affect the strength of perceived barriers to use of SM for disaster response.

Organizational structures of emergency response in the U.S. and England

The structure of emergency services in England differs substantially from that for the U.S. In the U.S., the county level Emergency Management Agency (EMA) is the key operational unit, each with an official EM. There are also EMAs at the state and federal levels. In small counties, the manager may be part time and also a police or fire captain or even a sheriff; but, regardless of the county size, there is one designated EM in charge of coordination of all local emergency response organizations when there is a disaster. At the federal level, FEMA (Federal Emergency Management Agency) is the organizing and oversight entity. It is through FEMA that, in times of disaster, coordination and disaster funding are managed.

Whereas in the U.S. there are EMs supervising discrete agencies, appointed by the government to take full charge in the case of declared disasters, this is not the case in England. England’s approach to responding to emergencies is founded on a generic national framework. The framework identifies the various tiers of single-agency and multi-agency management in emergency response, and defines the relationships between them. In short, there is no specific emergency manager in an event of emergency in England. Coordination only happens when a multi-agency coordinating group is established. Unless the events are purely fire related, police will chair the group, exercising a co-ordination function (not a command function). Individual agencies retain command authority over their own resources and personnel deployed at the scene. In England, tiers of management do not predetermine the rank or status of the individuals involved, so there may be many qualified respondents at each tier within an organization. (Shan 2015)

Our Research Questions:

Research Question (RQ) 1: What are the perceived major barriers to use of social media for disseminating (“pushing”) information for use by EM agencies, in the U.S. and in England?

RQ2: What are the perceived major barriers to use of social media (SM) for collecting (“pulling”) information for use by EM agencies, in the U.S. and in England?

RQ3: Are there any significant differences between the U.S. and England in the importance of these barriers? If so, what are possible explanations for these differences, and the implications for SM design and for future research?

RQ4: Are there differences between the U.S. and England in intention to use SM in the future, or in perceptions of SM usefulness and policies?

RQ5: Are there significant differences in responses to key questions among different types of response organizations in England?

In the remainder of this paper, we first describe the background and method used for the two studies in the U.S. and England. The Results section describes the characteristics of the two samples, compares the

responses for the perceived importance of different barriers to the use of SM in emergency management, both for dissemination and collection of data, and compares the responses to other variables of interest. We then discuss some of the possible reasons for these differences, the limitations of these studies, the contributions of the paper, and future research plans.

METHOD

Evolution of this study

To lay the foundation for a large-scale survey related to the issue of barriers to the use of SM for emergency management in the U.S, a series of semi-structured interviews was conducted with U.S. EMs in December of 2013. The interviews explored the status of SM and the perceptions of the barriers to effective use of it. A survey was then developed based upon the literature review and results of analysis of the semi-structured interviews. It was approved by an Institutional Review Board (IRB), and distributed in 2014 using the online survey application SurveyMonkey®. Single items were used to measure each barrier or type of use because EMs are busy, and having multi-item scales (more questions) increases the likelihood that the survey would not be completed. While multiple items (e.g. barrier of training, barrier of trust) may address the same higher order construct (e.g. barriers to use), the higher order constructs are formative, not reflective. That is, the items are dimensions of the construct. It is inappropriate to use factor analysis on formative constructs. The full wording for relevant items for this paper is shown in the tables of results that follow and the full survey is available on request from the second author. Details of the survey development can be found in Hiltz et al. (2014) and Plotnick et al. (2015).

We used the U.S. Census Bureau web site (www.census.gov) to develop a list of the 3000+ county level EMAs in the US. We attempted to secure email addresses for their directors or coordinators, using State EMA websites, county websites, and general Google searches. Counties were used as the unit of analysis because they are primary implementers of emergency management programs in the U.S., and when Federal declarations are made for disaster assistance it is at the county level. Email addresses were found for agencies and/or agency directors for 2980 of the counties identified. Invitations were sent out to the EMA directors or coordinators, with a link to the survey. There were 250 responses, but nine had only one or two answers, leaving 241 useable responses. Full results of this study are found in (Plotnick et al. 2015). This paper reports on a comparison of responses to the survey items by U.S. and English respondents.

