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Social Media for Risk Management and Emergency Response for Philippine Local Government Units

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ABSTRACT - When it comes to risk management and emergency response, having an informed citizenry through mass media is not enough. Prior to the onslaught of typhoon Yolanda (Haiyan) in the Philippines, a great majority of Filipinos received warnings from mass media but disaster risk had hardly been mitigated. This paper explores social media, particularly Facebook, as a more suitable communication platform which local governments units (LGU) in the Philippines could take advantage of. It attempts to explain the nature of social media and their technological affordances, discuss the communication needs of people at risk met by social media, and identify the key functions of social media in times of crisis. It also discusses how Facebook was used for flood risk management and emergency response in the first class municipality of Cainta, Rizal within the week of the town-wide floods caused by typhoon Mario on September 19, 2014 which displaced 5,300 families. This paper concludes that social media, Facebook in particular, afford users a high degree of social presence, making them the best tool for creating and nurturing small online communities managed by LGUs. They provide strong support for social interaction, social integration and the strengthening of *bayanihan* (heroism) spirit.

Key Words

Flood Risk Management, Risk Management for Local Governments, Social Media for Risk Management, Social Media for Emergency Response, Facebook for Risk Management, Facebook for Emergency Response, Facebook for Risk Management, Social Media for Local Government Units, Facebook for Local Government Units, Local Government and Online Communities

INTRODUCTION

The Philippines' experiences with natural disasters, including the case of typhoon Yolanda (international name: Haiyan), has taught us that having an informed citizenry is not enough. Despite the presence of government's organized information drive using mass media, disaster risks have hardly been mitigated and people, particularly the vulnerable ones, are repeatedly victimized.

In the case of typhoon Yolanda, majority of Filipinos received warnings from mass media. A large majority or 92 percent received warnings from television and nearly half or 48 percent received them from radio, while only 0.03 percent did not receive any warning. In the Visayas region, the hardest hit part of the country, 88 percent received warnings from television while 63 percent received them from radio. (Asia Foundation and Social Weather Station 2014).

Although mass media had been successful in their information dissemination function before typhoon Yolanda entered the country, their very nature, however, does not make them perfect tools for community crisis communication and emergency management.

LGUs need to constantly provide the community with local updates on impending risks and on available help. They also need to gather critical information from the ground in the form of reports and cries for help. In times of crisis, there is a need for LGUs to trust the wisdom of the crowd for they are the ones who are at risk and will benefit from effective solutions. This, however, requires a special medium of communication. Not mass media but social media.

Today, social media, particularly Facebook and Twitter, have become so popular and pervasive among Internet users. In the Philippines, 92.1 percent of Internet users are using Facebook and 20.2 percent use Twitter. (comScore, March 2014).

With such popularity among Filipinos, the social media, particularly Facebook and Twitter, offer an opportunity for local LGUs to take advantage of for improved governance. And so, it is important to ask: *What makes the social media suitable crisis communication tools for the country's local government units?*

This paper will attempt to explain the nature of social media and their technological affordances; explore the communication needs of people met by social media; identify the key functions of social media among communities in times of crisis; and discuss an instance where social media played an important role in an LGU's disaster risk management efforts.

METHODOLOGY

This paper looked at the opportunities and limitations of social media as a communication tool for risk management among local government units in the Philippines.

For the first three objectives of this paper, a review of related literature including academic journals, Internet surveys and gray literatures, which are mostly studies in the Philippines for proper context, was conducted.

For the last objective, a textual analysis using qualitative and quantitative analysis was conducted on recorded Facebook messages in the account of Cainta's Mayor Johnielle Keith "Kit" Nieto. Only those related to his flood risk management efforts during the onslaught of typhoon Mario, which caused a town-wide flooding in Cainta on Sept. 19, 2014, were analyzed.

