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The Application of Social Media in Disasters

How can Social Media Support an Effective Disaster Response?

Eric T. White
Student Intern, TWC/UNH

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How Can Social Media Support an Effective Disaster Response?

By Eric T. White, Student Intern, TWC/UNH
International Institute of Global Resilience
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Abstract: The purpose of this paper is to show how Social Media can be used to support an effective disaster response. The research comes primarily from news articles, academic articles, and Federal Emergency Management Agency (FEMA) reports. Contained in this paper are examples of how Social Media has been used in past disasters as well as the potential uses of Social Media in managing future disasters. The strengths of Social Media include: allowing for instant communication, the ability to reach a broad audience, and direct communication between disaster management organizations and those affected by the disaster. These strengths are compared to the its limitations, such as certain demographics not using Social Media, the speed with which rumors can spread, and the unrealistic expectations people may have of Social Media during disasters. The conclusion of this paper is that Social Media is overall an invaluable tool in disaster management.

"Port Recovery in the Aftermath of Hurricane Sandy," by Commander Linda A. Sturgis, USCG; Dr. Tiffany C. Smythe; and Captain Andrew E. Tucci, USCG (August 2014)

Introduction: The Webster-Merriam Dictionary defines Social Media as "forms of electronic communication (as Web sites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (as videos)." Social Media has increasingly been used as a tool in disaster management. Websites such as Facebook and Twitter enable disaster management organizations to communicate quickly and directly with the public. Real-time reports on disasters, information on what to do prior to a disaster, and information on recovery efforts can easily be disseminated to the public through Social Media. When traditional forms of media such as radio or television are supplemented by Social Media, emergency managers are able to reach a larger audience and to provide up-to-date information when a disaster occurs.

This paper is divided into five parts: (1) Social Media as a tool in disaster management; (2) How Social Media can be used in disasters; (3) Limitations and weaknesses of Social Media; (4) Case studies of Social Media use during disasters; and (5) Conclusion.

1. Social Media as a Tool in Disaster Management

Overview: Social Media websites and cellphone applications allow users to instantly post information on the internet which can then be seen by a wide range of the population. Websites such as Facebook and Twitter create the opportunity for people from around the world to connect with each other. Two friends from across the globe can reconnect over Skype. Breaking news in America can be seen instantly by someone in Japan on Twitter. Social Media allows average people to connect to the global network even when resources such as landlines and cellphones are not working.

Examples of Social Media and Related Technologies

Social Media

Facebook, Twitter, and YouTube are generally considered to be Social Media because they are online communities that allow people to share ideas and information. Through these websites people can connect with each other over the internet.

Facebook: Approximately 1.4 billion people use Facebook worldwide[1]. Currently it is the most popular Social Media website in the United States[2]. On Facebook, people are able to connect with other people, organizations, and groups that share a common interest. Facebook offers

[1] Statistic Brain "Social Networking Statistics" July 9, 2014
[2] Statista graph "Most popular social media websites in the United States in June 2014, based on share of visits" June 2014

disaster management organizations, such as FEMA which has three Facebook pages[3], the ability to keep the public informed of emergency situations before, during, and after they occur.

Twitter: Twitter allows people to tweet short messages which can be seen by people who are following their accounts. Users on twitter are restricted to using 140 characters or less in these tweets. A hashtag (#XXX) can be added to the tweet to make it easier to find in a search. For example, someone will be able to find a tweet on Hurricane Sandy much more easily if the hashtag #HurricaneSandy is added to it. Twitter has become an efficient and popular way to report on disasters because of its popularity and ease of use. Currently FEMA has 34 accounts on Twitter, which allows the agency to keep the public informed during an emergency[4].

YouTube: YouTube is a video sharing website. It allows people to upload their own videos and also view videos that other people have uploaded. In disaster management YouTube can provide the public with information on what to do prior to a disaster. This can include something as simple as a video on how to pack a "go bag" or other information on how to plan ahead for a disaster.

Related Technologies

These technologies are not true Social Media but they are mentioned because of the importance they have in disaster management and because they allow large numbers of people to communicate and connect with each other over the internet.