As part of the larger scale research project, we sought to examine the issues of SM use by EMs in a global context. Of course, it is not feasible to do an exhaustive comparison. However, even a comparison with just one, or a few, countries could reveal important considerations for technologists who develop SM and SM applications for a global market.

One of the researchers of the ongoing project discussed this research with her British colleagues. These discussions led to the replication of the U.S. survey, with necessary modifications, for deployment in England. Because the structure of emergency management in England is very different than in the U.S., the strategy for reaching EMs needed to be different and some modifications of the survey had to be made. While interviews of the British sample were not necessary (because the survey was being replicated, not developed), once the modifications were made, pre-tests were conducted to assure that the modified survey was comprehensible and appropriate for the British sample.

Modifying and deploying the survey in England

Many items on the English survey were copied from the U.S. survey. Others were modified to fit the English context and new items, related to the organizational structure of emergency management in England, were added. The organizations whose members collaborate for emergency response provided the sample frame. A face-to-face pre-test was conducted with five British emergency managers, in England, from the Leicester Police Service, Leicester Fire and Rescue Service, and East Midlands Ambulance Service. Based on the detailed pre-test feedback, the survey was modified and made available on Survey Monkey®. A modified “snowball” sampling technique was used.

In England, there are 48 Fire and Rescue Services, 39 territorial police constables, and 10 Ambulance Service NHS Trusts. A web search was made to identify contact emails. An email was sent to each organization, requesting permission to conduct the survey and support to distribute the survey within

their organizations. The invitations received responses of mixed levels of interest. Some organizations sent back their formal approval of the study and widely distributed the survey link internally; others agreed to forward the link to a selected number of relevant personnel; some declined the request for various reasons (e.g., did not meet their primary research interest, had just conducted a survey and did not want to expend further resources). However, most organizations did not respond at all (though some of them forwarded the link to, at least, some staff, as evidenced by the final data we obtained). This made it difficult to calculate the response rate. Also, bureaucratic requirements limited our ability to widely disseminate the survey. For example, formal procedures with a great deal of documentation were required to make the survey link available to EMs within some of the Ambulance Service.

The English survey was available on the web starting in October 2015 and closed in February 2016. A total of 107 responses were received. However, for analysis, responses for which respondents began the survey but did not answer any questions beyond the consent were removed, leaving a total of 83 valid responses.

Data Analysis, Results, and Discussion

To address the Research Questions, statistical analysis of data gathered from quantitative survey items repeated in the U.S. and English surveys was performed using SPSS24®. The foci of the analyses are barriers to use SM, intention to use SM, and perception of the level of achievement of organizational SM goals. Descriptive statistics were obtained for demographic data. Because the English emergency management functions are shared by multiple types of organizations, analysis was performed to test whether the responses for the variables of interest differed, in England, by the respondents' type of organization. The .05 level of significance was used when assessing statistical test results.

Kolmogorov-Smirnov tests determined that the data are not normally distributed so nonparametric statistical tests were used. Additionally, unless otherwise noted, responses of "don't know" were not included in analyses. The data from the two surveys (US and England) were combined with a key value to indicate whether the respondent was from the U.S. sample or from the English sample.

Characteristics of respondents and their organizations

Chi-Square tests indicate that there is a significant difference in the ages of the respondents from the U.S. and those from England ($X^2 = 28.7, p < .001$). The Crosstab table results (Table 1) indicate that while the English respondents are mostly between the ages of 30 and 49, most U.S. respondents are older (50+).

		<30	30-49	50+	Total
England	Count	9	54	17	80
	%	11.3%	67.5%	21.3%	100.0%
U.S.	Count	7	89	116	212
	%	3.3%	42.0%	54.7%	100.0%

Table 1. Crosstab table of ages of respondents

The educational systems of the U.S. and England differ. The English survey question was modified to reflect that. However, as can be seen in Table 2, respondents from both countries are well-educated.

	U.S.			England	
	Frequency	Valid Percent		Frequency	Valid Percent
High school	9	4.2	GCSE	8	11.6
Associates	37	17.1	A Level or equivalent	24	34.8
Bachelors	37	17.1	Bachelor's	24	34.8
Graduate	77	35.6	Master's	10	14.5
Other	56	25.9	Doctorate	3	4.3

Table 2. Highest degree earned by respondents

The length of time the respondents' organizations had been using SM differs significantly ($X^2 = 16.8, p = .001$) such that most English organizations had been using SM for three to five years, while most U.S. agencies have been using SM for two years or less.

