

Social media platforms and its applications in natural disaster and crisis events – the case of Bosnia & Herzegovina

Sadi Matar (Corresponding author)
School of Engineering and Design, Brunel University- UK
PO box 71000 Sarajevo, Bosnia and Herzegovina
Tel: +387(0) 61235597 E-mail: Sadi.matar@gmail.com

Nasim Matar
School of Management Information System, Petra University
P.O.Box 8441, 12111, Amman- Jordan
Tel: +962 (0) 799113593 E-mail: Nasim_matar@yahoo.com

Wamadeva Balachandran
School of Engineering and Design, Brunel University
Kingston Lane,Uxbridge Middlesex UB8 3PH
Tel: +44 (0)1895 265774 E-mail: wamadeva.balachandran@brunel.ac.uk

Ziad Hunaiti
School of Engineering and Design, Brunel University
Kingston Lane,Uxbridge Middlesex UB8 3PH
Tel: + 44(0)7909988034 E-mail: Ziad@knowledgewell.cu.uk

Abstract

Social media platforms are providing opportunities for people to easily engage in warning and informing others in response to natural disaster and crisis events. They are considered more effective and faster to spread among people than traditional media do, and as such make them very important for governments' civil protection authorities to consider using social media in a framework that will help people to better prepare and response to threats. The importance of this study is that it brings attention to the case of crisis in Bosnia and Herzegovina and it enriches the literature with current status and trends of effective using of SM to early prepare for and mitigate the consequences of disaster impact. This paper discusses some of the major challenges identified during the May 2014 flood in Bosnia and Herzegovina and the public use of social media that enabled the exploitation of new opportunities for facing flood threats and mitigate its effects.

Keywords: Bosnia & Herzegovina, Flood Crisis, Flood Challenges, Natural Disaster, Social Media

1. INTRODUCTION

The progress of information and communication technology (ICT) continues to have a major impact on our everyday life. ICT slipped into every cell of our lives, and is no more conceivable not to use several online applications and social media (SM) tools for communication and sharing content with family, friends and other colleagues at work, or even run your business completely using web-based technology (M.C. Alarcón-del-Amo, et al., 2012). This progress and development which has been reflected in the incredibly fast spread of different platforms of SM tools has undoubtedly found its application and use during natural disasters. The impacts of climate change on wellbeing are more frequent than ever and exceeding the ability of an affected community to get by using their own resources. High temperatures, fire and floods, hurricanes and increased storm damages,

rising sea levels and changing landscapes could be addressed by means of using SM tools; where news agencies worldwide offer some online platforms to citizens enabling them to provide an eyewitness accounts on different kinds of news (Goolsby, R. 2010). Disasters with no doubts are increasing criticality of communications, especially when the frequencies of occurrence of such events and threat implications are high. The need for exchanging information between and among civil protection authorities and general public in timely manner; to warn and inform them of possible hazards and harm, is mandatory for mitigating the impact of a disaster on a community(Yates & Paquette,2011). However, affected communities usually bring members of public to work together actively, to reduce the consequences of disaster, where their involvement becomes more evident with ICT (Palen & Liu, 2007). The use of SM tools and online platforms offer a new ways for public to network and share information in timely manner (Sarcevic et al., 2012). Sharing of public information and warnings, conducting operational coordination does not happen only when the disaster strikes, it happens also during prevention, protection response and recovery activities (FEMA, 2015). It is obvious that the main features of SM such as the speed at which interactions take place, the dependence on user-generated content, the focus on conversation and the low barriers to access is considered vital during disaster, still it is important to understand that crisis communication is not an end in itself but rather it supports the larger emergency response as many organizational and governmental agencies that deal with crisis communication are also involved in crisis response (Palen & Liu, 2007). This paper offers a new perspective on the usefulness and benefits of SM tools during crisis events with emphasis on the flood experience of Bosnia & Herzegovina in May 2014. Our goal is to shed the lights on the main identified problems that BiH has encountered during the flood crisis and the emergent need for adopting a SM framework that will help better interaction between general public, civil protection authorities and other interested parties. We believe that such interaction will reveal many trails in terms of future needs for ICT developments and deployments, which in turn will offer a better utilizing of SM tools in case of emergencies. Meanwhile, future needs should be clearly addressed and have an impact on government policies in a way that will urge them to adapt their organizational structures with what will support active participation of general public.