Google Person Finder: Google Person Finder was created in the aftermath of the January 2010 earthquake which devastated Haiti. This program was created specifically for the purpose of reuniting people who have been separated during any disaster. Google Person Finder allows users to post their own names and the names of loved ones to a database. Anyone who is searching for a missing person can then look up their names on this database in order to find them[5].

Skype: Skype is a free online phone service that allows people to communicate via webcam. During an emergency situation Skype may be preferred over cellphones or landlines because these traditional methods of communication can become tied up when call volume increases drastically.

Line: Line was developed in Japan following the devastating Tohoku Earthquake in 2011. This application allows its users to call or text each other over the internet[6]. This makes Line a cheaper and more reliable alternative to cellphones and landlines. Just like Skype, Line can be

[3] National Defense Magazine article "Social Media Changing the Way FEMA Responds to Disaster" by Steff Thomas, September 2013
[4] National Defense Magazine article "Social Media Changing the Way FEMA Responds to Disaster" by Steff Thomas, September 2013
[5] Google Person Finder website
[6] Reuters article "Born from Japan disasters, Line app sets sights on U.S., China" by Mari Saito, August 16, 2012

used during a disaster if traditional forms of communication such as cellphones or landlines fail. As of 2013 Line had 4.1 million members in Japan with an additional 96 million members in the Asia Pacific region, the Middle East, Africa, South America, and Europe[7].

2. How Social Media Can Be Used in Disasters

American search & rescue teams in Japan after the 2011 tsunami, Photo by Vernon Meekins, U.S. Marine Corps

Before the disaster: Prior to a disaster occurring, it is important to be as prepared as possible. Social Media gives disaster management organizations a means with which to communicate with the public in order to give them a plan for what to do if an emergency develops.

Ways in which Social Media has been used **before** a disaster include:

- Informs the public on how to be prepared if a disaster occurs.
- Shows the public where to look for information on a disaster if one were to occur.
- Gives the public confidence that the disaster management organization is capable of conducting emergency response when the time comes.
- Keeps the public informed on the location and movement of storms or other potential hazards.

During the disaster: While a disaster is occurring it is important for government authorities and disaster response organizations to be able to communicate with the public. Social Media gives disaster management organizations a way to get vital information out to the public in a quick and efficient manner.

[7] Covario article "Introducing LINE, an Emerging Social Network for Mobile in Japan" by Taro Kaji, March 20, 2013

Ways in which Social Media has been used **during** a disaster include:

- Provides information on evacuations in specific regions.
- Keeps the public aware of regions that they should avoid.
- Discredits rumors about the disaster before they can spread.
- Provides the public with information on road closures.
- Informs those affected by the disaster about the actions that are being taken to assist them.

After the disaster: Once the acute phase of the disaster has ended the long process of normalization begins. Through Social Media, disaster management organizations are able to provide information on recovery efforts to survivors.

Ways in which Social Media has been used **after** a disaster include:

- Reunites families and loved ones who have been separated from each other.
- Informs the public on recovery efforts.
- Assures the survivors of the disaster that they will be supported.
- Provides information and links to charitable organizations that are seeking to assist the survivors of the disaster.

3. Limitations and Weaknesses of Social Media

Overview: Along with the benefits of using Social Media in emergency situations there are also some limitations and weaknesses of this technology. However, these should not dissuade a disaster management organization from using Social Media, because the benefits appear to significantly outweigh the drawbacks. It should be remembered that traditional forms of media such as television and radio should be used in conjunction with Social Media in order to make up for any limitations or weaknesses that Social Media may have.