Textual analysis is a communication research method used to describe and interpret the characteristics of recorded or visual messages. The purpose of textual analysis is to describe the content, the structure and functions of the messages contained in texts. Content analysis, is used to identify, enumerate, and analyze occurrences of specific messages and message characteristics embedded in texts. (Botan & Kreps 1999)

Qualitative content analysis helped in giving light on the contextual meanings of the Facebook messages studied, both posts and comments, while quantitative content analysis helped establish conclusive numeric findings in support of qualitative analysis.

RESULTS AND DISCUSSION

Today, both Facebook and Twitter are big hits among Filipinos.

The Philippines could very well be a "Facebook addict" as alluded to by Suva & Manalo because Facebook is now a "common denominator among Internet users in the Philippines, young and old." (Maslog 2014).

Worldwide, Filipinos today comprise nearly 30 million (Internet World Stats, 2014) of the one billion Facebook users worldwide (Statista 2014).

In March 2014, Filipinos topped the number of web users with 96.1 percent visiting social networking sites, followed by Thailand with 93.9 percent and Malaysia with 91.6 percent. When it comes to the amount of time users spend in social networking sites, Filipinos also spend the longest with 41.5 percent compared to its other "Facebook addict" rivals Malaysia with 32.3 percent and Thailand with 30.8 percent. (comScore 2014).

The Internet is the communication platform of the future. It is where all traditional media (print, radio and television) are now converging and where newly established mass media (i.e. Rappler and Vera Files) have sprung and thrived. Since more Filipinos are going online, particularly to use social media, it is but imperative for LGUs to be there, too -- be where their people are, where they can serve them.

A Social Communication Media

As a technological breakthrough, the idea of social media could trace its roots from as early as 1979 when Usenet, a discussion system, was created by Tom Truscott and Jim Ellis from Duke University to allow members to post public messages. A decade later, Bruce and Susan Abelson founded a social networking site called "Open Diary" to bring together online diary writers into one community (Kaplan & Hainlein 2010).

Kaplan & Hainlein (2010) defined social media as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0; that allow the creation and exchange of user-generated content.

They distinguished the term from two related concepts: Web 2.0 and user generated content (UGC). Web 2.0, a term first used in 2004, describes how software developers and end-users started to use the World Wide Web as a platform whereby content and applications are no longer created and published by individuals, but instead are continuously modified by all users in a participatory and collaborative fashion. UGC, on the other hand, can be seen as the sum of all ways in which people make use of social media and refers to the various forms of media content that are publicly available and created by end-users.

Today, the term social media is a general concept that is often used interchangeably with two other concepts: social media technology (SMT) and social networking sites (SNS). Specifically, SMT refers to web-based and mobile applications that allow individuals and organizations to create, engage, and share new user-generated or existing content, in digital environments through multi-way communication (Davis 2013). Individual users produce user-generated content; existing content, on the other hand, is usually produced by traditional media (news, magazines, radio, and television) for the web.

On the other hand, SNS are web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. (Ellison and Boyd 2007)

The advent of tablets, smartphones and mobile Internet, however, blurred the distinction between SNS and SMT. Users could now access the web and stay online even when they are in transit or even when electricity is out. Many tablet and smartphone users are also able to extend the battery life of their units using power banks or external batteries.

Daniel Nation (2014) offers a simple and practical way of understanding what social media are, by breaking the term down. He said: “Media is an instrument of communication, like a newspaper or a radio, so social media would be a social instrument of communication.”

Being a social instrument, social media enables activities in which people can come in contact and interact with one another, simply to connect or link up, or to exchange and share information, be it an existing information or user-generated.

Unlike the traditional mass media, social media allows for both real-time or online and asynchronous interactivity among users. Interactivity refers to “the degree to which participants in the communication process have control over, and can exchange roles in their mutual discourse (Williams, Rice, and Rogers, 1998 as cited in Ruggiero 2000).