2. SOCIAL MEDIA AND DISASTERS

The term SM refers to online and network based tools, sites and applications created to enable cooperation, social interaction and sharing of information between users online (Abbasi, Hossain, Hamra and Owen, 2010).

Recent developments of ICT tools and applications have led towards serious consideration for the use of SM in the time of crisis. Many traditional media, such as television and newspapers are still considered very important one-way dissemination channels in disaster communications (Fraustino et.al. 2012). On the other hand, SM provides means for both one-way and two-way interaction between its users (Bortree & Seltzer, 2009). Social networking sites provide a platform for an immediate and personal way to deliver information to other targeted users or followers. These features plus their ability to attained mobile applications enabled such platforms to be exceptionally active upon crisis events as users have been able of posting text messages, pictures and video in a fairly easy way (Flizikowski, et.al, 2014). Recent crises events reveal an increased level of using non-traditional means of communication and sharing of information among public through online platforms, which provides more opportunity to communicate and a new way for global outreach (Wright & Hinson, 2009). The use of SM boosts during disasters, as people look for immediate and in-depth information (Bates & Callison, 2008). While there is no one-size-fits-all solution for crises communication, media tools, such as; radio, television, newspaper, as well as SM can be used to initiate and organize people to achieve different goals and update them with recent information that is not available through other official channels (Lerman & Ghosh, 2010). It is hard to define best practices for SM use, as best practices should be derived from analyses to many cases, and it is quite difficult to establish best practice in crisis communications as crises can be rare and have many variations (M. W. Seeger, 2006).

2.1 BRIEF CRISIS CASES

The use of SM in critical events reviled its benefit and justified its epithet as potential and emerging communication tool. Some real cases that reflect a range of SM used during different crises situations are:

- The Virginia Tech shooting that took place in April 16, 2007 resulted in 32 killed and 15 injured students. These shootings were video recorded by students and instantly uploaded and shared on YouTube. These recordings where used to inform and update others online to take extra precocious while being trapped at the scene site at the University campus (Lindgren, S., 2012).

- Using online platforms during the crises of Southern California Wildfires, where journalists and public officials were too slow in providing solid information that could be shared with the affected community. At that time, people used SM to track the location of the fire and verify whether their neighbourhood was affected (Sutton et al., 2008).
- Use of SM tools during the Haitian Earthquake in 2010. On the 12th of January 2010, a 7.0 magnitude on the Richter scale earthquake struck Haiti's capital Port-au-Prince, killing more than 200,000 and displacing 2 million people (Livingston G., 2010). The use of SM in this recent disaster has been widely registered, as disaster revealed the practicability of Internet based SM tools such as Twitter, Facebook and the Sahana for risk and crisis communication (Wendling, C., J. Radisch and S. Jacobzone, 2013).