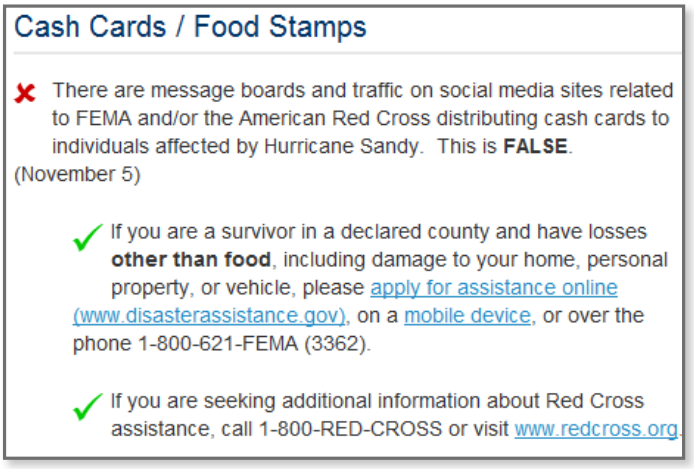
Examples of Limitations and Weaknesses

- Non-use of Social Media: Older generations may not be as familiar with Social Media as younger generations. They may feel uncomfortable using these new technologies and prefer using traditional forms of media. For this reason it is important for disaster management organizations to use both traditional media and Social Media in order to reach this older demographic.

- Non-use of Internet: Not all people use the internet. In fact, according to FEMA course IS-00042, "Social Media in Emergency Management," 22% of adults in the United States

do not use and/or do not have access to the internet[8]. Whether because of where they live or because of other circumstances, without access to the internet these people will not have access to Social Media. This is another reason why disaster management organizations need to supplement Social Media with traditional media.

- Rumors: False information and rumors can spread quickly over Social Media. This can lead to confusion during an emergency situation. It is important for disaster management organizations to counter any rumors or false information with the correct information. FEMA is currently developing a webpage that counters false rumors[9]. By monitoring the information on different Social Media websites and applications, FEMA will be able to quickly stop the spread of rumors and dispel any false information following a disaster.



FEMA Rumor Control. Carolyn Deming, FEMA "Social Media Emergency Management and Disaster Response" (April 8, 2014)

- Unrealistic Expectations: According to a University of San Francisco survey, one out of three Americans expect help from a disaster management organization within an hour of their posting information on Social Media, and 80% of Americans expect disaster management organizations to be actively monitoring Social Media[10]. But when a disaster occurs a disaster management organization will have its hands full and may have a hard time responding to every individual over Social Media. If an individual isn't able to get a direct response in a timely manner then he/she may become agitated and feel as if the disaster management organization isn't doing its job[11]. A disaster management organization needs to assure the public that it is monitoring Social Media and responding to issues that the majority of people are having during the disaster.

- Literacy Required: A person needs to be literate in order to use most forms of Social Media. While a great majority of Americans and Japanese are literate this is not the case in some countries. Countries with low-literacy populations are less likely to use Social

[8] FEMA course IS-00042 "Social Media in Emergency Management" October 31, 2013
[9] National Defense Magazine article "Social Media Changing the Way FEMA Responds to Disaster" by Steff Thomas, September 2013
[10] National Defense Magazine article "Social Media Changing the Way FEMA Responds to Disaster" by Steff Thomas, September 2013
[11] "Ogilvy Exchange: The Expanding Use of Social Media in Disaster Preparedness and Response" on YouTube by Ogilvy Public Relations, July 3, 2012

Media. Therefore, Social Media will not be as useful during a disaster in countries where the population isn't as literate.

- Poverty Areas: Regions of the world that have high levels of poverty will not have as much access to the internet as the more affluent regions of the world. These regions typically don't have the infrastructure necessary to support internet access. If they do have the infrastructure then it may not be very stable and could easily be damaged during a disaster[12].

- Electricity Required: During a natural disaster such as a hurricane or an earthquake electric power may fail. If people don't have access to electricity then they will not be able to keep a charge on their electronic devices such as cellphones and laptops. Without a charge on these devices people will not be able to access the internet or Social Media.

- Unrealized Potential: Some governments don't yet see the potential that Social Media has in disaster management. By not utilizing Social Media to its full potential these organizations are limiting the tools that they have in managing disasters. The Japanese government did not make maximum use of Social Media in its response to the 2011 Tohoku disaster. Since that time the Japanese government has begun to consider standardizing Twitter for use in emergency communications[13].

4. Case Studies of Social Media Use During Disasters

Overview: Social Media has the potential to be a key tool in disaster management. When utilized effectively it can help to disseminate critical information to the public which can save lives. In this section real examples of how Social Media has been used by disaster management organizations and by the survivors of the disaster will be discussed.