To summarize, what sets social media apart from all other forms of technology-based communication media is that they are both collaborative and participatory. Their salient feature is a multi-way model of communication which allows for interactivity among all communication participants while enabling them to single-handedly or collaboratively create and share content, blurring the line that separates the communication sender from the receiver. Content creation and distribution have been democratized and are no longer a role confined to well-oiled institutions but to ordinary individuals as well.

Social Media: Creating Communities

Needs and motivations of media users are personal, and can be either or both of social or psychological origin (McQuail et. al. 1972, as cited in McQuail et. al. 1994).

As explained by uses and gratification theory, media use is selective and motivated by rational self-awareness of an individual's own needs and an expectation that those needs will be satisfied by particular types of media and content (Katz et. al. 1974 as cited in Ruggiero 2000).

Media consumers use media for varied reasons. McQuail offers four reasons: (1) diversion, escape from routine or problems or emotional release; (2) personal relationships which refers to the need for social integration and interaction; (3) personal identity which pertains to self-reference, reality exploration and value reinforcement; and (4) surveillance which refers to media use as a form of information seeking.

While social media could gratify all four needs, their very nature makes them strongest in reinforcing personal relationships and satisfying surveillance needs of users.

Examples of personal needs satisfied by media include the need to gain insight into the circumstances of others or social empathy; identifying with others and gaining a sense of belonging; to find a basis for conversation and social interaction; to have a substitute for real-life companionship; to help carry out social roles; and enable one to connect with family, friends and society. Surveillance needs, on the other hand, include the need find out about relevant events and conditions in one's immediate surroundings, society and the world; to seek advice on practical matters or opinion and decision choices; to satisfy curiosity and general interest; for learning and self-education; and to gain a sense of security through knowledge (McQuail 1983).

Unlike with traditional mass media, the users of social media are "demassified" (Singer 1998 as cited by Ruggiero 2000) or broken down into small global villages defined not by geographic boundaries but by a sense of social or psychological affiliation or belongingness. Demassification describes the way Internet users have become highly fragmented as a result of the increasing control they have over the medium which enables them to select and tailor messages according to their own needs.

Social media affords users a virtual landscape mirroring familiar elements of real-life communities; linking people together in ways that resemble traditional feelings of connection where exchange of feelings and ideas and the reporting of experiences and actions are facilitated (Davis 2013).

Online communities or groups could be any of the following: open groups where anyone could join (unless blocked by the manager for some valid reason); closed groups where membership is restricted and one needs to be either invited to join or will have to send request to join; and lastly, the secret group which is a closed group and is not searchable unlike the open and closed groups.

To summarize, aside from all the gratifications traditional mass media could offer, social media afford users so much more. They allow users to freely create their own communities or join existing communities of their choice where their needs and motivations are best gratified. Online communities are smaller in size, mirroring familiar elements of real life communities, and the

members are bound together by personal needs and motivations which include the need to gratify personal relationship and surveillance needs.

Social Media for Risk Management and Emergency Response

Social media allows emergency management to utilize networked individuals to function as "refined node of information" of a bigger and more organized risk management communication program (Grieb in White 2012). Collectively, networked individuals are "a gold mine" or the greatest resource of untapped information for social media and emergency management (White 2012).

Social media users provide information from the ground, the very critical information emergency managers or response teams need for situational awareness which help them establish clear operational picture. Lack of which not only slows down the deployment of effective resources into the disaster area, but delays the overall recovery as well. Information from social media when juxtaposed with reports from trained first responders provides a much improved operating picture (Westbrook in White 2012).

As tools for the delivery of critical information to and from the people, the power of social media lie not only on their speed and cost-effectiveness but also on their power to amplify messages through sharing -- where each receiver, acting as "refined node of information," could also act as message sender to his or her own online community. This communication model is referred to by White (2012) as a one-to-many communication relationship (See Figure 1).