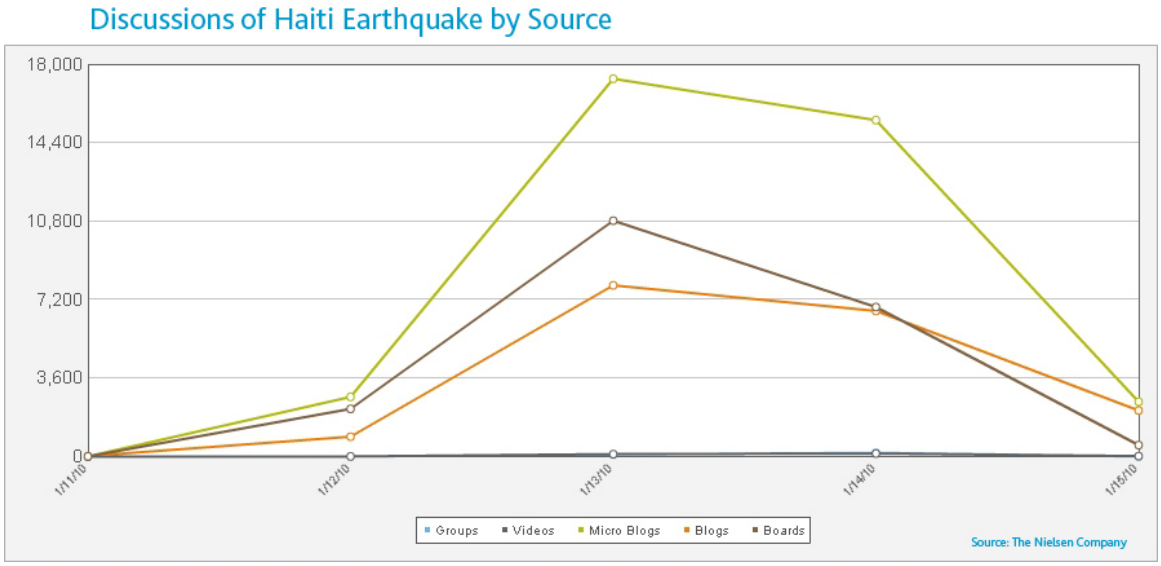

Figure 1. Discussions of Haiti Crisis using Social Media, Source (Nielsen, 2010)

According to a web tracking data analysis carried that was out by Nielsen (figure 1), they have indicated that Twitter was the primary source of information that people focused on in order to interact with others about earthquake, followed by online videos and blogs. According to a data published by Sysomos, an analytics firm in Toronto, they estimated that nearly 2.3 million Tweets contained the word Haiti or the Red Cross in the period from Jan 12 to Jan 14, 2010. (Sysomos, 2010).

- The Japanese earthquake and tsunami in 2011 which caused a major disaster that affected many people lives and caused an enormous damage to the properties. Public turned to online platforms as well as Japanese social networks to keep in touch with the loved ones, while mobile phone networks were jammed and people encountered difficulties to communicate (Gao, Barbier, & Gollsby, 2011). Also there was a global concern about the damage to the Fukushima Daiichi Nuclear Power Plant which suffered a nuclear meltdown and release of radioactive materials. These concerns made this story the number one topic across SM users.
- The use of SM during the Typhoon Haiyan in 2013, which killed over 6.000 people while injuring 28.500 and affecting 13 million people, was very helpful in both the sharing of information about the super typhoon and a call for help and aid. According to a research published by Sheldon Levine (2013), they have tracked the mentioning of word "Philippines," "Haiyan", "Yolanda" and "Typhoon" on the internet, starting from the 6th of November when the Typhoon Haiyan was reported to have entered the area of Philippines and found out that there has been 102,726 blog posts, 293,648 online news articles, 52,907 forum postings and 5,723,430 tweets till the 20th of November.

The online use of SM networking as a way of fast, emergent and reliable communication is a new form of public participation in crises events. Such a media has great potential in the communication process that takes place during the phase of preparation, warning, response, and recovery from a disaster. Each tool has its use and property that suites one case more than the other (T. Simon et al., 2015).

3. SOCIAL MEDIA AND FLOODS IN BOSNIA & HERZEGOVINA

The use of SM networks in Bosnia and Herzegovina has increased remarkably over the recent years, likewise the number of those who have a computer. According to the annual report published by the BiH Communications Regulatory Agency in 2015, BiH with a population of 3.842.000 has 2.227.970. Internet users, which makes 58% rate of utilization of the Internet, and 3.491.188 mobile phone subscribers (CRA, 2015). The SM in BiH, without doubt is seen as a key tool used to share different kinds of information and attract users to engage in generating debates and discussions. In terms of using SM during crisis events, the section will present the current status of using SM by governmental agencies and the public during flood crisis events.

3.1 FLOOD CHALLENGES

Riverine Floods are not a rare phenomenon in Bosnia and Herzegovina, as many cities were built along its riverbanks. In April 2003, the International Bank for Reconstruction and Development published a report confirming that Bosnia and Herzegovina is under permanent flood risk, which is threatening 4% of its total area and 60% of its lowland area (World Bank, 2003). The recent flood problems started with heavy rains on May 13, 2014 and continued for three days. This rainstorm caused unprecedented floods along the Sava River basin, its tributaries and other rivers in Bosnia. It is estimated that one third of the country was flooded with water levels reaching the highest levels ever recorded in 120 years of record keeping. (RNA, 2014). The researcher, as a government official at the Ministry of Communications and Transport of BiH was directly involved for 19 days in the emergency situation room of the Operation and Communication Center 112 (OCC112) of BiH. During this period, the crisis revealed many problems that were not encounter and made the country incapable of responding properly and in a timely manner. Some of the major problems identified were:

3.1.1. Different jurisdiction, laws and procedures among thirteen different governmental levels that are not harmonized with the state level framework law on protection and rescue from natural or other disasters in BiH got more complicated during crises events. The state of emergency for the affected regions was not declared on the same time, rather it was declared on the 15th of May by the FBiH entity, while in the RS entity on the 17th of May. Such different and complicated procedures for declaring the state of emergency imposed obstacles in perform actions and task towards the protection and rescue of people and material goods from flood disaster (ICPDR & ISRBC, 2015).

3.1.2. Absence of an early warning and informing system that will warn media and public of possible threat in the region. Media and public were not promptly informed about possible floods, even though the OCC112 center on May 13 did send a note informing the civil protection authorities in both entities of BiH about possible flooding in the region. Such information was not forwarded further to the operational levels of civil authorities nor was publicly accessible to media, whereas such left the public vulnerable to direct impact of the disaster (Zurich, 2015).

3.1.3. Government crisis headquarters were not capable of following and dealing with huge amount of information posted on SM about the current situation in the affected places, leaving the public susceptible to rumours and false information. On the other hand, users kept sharing valuable information via SM tools, self-organizing and taking actions to rescue and help others (CCI, 2015).

3.1.4. Insufficient coordination among government crisis headquarters from one side and other national and international humanitarian organizations led to serious problems in requesting, accepting and distributing humanitarian aid in Bosnia and Herzegovina. There was no unified communication system for dealing with national and international aid, border crossings and other humanitarian warehouses were crammed with humanitarian aid that was waiting to be released from custom and transported to the affected region (CCI, 2015; Zurich, 2015).

According to the assessment of the post disaster recovery needs (RNA) that was conducted by the authorities of Bosnia and Herzegovina, it was found that the May 2014 flood caused a destruction which is estimated to have the equivalent of nearly 15 percent of GDP of Bosnia and Herzegovina which is 3.98 Billion BAM out of which 9.3 % of GDP in damages (1,493,070,000 BAM) and 5.6 % of GDP of losses (2,491,700,000 BAM). (RNA, 2014). The three most vulnerable sectors that suffered damage and losses according to RNA report are:

- Livelihoods and employments with 1.55 Billion BAM.
- Housing and household items with 886.4 Million BAM.
- Transport and Communications with 680 Million BAM.

In the first days of the disaster, only limited information was available, and the public had to find communication alternatives. Such alternatives were the use of SM.

3.2 SOCIAL MEDIA AS AN ALTERNATIVE.

Many different practices have shown that SM is considered to be the main mass-communication means used by people in an event of natural disaster (Erica Goldfine, 2011). Different governmental agencies worldwide have SM accounts that are registered and verified in order to provide their services and communicate effectively with public in crisis and non-crisis events. In the case of BiH governments, such practices are not fully considered, and the use of SM is not yet foreseen as a potential mean of communication in case of disasters, and is used mainly as a public relation (PR) means. Most individuals nowadays tend to spend considerable time checking SM and connecting to the internet on their smartphones (Ofcom, 2015). This trend of using most widely owned internet-enabled device allows them to access posted emergency information easier and faster than any other mean. Well, the focus should not be on the utilization of the technology, rather on how adaption and innovation uses of ICT should fulfil the needs of communities (Sutton et al., 2008). Surveying the literature, searching within SM tools and services didn't reveal any official information regarding the use of SM during floods crisis events in BiH. However, on the State level, the Operation and Communication Center -112 of the Ministry of security has its own Facebook account that is not verified, and mainly used to publish some of the PR activities taken by the ministry regarding civil protection and some limited posts about disaster events. The same is true for the Federal Authority of Civil Protection (FUCZ), leaving the RS civil authority without mass SM usage at all. The only way they communicate with the public by means of the internet, is by posting late reactive announcements on their Web pages. It is obvious from such different actions that the Bosnian government does not have any policies, plans and frameworks for using and incorporating SM within their protocols of communication. The unavailability of a common trusted framework for SM communication by the government agencies have led the public to initiate different activities that were created to provide information of flood threats and to provide helpful information that can be used for mitigating the threats. The recurring events of natural disasters that affected Bosnia and Herzegovina recently have led people to turn to the use of SM to get more information, as they could not get enough detailed or satisfactory information from the government (CCI, 2015). Most of the SM sites that are published by the public during crisis events are self-organized and published using their SM profiles texts, videos and shared other links of what they have witnessed or just read across the internet. On the other hand, some SM sites are designated to communities with names that give a clue to other of sharing disaster information of these events. Some of the SM accounts that have been used during the Bosnian floods crisis are as following:

Table 1. Social Media , Facebook & Twitter for managing flood crisis in BIH

Facebook	Twitter hashtags
https://www.facebook.com/floodinbosnia	#Bosniafloods
https://www.facebook.com/BosniaFloods	#Bosnia
https://www.facebook.com/poplaveba	#poplave
https://www.facebook.com/poplavedoboj	#poplave2014
https://www.facebook.com/Poplavebih	#helpbosnia

It is expected to see more of these private SM sites that are oriented towards flood crisis in BiH in the near future, as the Bosnian flood crisis is becoming a recurring event. Having more sites and efforts is not the correct procedures for facing crisis in Bosnian without the real involvement of governmental agencies. The previous sites are acting as sites for sharing information, and such unregistered and unverified sites can lead to more threats in different cases such as spreading false information and rumors that might lead to more unpleasant events and jeopardizing lives worse (Oh et al, 2013). From what has been presented so far there is an obvious need to define a communication framework that will act as complimentary system towards enhancing the efforts of dealing with flood crisis, which is the main aim of the researchers study work. Such solution can be of a great benefit for the case of Bosnia and Herzegovina (CCI, 2015), especially with the presence of SM networks that are freely available and reachable by all. Moreover, identifying and creating a communication framework between the different entities will not require changes of any political or procedural framework of any party in the Bosnian government, and this is why it is believed that such framework can be appreciated by all parties that are facing the same threat of flood hazards. In addition, it is important to define a trusted solution for the Bosnian government and the public as many different efforts have started to present channels for mass communication with the public, and the creation of such unauthorized channels can lead to mass disaster or hazards. The

problem with such channels are due to the channels activity of spreading information that are not posted by experts, or rumors that can make the situation worse (Oh et al, 2013). Thus it is important to define a communication framework using SM for the Bosnian government that can assist in maximizing the benefits and coordination for all the entities and the public.

4. CONCLUSIONS

This paper attempted to identify and address some of the challenges that affected Bosnia and Herzegovina during the flood crisis and the use of SM in May 2015. The main challenges were identified include: (1.) Lack of consistent and clear communications procedures, (2.) Lack of effective lines of communications between government, media and public. (3.) Duplication of efforts and insufficient coordination among first responders and public and (4.) No efficient mechanism for coordination of relief work. The integration of SM in our everyday life needs to be considered as a priority in the hierarchy of crisis communication tools between government agencies, media and public. Brief cases presented from disasters that occurred globally in the last decade have revealed the potential use of SM tools as an unavoidable and crucial component for dealing with various events of crisis. The valuable information that were collected, shared and widely-spreaded by BiH public on SM during the flood crisis event of May 2015 should be used more efficiently by government agencies, especially in lights of high public demand and need to use SM tools in case of crisis and emergencies. This is why there is an emergent need for adopting a SM framework for Bosnia and Herzegovina that will help better interaction between general public, civil protection authorities and other interested parties in a trusted, timely worth and secure manner. Further studies are highly recommended for using SM by governmental agencies before, during and after disasters. Assessing the readiness of governmental agencies as well as their willingness to coup with evitable changes of introducing SM in their everyday work should be considered thoroughly. This research will continue to investigate the possibilities for building a dedicated SM framework for flood crisis in BiH. Also, it would be very important to decide on users preferences for using SM tools, which can provide valuable information of what tools and approaches in delivering emergency information to consider for reaching most of the people in case of disasters.

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