The use of social media in countrywide disaster risk reduction public awareness strategies

Neil Dufty summarises the findings of research into the adoption of social media platforms for disaster risk reduction awareness campaigns. ®

ABSTRACT

Social media has been used extensively in recent disasters by emergency managers particularly to warn people and help in the co-ordination of response and recovery. However, its use in disaster prevention and preparedness is less understood. This article examines the use of social media in disaster risk reduction (DRR) awareness strategies around the world through a literature review and expert opinion. It concludes that it is generally underutilised in major DRR awareness strategies, although there are robust programs operating in some countries with high social media use.

Introduction

Social media has become part of everyday life around the world. There are numerous definitions of social media in the literature all of which acknowledge its ability to create and enable information exchange. For example, Gupta and Brooks (2013) define social media as:

'All the devices and platforms that allow users globally to virtually create and share information with each other. "Platforms" are the virtual spaces that allow users to come together, and create and share information. "Devices" are the computing technologies that enable users to access the platform'. (Gupta and Brooks 2013, p. 18)

Unlike traditional media such as newspapers, social media manages the content of the conversation or interaction in the online environment and allows for spontaneous two-way and multiple dialogue. As Keim and Noji (2011) state:

'social media rely on peer-to-peer (P2P) networks that are collaborative, decentralised and community driven. They transform people from content consumers into content producers.' (Keim & Noji 2011)

Social media include blogs, discussion forums, chat rooms, wikis, apps, YouTube, Channels, LinkedIn, Facebook, and Twitter. Also, all crowdsourcing platforms are, by definition, social media platforms. Crowdsourcing is:

'The act of sourcing media from the crowd. It involves incentivizing users through a variety of means to provide the platform owners and others with intelligence and solutions.' (Gupta & Brooks 2013, p. 27)

Social media emerged out of the Web 2.0 revolution, which was a set of features and applications that promoted interoperability, sharing, and multiple-way communication. Social media existed before Facebook in the form of MySpace and other platforms, but greatly expanded after 2004 when Facebook was launched.

One in four people on Earth has started using some form of social media regularly (eMarketer 2013). Facebook was by far the most popular social media site as at 2013 with over 800 million users worldwide. Twitter (the fastest growing social media platform) was second with over 220 million users worldwide, then LinkedIn (100 million) and MySpace (80 million).

Social media and emergency preparedness

Social media has been used extensively in recent disasters by emergency managers, those people affected and those others wanting more information. It has been particularly used to warn people and help in the co-ordination of response and recovery.

Due to its recent emergence, social media has only had widespread use in emergency warning, response and recovery since 2010. It has played an important role during and after major disasters such as the 2010 Haiti earthquake (Yates & Paquette 2011), 2011 Queensland floods in Australia (Bruns *et al.* 2012), 2011 Christchurch earthquake in New Zealand (Bruns & Burgess 2012), 2011 Japan earthquake and tsunami (Hjorth & Kim 2011), 2012 *Hurricane Sandy* (Lotan 2012) and *Typhoon Haiyan* that hit the Philippines in 2013.

Several books have been written on the topic of social media and emergency management including by White (2012), Crowe (2012) and Gupta and Brooks (2013).

Most emergency agencies around the world now use social media alongside traditional media (e.g. newspapers, television, community meetings) to

communicate for warning, response and recovery. According to White (2012):

> 'Emergency management, on all levels and in all types of organizations, use social media….Each of these groups has a different set of goals and objectives where social media is leveraged as a set of solutions to fit the needs of that particular group'. (White 2012, p. 9)

Emergency managers and other interested people and organisations have banded together to form worldwide social media communities of practice to share ideas and learnings about using social media for disasters[1]. Teams of emergency managers and volunteers from around the world have joined together to provide social media services during and after disasters. These teams, known as Virtual Operations Support Teams (VOSTs):

> 'make use of new communication technologies and social media tools so that a team of trusted agents can lend support via the internet to those on-site who may otherwise be overwhelmed by the volume of data generated during a disaster.' (Reuter 2012)

Of particular note is the use of social media in mapping to provide humanitarian rescue and relief.

> 'Crisis-mapping technology has emerged in the past five years as a tool to help humanitarian organizations deliver assistance to victims of civil conflicts and natural disasters. Crisis-mapping platforms display eyewitness reports submitted via e-mail, text message, and social media. The reports are then plotted on interactive maps, creating a geospatial record of events in real time.' (Meier 2013)

Social media has been extensively used for warning, response and recovery in recent disasters, however, this paper examines the current use of social media in countrywide public awareness strategies that are implemented prior to disasters for prevention and preparedness.