		< 1 yr	1-2 yrs	3-5 yrs	5+ yrs	Total
England	Count	1	8	21	10	40
	%	2.5%	20.0%	52.5%	25.0%	100.0%
U.S.	Count	13	45	40	7	105
	%	12.4%	42.9%	38.1%	6.7%	100.0%

Table 3. Crosstab table of length of time organizations had been using SM

There is also a significant difference in whether the organizations of the respondents have any policies that prevent the use of SM ($X^2 = 15.08, p < .001$) such that most English respondents' agencies have such a policy while most the U.S. respondents' agencies do not.

		Yes	No	
England	Count	25	18	43
	%	58.1%	41.9%	100.0%
U.S.	Count	29	86	115
	%	25.2%	74.8%	100.0%

Table 4. Crosstab of whether the organization has policies preventing the use of SM

In the U.S., county-level EMAs are discrete organizational entities while emergency management functions in England are embedded in larger response organizations. Therefore, staff sizes for English organizations are considerably larger than those for U.S. agencies. The question about staff size differed in the two surveys so we cannot make a meaningful comparison between them. Table 5 shows the frequencies for sizes of the organizations to which the respondents belonged in the U.S. and England.

U.S.			England		
Staff size	Frequency	Valid Percent	Staff Size	Frequency	Valid Percent
1 to 9	200	83.3	1 to 100	1	1.4
10 to 30	20	8.3	101 to 500	2	2.7
31 to 50	10	4.2	501 to 1000	18	24.3
51 to 100	9	3.8	1001 to 5000	39	52.7
over 100	1	.4	5001 to 10000	12	16.2
			> 10000	2	2.7

Table 5. Frequencies of staff size for respondents' organizations

In sum, respondents from both countries are well-educated. The English respondents tend to be younger than those from the U.S. and work at larger organizations that have been using SM longer. While test results suggest that a higher percentage of English organizations have some policies preventing the use of SM than do U.S. ones, it does not necessarily mean that SM is used less in England. This result may be due to English agencies having more policies regarding SM than U.S. agencies. This proposition is supported by the test results for whether people in the organization use SM which shows a significant difference ($X^2 = 4.01, p = .045$) such that 72% of the English respondents answered that SM is used by staff, while a lower percentage (56.4%) of U.S. respondents stated that staff in their agencies use SM.

		SM Used	SM Not Used	Total
England	Count	32	12	44
	%	72.7%	27.3%	100.0%
US	Count	115	89	204
	%	56.4%	43.6%	100.0%

Table 6. Crosstab of whether staff use SM in the respondents' organization

While all the U.S. respondents work at county-level EM agencies, the English respondents work	Frequency	Valid Percent
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for the Police Service, Fire & Rescue Service, or the Ambulance Service. Frequencies are shown below in Table 7.		
Police Service	34	43.6
Fire & Rescue	27	34.6
Ambulance	17	21.8

Table 7. Distribution of English respondents by type of organization

In summary, there are differences, both organizational and individual, between the two samples. Next, we examine whether there are significant differences in how the respondents rated variables of interest.

Results of tests for significant differences of means for barriers and other variables of interest

Seven-point semantic differential items were used for respondents to rate the extent to which barriers to collecting data and disseminating information through SM exist in their organizations, ranging from 1 (not a barrier) to 7 (A large barrier). Data for other variables of interest (intention to use, level of accomplishing SM goals, usefulness currently of SM) were also collected using semantic differential survey items. Because the data were not normally distributed, nonparametric Mann-Whitney U tests were performed on each variable to test if there were any significant differences between the U.S. and English respondents' ratings of these variables. Tables 8 through 10 show the results of these tests.

For barriers to dissemination of information, there were significant differences between the highlighted barriers below in Table 8 such that: for each barrier except for the lack of staff (quantity), the English respondents perceived the barrier to be significantly greater than did the U.S. respondents. U.S. respondents rated lack of sufficient staff as a significantly greater barrier than did English respondents.