Tohoku Earthquake and Tsunami

The Tohoku Earthquake struck off of the east coast of Japan on March 11, 2011. This ferocious earthquake was recorded as a magnitude 9.0 by the United States Geological Survey (USGS)[14]. It created a tsunami which would sweep away entire towns leaving little behind. In the wake of this terrible earthquake and tsunami major areas of eastern Japan were utterly devastated.

[12] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010
[13] San Jose Mercury News article "When disaster struck Japan, Google and Twitter became tech first responders" by John Boudreau, October 28, 2012
[14] USGS report on the Tohoku Earthquake, March 14, 2011

Infrastructure was ruined in the affected areas. Homes were destroyed, families were separated and over 15,000 people died according to the National Geophysical Data Center[15].

Devastation after tsunami of March 11, 2011, photo by Cabinet Office, Government of Japan

Aerial photo of March 11 tsunami hitting the Sendai Plain in northern Japan, California Dept. of Conservation

[15] National Geophysical Data Center report "March 11, 2011 Japan Earthquake and Tsunami" March 9, 2012

In the ensuing confusion of this disaster, communication via cellphones broke down. Many of those affected by this disaster looked to Social Media to connect with loved ones and to get critical information from the authorities on where to look for rescue and recovery efforts. In this way Social Media was used as a tool during a major disaster.

Ways in which Social Media was used during and after the **Tohoku Earthquake and Tsunami** include:

- Social Media became a vital form of communication during rescue efforts. When cellphones and land lines were failing, Social Media websites and applications such as Twitter and Facebook were still up and running.

- The hashtag #j_j_helpme was used on Twitter following the earthquake and tsunami as a way for emergency personnel to rapidly identify people who were in need of rescue[16]. The first letter j stands for Japan and the second one is for *Jishin*, which translates to "earthquake" in Japanese.

- Google tweeted a link on Twitter to its Google Person Finder tool which allows people to search for missing family members and loved ones. This tweet was retweeted over 9,000 times in the wake of the Tohoku disaster[17].

- After the earthquake/tsunami people crowded into the Apple store in Tokyo. The free WiFi that was offered in the store allowed people to view critical information on the disaster over USTREAM, a video streaming application, and to contact loved ones on Twitter, Facebook and other Social Media websites[18].

- In June 2011, NHN Japan created Line as a response to the failure of cellphones and landlines during the disaster[19]. Line allows users to communicate with each other over the internet, which is vital during a disaster as other forms of communication seem to fail more often.

- The Mayor of Minami-Souma, Sakurai Katsunobu, posted a video on YouTube following the Tohoku disaster in which he tried to create awareness of the dire situation in his town[20]. In this well-known video, the mayor pleaded for help from the Japanese government in the form of supplies such as food and fuel. This video drew international

[16] "TEDxTokyo - James Kondo - Twitter in Tohoku" on YouTube by James Kondo, May 20, 2011
[17] Huffington Post article "Google Launches Japan Earthquake Person Finder To Help Find Missing People" by Catharine Smith, March 11, 2011
[18] "Apple's Role in Japan during the Tohoku Earthquake" by Kevin Rose, March 16, 2011
[19] Reuters article "Born from Japan disasters, Line app sets sights on U.S., China" by Mari Saito, August 16, 2012
[20] The Asia-Pacific Journal: Japan Focus "Social Media, Information, and Political Activism in Japan's 3.11 Crisis" by David H. Slater, Nishimura Keiko, and Love Kindstrand, June 11, 2012

attention to the town's plight, and has been viewed almost half a million times on YouTube since it was posted[21].

- The Office of the Assistant Secretary for Preparedness and Response (ASPR) of the U.S. Department of Health and Human Services used Social Media to inform Americans on how the Tohoku Earthquake could impact them[22]. This helped to build up American awareness on what was happening in Japan after the Tohoku Earthquake.

- After the Tohoku disaster the U.S. Ambassador to Japan, John Roos, used Twitter to communicate with Americans who were in Japan at the time of the event. He was quoted as saying "it was incredibly effective" in regard to Twitter during the disaster[23].

Devastation in Tohoku three months after the March 2011 tsunami, photo by Leo Bosner, IIGR

- After the Tohoku disaster the potential that Social Media has in emergency management became more apparent to the Japanese government. They are currently considering how to use Social Media in order to better respond to disasters[24].