Methodology

The review used three methods to scope and identify current examples of countrywide DRR public awareness strategies that use social media:

1. A literature search using the internet for peer-reviewed papers, reports and appropriate websites.
2. Requests for examples sent by email to over 30 experts in social media and emergency management from around the world.
3. Requests for examples sent to the #smem (social media for emergency management) community of practice on Twitter.

The examples were analysed for their 'value' using measures such as DRR awareness messages, usage rates and ease of integration with other media.

Findings

The research identified numerous examples of social media being used in countrywide DRR awareness strategies from around the world.

Philippines (example: iCOMMIT)

There are about 30 million Facebook users and six million Twitter users in the Philippines. In late 2012, a social media campaign aimed at encouraging the public to help reduce the risks posed by disasters was launched (Romero 2012). The iCOMMIT campaign aims to raise awareness and encourage action through sharing of views on how people can build safer communities.

Indonesia (examples: Humanitarian OpenStreetMap, Build Back Better)

Of Indonesia's 240 million people, there are some 61 million internet users, many of whom access online content using mobile phones. According to Paris-based analyst group Semiocast, Indonesia was home to 29.4 million users of Twitter in July 2012, and more than two per cent of all Tweets posted across the world in June 2012 came from the Indonesian capital Jakarta. Facebook has 64 million active users in Indonesia, making it one of the largest Facebooking countries in the world (IRIN 2013).

There has been several DRR awareness campaigns conducted across Indonesia in the past few years using the large social media population.

- The Humanitarian OpenStreetMap (HOT) launched a project in Indonesia to create a free world map built entirely by volunteers with satellite technology to reduce community disaster risks.

- The *Build Back Better* campaign aimed to change behaviour by convincing householders to make informed decisions about the need for earthquake-resilient housing. The online campaign uses the internet and social media to spread the information nationally, reaching many more Indonesians in vulnerable regions across the country. (Australia-Indonesia Facility for Disaster Reduction 2012)

United States (example: Ready Campaign)

Launched in February 2003, *Ready* is a national public service advertising campaign designed to educate and empower Americans to prepare for and respond to emergencies including natural and man-made disasters. The goal of the campaign is to get the public involved and ultimately to increase the level of basic preparedness across the nation.

In recent years, *Ready* has also been disseminated through social media as well as more traditional means with a presence on Twitter, Facebook and YouTube. It also has a blog and a FEMA Social Hub where it features current relevant social media conversations.

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1 Social Media 4 Emergency Management. At: www.sm4em.org.

A related countrywide campaign is *America's PrepareAthon!*[2], which is a grassroots campaign for action to increase community emergency preparedness and resilience through hazard-specific drills, group discussions, and exercises, and has a strong social media presence. Throughout the year, it helps communities and individuals across the country to practise preparedness actions before an emergency strikes.

The U.S. National Preparedness Community is an online community of people who view preparedness as a shared responsibility. After signing up and creating a password account, members collaborate in online discussions with peers from different communities of practice, join regional groups, participate in national preparedness discussions, and get updates from FEMA and emergency management personnel. The community is open and free to anyone who wishes to join. When people register for *America's PrepareAthon!* and create their password, they automatically become part of the National Preparedness Community and can participate in all available on-line discussions.

United Kingdom (examples: Flood Group UK, Flood Awareness Wales)

With about 5.4 million properties in the UK at risk of flooding, there are several countrywide DRR awareness strategies relating to flooding. Flood Group UK is a Facebook page established essentially for people who have been flooded or are at risk of being flooded. It contains information to help them prepare for and recover from a flood. It is also a place where they can share their experiences of flooding.

One in six properties in Wales is at risk of flooding. The Environment Agency's *Flood Awareness Wales* campaign encourages communities to develop community flood plans and individuals to prepare flood kits. People can ascertain their flood risks via the *Flood Awareness Wales* website. Latest news about the campaign is disseminated through social media including Twitter and Facebook. People can also sign up for Flood Alerts on Facebook.