It can be observed that the top three barriers to dissemination for the U.S. (Lack of staff (quantity), Lack of guidance, and Lack of staff (skill)) differs from the top three barriers for English respondents (Legal or privacy issues, Lack of training, and Lack of staff (skills)) although there is overlap. It is possible that organizational and legal issues may contribute to this disparity. For example, the U.S. agencies tend to lean on staff and the privacy laws in Europe are, in general, more stringent than those in the U.S.

Barriers to Dissemination	Mann-Whitney U		U.S.			England		
	Z	p	N	Mean	SD	N	Mean	SD
Lack of hardware	-4.67	<.001	219	2.00	1.69	62	3.08	2.12
Lack of software	-4.95	<.001	219	2.13	1.86	62	3.32	2.10
Legal or privacy issues	-5.00	<.001	218	2.77	1.87	60	4.27	2.01
Lack of staff (quantity)	-3.95	<.001	221	4.61	2.16	64	3.39	2.08
Lack of staff (skill)	-1.37	.171	221	3.33	2.05	63	3.68	1.96
Lack of experience with SM	-1.39	.164	221	3.22	1.92	64	3.58	1.99
Lack of training opportunities	-2.81	.005	222	3.23	2.00	62	4.05	2.10
Lack of support from senior management	-.98	.330	219	3.11	2.29	64	3.22	2.03
Lack of guidance/policy documents	-.054	.957	221	3.46	2.05	62	3.42	1.86
Lack of compatibility with my organization's IS	-2.64	.008	214	2.60	1.94	59	3.29	2.03
SM limitations	-1.317	.188	210	2.63	1.82	61	2.93	1.82

Table 8. Comparison of means of barriers to dissemination of information by SM

The test results for comparison of barriers to collection are shown below in Table 9. Of note is that the barriers for which the means are significantly different are the same for dissemination as collection – and, with the same result: for barriers for which there is a significant difference, the English respondents perceive the barrier to be greater, except for the barrier of insufficient staff, for which the U.S. respondents perceive a significantly greater barrier.

US respondents rated as the largest barriers to collection Lack of staff (quantity), Trustworthiness, and Information Overload. English respondents' largest barriers were Information Overload, Trustworthiness, and Legal or privacy issues, followed by Lack of staff (quantity) in 4th place. While insufficient staff is an issue for both samples, there is a statistically significant difference such that the U.S. respondents perceive it as a bigger barrier. That it is a big barrier for both may be, in part, because processing SM data collected is labor-intensive. That legal/privacy issues and trustworthiness of data are top barriers for the English respondents again may be a consequence of the stronger privacy controls in Europe.

Barriers to Collection	Mann-Whitney U		US			England		
	Z	p	N	Mean	SD	N	Mean	SD
Lack of hardware	-3.47	0.001	218	2.26	1.94	56	3.18	2.20
Lack of software	-3.75	<.001	218	2.67	2.12	55	3.82	2.25
Legal or privacy issues	-3.81	<.001	215	2.93	2.09	57	4.07	2.08
Lack of staff (quantity)	-2.62	0.009	221	4.72	2.24	59	4.02	2.10
Lack of staff (skill)	-0.43	0.667	221	3.56	2.23	57	3.65	1.97
Lack of experience with SM	-1.25	0.212	221	3.40	2.09	57	3.72	1.89
Lack of training opportunities	-2.01	0.044	221	3.44	2.09	58	4.03	2.02
Lack of support from senior management	-0.90	0.369	220	3.06	2.25	58	3.24	2.08
Lack of compatibility with my organization's IS	-3.22	0.001	212	2.60	1.91	54	3.54	2.09
Trustworthiness of data	0.00	1.000	218	4.04	2.02	59	4.07	1.79
SM limitations	-0.57	0.571	208	3.13	1.92	56	3.20	1.68
Information overload	-0.79	0.428	213	3.92	2.07	57	4.16	1.94

Table 9. Comparison of means of barriers to collection of data from SM

We compared the means of U.S. vs. English respondents' responses for other variables of interest. Table 11 shows the results. Only the intention to use is significantly different for the two samples. U.S. respondents have a higher intention to use SM.