The failure of cellular phones and landlines during the Tohoku disaster forced people to use Social Media in order to communicate. Through Social Media people were able to view and share information quickly. This increased speed in communication helped emergency personnel in their rescue and recovery efforts. This was critical during the response to the Tohoku Earthquake and subsequent tsunami.

[21] "SOS from Mayor of Minami Soma City, next to the crippled Fukushima nuclear power plant, Japan" on YouTube by Katsunobu Sakurai, March 26, 2011
[22] "Best Practices: The Use of Social Media Throughout Emergency & Disaster Relief" by Erica Goldfine, April 28th, 2011
[23] San Jose Mercury News article "When disaster struck Japan, Google and Twitter became tech first responders" by John Boudreau, October 28, 2012
[24] San Jose Mercury News article "When disaster struck Japan, Google and Twitter became tech first responders" by John Boudreau, October 28, 2012

Hurricane Sandy

Hurricane Sandy, or "Superstorm Sandy" as it came to be known, struck the Caribbean and the east coast of the United States in October 2012. The strong winds and rain of this hurricane devastated populated areas and led to severe flooding. Power lines and other utilities were badly damaged leading to a loss of electric power for basic services such as heating, lighting and refrigeration. (Even the pumps in gas stations will not work without electric power.) Most of the devastating damage seen in the United States took place in New York and New Jersey.

Hurricane Sandy resulted in the deaths of 117 people in just the United States alone[25]. It caused approximately $65 billion in US damage, making it the second most costly hurricane to hit the United States, surpassed only by Hurricane Katrina in 2005[26]. This makes Hurricane Sandy one of the worst storms to hit the Caribbean and United States in the modern era.

FEMA image of the damage in Breezy Point, NY following Hurricane Sandy. Photo by Ryan Courtade, November 13, 2012

[25] Bloomberg article "Drowning Caused One-Third of Deaths From Hurricane Sandy" by Anna Edney, May 23, 2013

[26] USA Today article "Hurricane Sandy, drought cost U.S. $100 billion" by Doyle Rice, January 25, 2013

New Jersey coast after Hurricane Sandy, photo by Mark Olsen, U.S. Air Force

Ways in which Social Media was used during and after **Hurricane Sandy** include:

- Prior to the storm hitting the east coast of the United States AccuWeather was on Twitter and Facebook providing information on the storm. They would tweet on Twitter and post on their Facebook page information about the current location of the hurricane and where it was expected to make landfall[27].

- Some people who were in need of assistance during Hurricane Sandy found that there was no response from 911 when they called. In some areas, 911 operators were too overwhelmed and could not respond to every call. This is because 911 isn't designed for disasters where the operators may be faced with a huge number of calls[28]. Instead, people were able to communicate with emergency personnel over Twitter to inform them of their circumstances[29].

[27] AccuWeather article "Sandy Proves Social Media Can be Powerful During Hurricanes" by Meghan Evans, August 13, 2013
[28] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010
[29] Yahoo News article "Meet FDNY's one-woman Twitter response team guiding New Yorkers through storm" by Chris Moody, October 30, 2012

- Prior to the hurricane, FEMA recommended that people in the affected areas use Social Media or send texts instead of making calls on their cellphones or home phones to communicate with loved ones[30]. In fact, a study conducted by the University of San Francisco says that over 70% of people who are involved in a disaster situation use Social Media to communicate with loved ones[31]. FEMA acknowledged that during disasters like Hurricane Sandy phone lines and cellphone towers can be tied up making it hard to communicate.

"Social Media Emergency Management and Disaster Response" Carolyn Deming, FEMA (April 8, 2014)

- In the aftermath of the hurricane large numbers of people lacked many basic commodities. Charitable organizations such as the American Red Cross were posting on their Facebook pages that they were accepting donations to help assist the victims of Hurricane Sandy[32].