Australia (example: Victoria Summer Fire Campaign)

In Australia most of the DRR awareness campaigns are delivered by state and territory emergency agencies. There are some excellent examples of government and non-government organisations programs that include social media such as *Get Ready Queensland* (Queensland Government) and *Harden Up* (Green Cross Australia). Some programs such as *FloodSafe* and *StormSafe* are used across several jurisdictions.

The Victorian Government implements a state-wide Summer Fire Campaign that commences in November and finishes in February or March each year depending on the length of the fire season. The campaign includes the use of digital information channels (the

FireReady app and VicEmergency website), social media (Twitter/Facebook) and advertisements on TV, radio, newspapers and digital channels encouraging people to leave early if fire threatens. The campaign is co-ordinated by the Department of Justice on behalf of several agencies including the Country Fire Authority (CFA), Victoria Police, Department of Environment and Primary Industries, Victoria State Emergency Service, and the Metropolitan Fire Brigade.

Messages are rolled out through social media channels. There are 367 000 people who receive campaign messages by following the CFA Facebook page and Twitter feed. Messages are also delivered via the social media channels of Victorian Government departments and agencies as well as campaign partners including the Australian Football League Players Association, Melbourne Heart soccer club, Cricket Victoria and the Melbourne Renegades T20 team, as well as cross-denominational religious organisations. An indication of the interest in fires is found in Figure 1 that shows the number of total social media posts related to fire across the 2013-14 fire season in Victoria.

Summary of findings

From these case studies and other examples located, the following observations are made in terms of the nature and value of countrywide DRR public awareness strategies that use social media:

- Other than the case studies noted, there were numerous government agencies and non-government organisations using Facebook and Twitter (as part of countrywide DRR public awareness strategies) to encourage people to develop an emergency plan for preparedness. Some also gave practical advice on preparing an emergency kit.

- As shown in the case studies, social media was either used as the sole method of dissemination (e.g. iCOMMIT) or in conjunction with traditional media.

- Social media was used for DRR public awareness strategies across a range of hazards including tsunamis, earthquakes, flood, bushfires/wildfires and for cross-hazard disaster resilience.

- Social media was used understandably in those countries with high internet and social media usage rates such as the Philippines, Indonesia, United States, United Kingdom and Australia. There were several major countrywide DRR public awareness strategies identified, particularly in African and South American countries, that did not use social media (possibly due to relatively low social media usage rates).

Several of the experts responded to research requests saying they believed there is far more interest and activity by emergency agencies in the use of social media in response and recovery, than in DRR. They supported the need for more effort in using social media across all components of the disaster cycle.

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2   A detailed article on *America's PrepareAthon!* was published in the *Australian Journal of Emergency Management*, vol 29, no. 4. pp. 52-52.
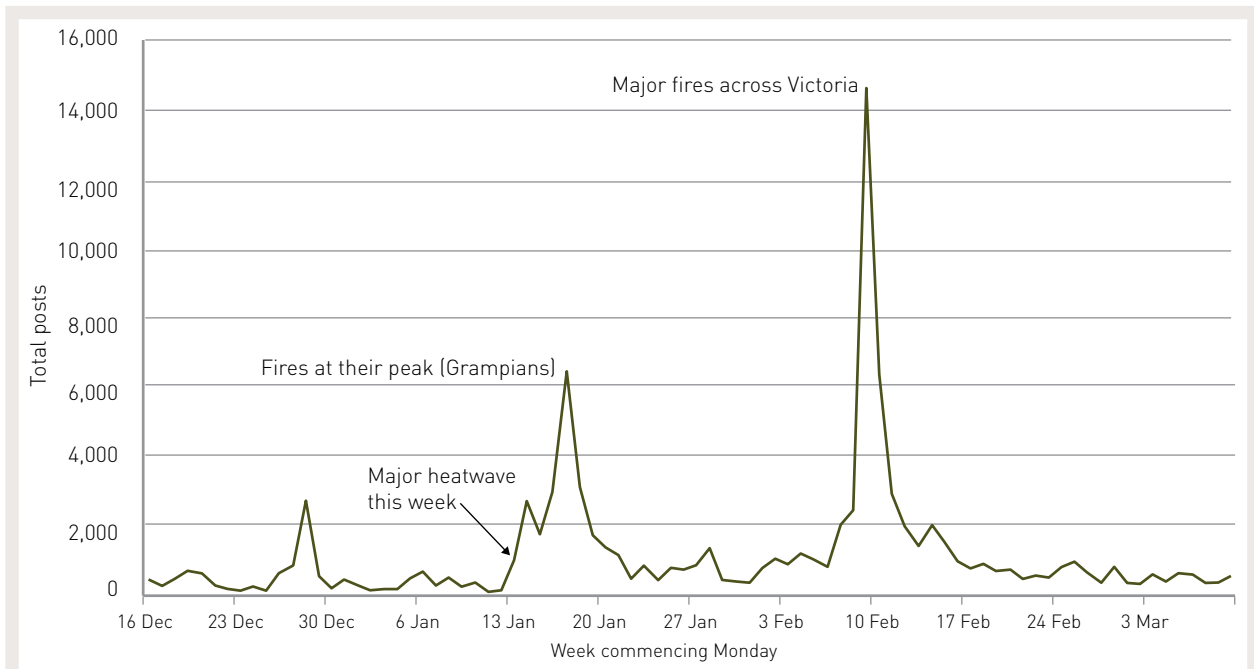
Figure 1: Social media posts on the topic of fire over 2013-14 Victoria, Australia fire season.