Variables of Interest	Mann-Whitney U		US			England		
	Z	p	N	Mean	SD	N	Mean	SD
Intention to use SM	-3.14	0.002	214	5.92	1.38	66	4.92	2.17
How well the agency is reaching its SM goals	-0.38	0.704	102	4.42	1.77	34	4.56	1.60
Usefulness of SM currently	-0.83	<.409	110	5.40	1.36	57	4.98	1.92
Degree to which SM policies are adequate for everyday	-0.59	.559	36	4.53	1.63	44	4.25	1.67
Degree to which SM policies are adequate for times of crisis	-0.005	.996	36	3.94	1.85	44	3.91	1.92

Table 10. Comparison of means of other variables of interest

Summary of test results

The test results suggest that there are some significant differences in both use of and perceptions of barriers to use of SM by the U.S. and English respondents. The disparities are likely to be a result of several factors including organizational differences and cultural differences (e.g. privacy concerns). For example, the top-rated barrier for U.S. respondents is the lack of sufficient staff for both collecting and disseminating information with SM, while for the English respondents this barrier falls farther down in

the ranked list of barriers. However, the similarities in responses are greater in number than the differences and both groups of respondents do have a high intention to use SM and believe that SM is useful for their work.

While U.S. respondents report a higher intention to use SM, there were no statistical differences between the samples for accomplishing SM goals or for the current usefulness of SM. It is plausible that this is, in part, a result of different goals for SM use which can be reflected in the difference in codifying and accepting SM use by policies.

Comparison of variables of interest by type of organization in England

We conducted nonparametric Kruskal-Wallis tests of the data for English respondents' responses to questions about barriers and the intention to use SM to ascertain if there are significant differences by the type of organization (Police, Fire & Rescue, or Ambulance) to which the respondent belongs. For the barriers to disseminate information, ratings of two barriers have significant differences: Lack of support from senior management ($X^2=10.53$, $p = .005$) is rated as a significantly larger barrier by Ambulance respondents than by either Police or Fire & Rescue respondents; the Lack of compatibility with existing IS is perceived to be a significantly greater barrier by Ambulance respondents than by Fire & Rescue respondents ($X^2=7.03$, $p = .030$). For barriers to collect information, three barriers have a significant difference in ratings by the respondents' types of organization: Legal and privacy issues is a significantly larger barrier for Police than for Fire & Rescue ($X^2=6.23$, $p = .044$); Lack of support from senior management is perceived to be a significantly larger barrier by Ambulance respondents than by either Police or Fire & Rescue respondents ($X^2= 11.12$, $p=.004$); and the issue of Information overload is seen as a significantly greater barrier by Ambulance respondents than by either Police or Fire & Rescue respondents ($X^2= 8.29$, $p = .016$). Tests of the variable for Intention to use showed that Fire & Rescue personnel have a significantly higher intention to use SM than do Ambulance Service respondents.

In sum, there are some, albeit few, differences in how English respondents perceive the level of barriers and their intention to use SM by which type of organization they are part of. Where there are significant differences, the data suggest that members of the Ambulance Service generally believe the barriers to be greater.

DISCUSSION AND CONCLUSIONS

To answer Research Question 1 (What are the perceived major barriers to use of SM for disseminating ("pushing") information for use by EM agencies, in the U.S. and in England?) we calculated and compared the means for respondents' answers to questions about the level of several barriers identified in the literature and prior research. The results suggested that, for both groups, the largest barriers are related to organizational and policy issues, not technology ones.

Similar results of tests to address RQ2 (What are the perceived major barriers to use of SM for collecting ("pulling") information for use by EM agencies, in the U.S. and in England?) were found in the examination of the means for barriers to collecting data with SM. However, some of the major barriers to collection (e.g. Trustworthiness, Information overload) are ones for which technological solutions can be, and are being, developed.

For all barriers, except insufficient staff, when there were significant differences, the English respondents rated them as greater barriers than did the U.S. respondents. This result may be, at least partially, explained by the finding that a higher percentage of English organizations have policies prohibiting some use of SM than do U.S. agencies. That lack of sufficient staff is significantly a larger barrier for the U.S. may be because in the US, county emergency management agencies are separate organizational entities and the management for rural and other sparsely-populated areas is often a part-time position that may be held by the Police Chief, Fire Chief or other governmental agency manager. In England, since emergency management is not a separate governmental function but is part of the charge of major response organizations (Police, Fire, Ambulance), the agencies tend to be better staffed.