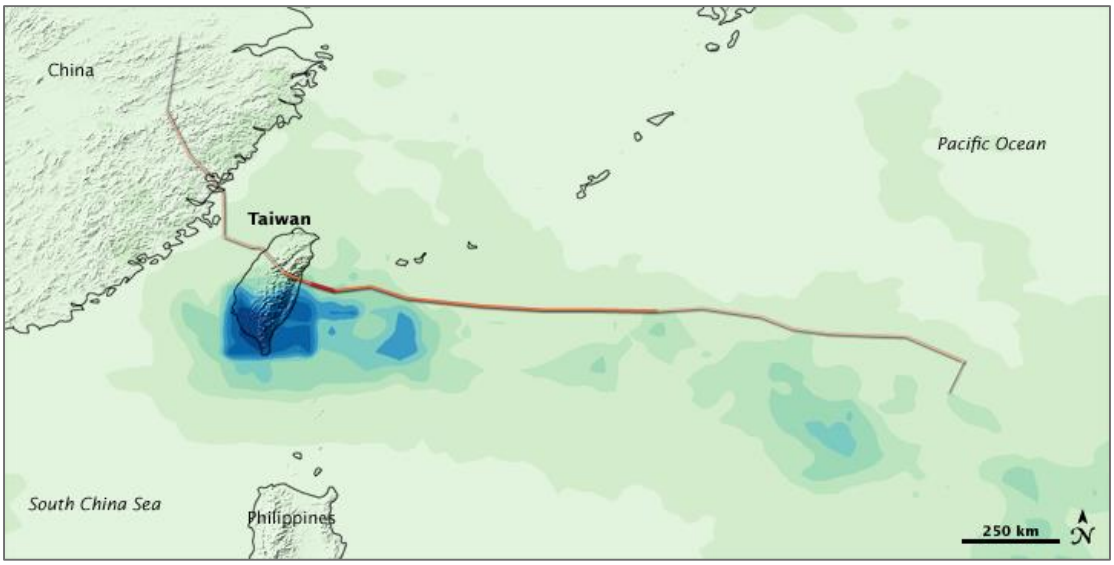
In Summary, Social Media was used extensively during Hurricane Sandy. Prior to the hurricane making landfall the public was kept updated over Twitter and Facebook on what regions would be affected and how severe the storm would be. During and immediately after the storm emergency responders communicated over Social Media with victims when 911 became too overwhelmed to take every call. After the hurricane passed people were kept updated about relief efforts and about where they could make donations. This was all done over Social Media.

Typhoon Morakot

Typhoon Morakot passed through the Asia-Pacific region in August 2009. The typhoon caused damage in Japan, China and The Philippines but the most severe damage was seen in Taiwan. Some of the southern areas of Taiwan received an accumulated 2866 mm (112 inches) of

[30] Verizon News Center article "Turning to Social Media for Help During and After Hurricane Sandy" by Brian Malina, November 1, 2012
[31] National Defense Magazine article "Social Media Changing the Way FEMA Responds to Disaster" by Steff Thomas, September 2013
[32] Verizon News Center article "Turning to Social Media for Help During and After Hurricane Sandy" by Brian Malina, November 1, 2012

rainfall[33] and experienced winds of 145 km per hour (90 miles per hour)[34]. In the aftermath of Typhoon Morakot Taiwan would experience significant flooding which would displace 24,950 people. In the end over 600 Taiwanese would die as a result of Typhoon Morakot[35].



NASA image tracing the path of Typhoon Morakot by Jesse Allen. Acquired August 3-9, 2009

Ways in which Social Media was used during and after **Typhoon Morakot** include:

- During Typhoon Morakot, The Association of Digital Culture Taiwan established an unofficial Morakot Online Disaster Report Center. They then asked people in the areas affected by the typhoon to monitor Twitter and other Social Media sites and post information on damage and people in need of assistance to the Online Disaster Report Center. The day after this report center was established it was integrated into the Taiwanese government's official communication systems[36].

- People in Tainan County found that after the typhoon struck traditional emergency reporting systems became overloaded. Instead of using these reporting systems the people posted directly on the local Commissar's Plurk, a popular Social Media site used in Taiwan. By doing this they were able to get the assistance that they needed[37].