Discussion

There are some issues emanating from this research that warrant discussion. Also, it is pertinent to assess the potential value of social media in countrywide DRR public awareness strategies.

DRR messages versus warning messages

A few of the experts contacted raised the issue of potential conflict between DRR campaign messages and warning messages for those hazards that have a warning lead time. For example, a DRR bushfire/wildfire campaign message may be to 'leave and live' (i.e. evacuate early). However the warning message during a fire may be to shelter-in-place, as evacuation routes had already been cut off. This issue should be managed by emergency agencies and clearly communicated to potentially impacted communities.

It should be noted that misinformation and control of messaging by emergency agencies when using social media (Lindsay 2011) was viewed by the experts as much less of an issue with DRR campaigns than it is in emergency response and relief.

Evaluation

It was difficult to gauge the 'value' of social media in countrywide DRR public awareness strategies due to lack of data. However, it appears that:

- Social media guided people to websites that have high usage rates and resulted in individual, family and community emergency or action plans being developed.

- There was considerable approval of the use of DRR social media sites (e.g. the number of likes for the Flood Group UK Facebook page).

- Apps (e.g. Victoria's FireReady) appear to be popular forms of social media to prepare for disasters and for warnings.

- Social media may be a key warning communication method in an early warning system, particularly if there is a short warning time (e.g. Indonesia's Twitter Early Warning System).

Most of the experts who provided information concurred that although there is some formative and summative evaluation of social media use (e.g. usage) conducted, there is generally a lack of overall evaluation frameworks and processes in this emerging use of social media.

Social media is starting to be evaluated in response and recovery. As Westbrook *et al.* (2012) note:

'The community, volunteer organizations, and news organizations are currently embracing social media, but emergency management (EM) is slow to adopt and implement it on a full scale. One can understand this hesitation, given the lack of guidance and quality assurance. As EM officials and agencies begin to implement social media, several questions need to be answered such as:

- *How do you know a social media strategy is working?*

- *What is considered social media success?*

- *Does it work better than past methods of communication and information sharing?'*
(Westbrook *et al.* 2012, p. 2)

They add that:

'The full potential of continually utilizing social media can only be realized with ongoing formal studies and field studies evaluating over time series efforts. Social media is continuously changing. Constant updates to

> *the technologies along with user preferences force us to remain current in our usage and study approach.'* (Westbrook *et al.* 2012, p. 9)

It is critical that the use of social media be evaluated across the whole of the disaster cycle.

Conclusion

This research found widespread use of social media in countrywide DRR public awareness strategies around the world, particularly since 2010. It identified examples from several countries and across hazards. It observed that social media was most intensively used in those countries with high social media usage rates such as Indonesia and the Philippines.

It appears that social media is 'underutilised' in countrywide DRR public awareness strategies and a greater understanding of its potential and benefits is required. This includes appreciation of the range of social media platforms and devices, co-ordination of social media across the disaster cycle, and the benefits of social media in forming communities of practice and in disaster resilience learning.

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About the author

Neil Dufty is a Principal at Molino Stewart Pty Ltd, an environment and natural hazards consultancy based in Parramatta, NSW. He has researched and presented several papers on the use and value of social media in emergency management especially as part of community education and engagement programs. The detailed input paper from this research is at http://works.bepress.com/neil_dufty/34/.