RQ3 asked: "Are there any significant differences between the U.S. and England in the importance of these barriers? If so, what are the implications for SM design and for future research?" Significant differences were found for some barriers. The reasons for the differences are likely complex and due to a combination of policy, organization, and technology use differences. The differences of the characteristics

of the two samples' organizations also suggests that there is unlikely to be an effective "one size fits all" SM design. Design considerations must include building in the flexibility to meet the diverse needs of the users in the context in which they work.

In assessing RQ 4, we found that although England had higher current use of SM, U.S. responders had a higher intention to use it in the future. Both sets of respondents shared favorable perceptions of the usefulness of SM, and doubts about the extent to which SM policies were adequate for crisis management.

The test results addressing RQ5 (Are there significant differences in responses to key questions among different types of English response organizations?) suggest that there are not many significant differences but, when they arise, with but one exception, Ambulance Service members perceive greater levels of barriers and have lower intention to use SM. This may be because Ambulance Services in England are part of NHS Trust. They must adhere to greater bureaucratic regulations than the other organizations. In contrast, emergency managers in Fire and Rescue Services and Police Constables are less constrained and are even formally encouraged to improvise creative ways to solve problems (e.g., HM Government, 2008, p.113)

Contributions, limitations, and future research

This research contributes to the extant understanding of why SM is not fully exploited in emergency management. It demonstrates that even in two countries with very similar cultures and level of economic development, differences in the organization of the emergency response mission and in government policy guidelines can greatly affect the perceptions of barriers to use of SM, and its uses. Thus it suggests foci for future research to better understand the reasons SM is not used to its fullest potential in different countries and in different organizations. On the other hand, the fact that information overload and trustworthiness of data are top barriers to the collection of data from SM during emergencies in both countries points to a perhaps universal need for new software to automate the organization and screening of SM data. Such software would probably need to be tailored to fit the policies and procedures of different agencies and to integrate with their current crisis response information systems.

The ultimate goal of this research is to help developers understand better the needs of the emergency managers and provide the emergency managers with a better understanding of what is technically possible. This study is a step towards that goal as it provides support for the observation that generic, one-size-fits-all solutions to the issue of underuse of SM in emergency management will not suffice. This is important for technologists to understand as they develop solutions to be deployed globally. It also adds support to the need for creating a global community of practice for technologists and those in emergency management who would use SM. It is not feasible to survey every nation but developing communication channels between technologists and users would enable technologists to understand in a global context, where flexibility in design and functionality are needed.

One important research thread should be to examine the adoption of SM in government in different countries through the lens of a theoretical framework to explicate the stage of adoption. We have collected data in the survey (not analyzed for this paper because of space restrictions) that can give insight into the stage of SM adoption for U.S. and English emergency management using such a framework (Mergel and Bretshneider 2013). We will continue to analyze the data collected and include analysis of where the English and U.S. organizations fit into the framework. Future research includes collecting and analyzing additional data from other countries. Analysis of data from many countries in the context of the framework and the characteristics of the agencies and country cultures will help to identify measures that can be taken to promote effective use of SM.

A limitation of this research is that a single instrument (survey) was used. The U.S. survey was deployed to county level emergency managers. Emergency management activities occur at all levels of government in the U.S.; we hope to extend the research to include other levels in the U.S. The regulatory issues in England limited our ability to reach more subjects with the English survey. Future research needs to find ways to overcome these limitations. In addition, data collection in the two countries occurred a little over a year apart; this could account for some differences. Finally, this paper only compares two nations that are very similar in terms of culture and level of development. Results for nations with very different cultures, types of government organization and policies, and level of development, are likely to be very different.

We have examined, in other related research (Rao et al. 2017) the perceptions of emergency managers about technological advances (e.g. data processing applications) that can help overcome some of the barriers to use, and how these perceptions affect future intention to use SM. As we deepen our understanding, we aim to bring the two research threads together to build a global community of practice with technologists who design these SM enhancements and the emergency management professionals who can use them.

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