[33] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010
[34] NASA Visible Earth article on Typhoon Morakot, August 7, 2009
[35] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010
[36] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010
[37] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010

- PPT, a popular online bulletin board system in Taiwan, was used by the people of Taiwan to post requests for volunteers and donations after Typhoon Morakot. Social Media was often used in this way by non-government organizations because the Taiwanese government was not using Social Media to its full potential during this disaster[38].

During Typhoon Morakot, the Taiwanese government did not utilize Social Media as effectively as it could have. This was partly because of a lack of preparedness as well as a lack of internet access in some parts of the country. The government hadn't yet adopted a standardized method of using Social Media. This caused the Taiwanese people to look to the websites of non-government organizations for information on the disaster.

5. Conclusion

When utilized effectively Social Media provides benefits that are not seen when only using traditional media. It is invaluable when used in a disaster situation. Social Media has the added value of being able to reach a larger audience and being able to communicate directly with the public.

The following chart displays the **strengths** and **limitations** of Social Media when used in disaster management. It is important to stress that even with its limitations Social Media is still an important tool in disaster management.

Strengths of Social Media	Limitations of Social Media
Reliable Form of Communication	Rumors Spread Quickly
Reaches a Broad Audience	Unrecognized Potential
Allows for Direct Communication	Non-use of Internet/Social Media
Allows the Public to Participate	Electricity Required
Can Cross Organizational Lines	Unrealistic Expectations
Delivered Instantaneously	Requires Literacy

[38] Flip the Media article "Social media helps organize rescue mission following typhoon attack" by Pei-chieh Chen, August 19, 2009

Strengths of Social Media

- Reliable Form of Communication: The internet has proven that it is often a more reliable way to communicate during a disaster situation than traditional forms of communication. When phones fail, as they frequently do during major disasters, Social Media can be a reliable alternative form of communication.

- Reaches a Broad Audience: Information reaches a much broader audience with Social Media. By "sharing" a link on Facebook or by "retweeting" it on Twitter information will spread across the internet quickly.

- Allows for Direct Communication: Social Media gives a disaster management organization, such as FEMA, the ability to communicate directly with the public. This allows a disaster management organization to provide the public with the precise information that they want them to have, when they want them to have it.

- Allows the Public to Participate: With Social Media the public can receive updates directly from those involved in a disaster situation.

- Can Cross Organizational Lines: Social Media allows emergency personnel on the scene to communicate directly across organizational lines when necessary[39]. This can increase the speed and effectiveness of emergency personnel's response during a disaster.

- Delivered Instantaneously: With Social Media people hear about news the instant it happens. They don't have to wait for the news media to report it.

Limitations of Social Media

- Rumors Spread Quickly: False information and rumors can spread quickly over Social Media. This can lead to confusion during a disaster situation.

- Unrecognized Potential: The potential that Social Media has in disaster management has not yet been realized by some governments. By not utilizing Social Media to its full potential these governments are limiting the tools that they have in managing disasters.

- Non-use of Internet/Social Media: Not all people use Social Media and the internet. A disaster management organization must find alternate ways to communicate with these people.

[39] BMC Medical Informatics and Decision Making article "Web 2.0 and Internet Social Networking: A New tool for Disaster Management? - Lessons from Taiwan" by Cheng-Min Huang, Edward Chan and Adam Hyder, October 6, 2010

- Electricity Required: During a natural disaster electric power may fail. Without electric power people will not be able to keep a charge on their electronic devices. If they don't have a charge on their electronic devices then they will not be able to access the internet or Social Media.

- Unrealistic Expectations: People can have unrealistic expectations of Social Media during a disaster situation. They may expect immediate responses to the questions that they ask disaster management organizations. If they don't receive a response in a timely manner then they may become agitated and lose faith in the disaster management organization.

- Requires Literacy: A person needs to be literate in order to use most forms of Social Media. If a significant portion of a population is illiterate then the utility of Social Media within that population will be diminished.

Social Media has the potential to be a lifesaving asset during a disaster. Never before have disaster management organizations been able to communicate with such a broad audience as with Social Media. Although it has its limitations, when utilized effectively Social Media allows a disaster management organization to instantly communicate directly with the public and keep them informed on a disaster situation in a way that traditional news media cannot. This ability to communicate with the public helps to support an effective disaster response, and it gives the public confidence that if they are in need of assistance then they will be helped.

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