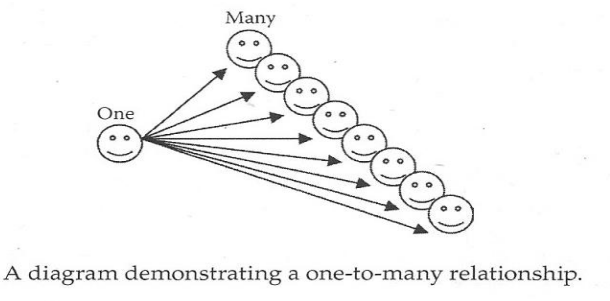

Figure 1. One-to-Many Communication *(White 2012).*

Unlike the traditional mass media, the Internet is a "vehicle for the provision of very specific high-value information to very specific high-consumption audiences (Abrahamson 1998, as cited in Ruggiero 2000), the members of smaller communities bound together by similar motivations and needs.

Because online communities are fragmented, the kind of information they want and need are also highly localized but very specific and high-value information. Posts on Facebook reporting fire within the community would most likely spread more rapidly than a report on fire somewhere they have not even heard of.

When disaster strikes in a community, members get alerted almost instantly. A strong sense of community is awakened among members and they turn to their respective online communities or "virtual gathering spaces" (Palen 2007) for information seeking and sharing. They feel the need to communicate with one another not only to seek help and support but also to share

updates, to share feelings and experiences, to check on the situation of other members of the community, and to offer help when possible like what real-life communities do.

Facebook for Cainta's Flood Risk Management and Emergency Response

The first class municipality of Cainta, Rizal has only seven relatively large barangays namely: San Andres, San Juan, San Roque, Santa Rosa, San Isidro, Santo Domingo and Santo Nino. The town is located directly south of flood-prone Marikina City and is adjacent to the first class city of Pasig in Metro Manila. Hence, the town is referred to as Metro Manila's gateway to the East (See Figure 2).

Due to its proximity to highly urbanized Metro Manila, widespread and uncontrolled urban growth developed in all of its barangays. The once agricultural village of vast rice fields had become a hub of industrial, highly urbanized commercial establishments and residential subdivisions (One Cainta Website 2014).

Figure 2. Political Map of Cainta

A 2010 census of the national government in Rizal reveals that Cainta is the second most populated town with 311,845 people (Philippine Statistics Authority, 2013) and has the highest density of 10,811 persons per square kilometer (Rizal Provincial Development and Physical Framework Plan 2008-2013).

Urbanization, however, is not all to blame for the town-wide flooding in Cainta. Based on the geo-hazard map produced by the Mines and Geosciences Bureau of the Department of Environment and Natural Resources, Cainta, is naturally highly susceptible to flashfloods and

flooding of as high as one meter for several hours during heavy rains due to its landforms of topographic lows which include active river channels, abandoned river channels and areas along river banks. Cainta's topographic form make it an unfortunate catch-basin of flood waters coming from other nearby mountainous towns of Rizal.

As long as the national government is not able to come up with a grand project to spare Cainta from floods, residents will always have to live with the reality that anytime, flashfloods and massive and prolonged flooding could hit them.

In 2009, the town's residents experienced the greatest scare of their lives as they watched their houses submerged in waters brought about by typhoon Ondoy. This same scare happened again in 2011 when Sendong flooded most parts of Metro Manila and Rizal Province.

In August 2013, five barangays were again submerged due to tropical storm Maring, prompting the town to declare a state of calamity. Almost 80 percent of Cainta was submerged underwater forcing 2,717 families to seek shelter in evacuation centers (Gappi, Robles & Zapanta 2013).

What the local government of Cainta had learned about flood risk management over the past five years was once again put to the test only last September 19, 2014. Typhoon Mario caused torrential rains in Rizal that caused town-wide floods. Some 5,300 families were affected and gathered in 23 evacuation centers while one died of drowning (Nieto 2014).

For a more effective flood risk management this time, the local government made heavy use of social media, particularly Facebook, for its flood risk management system. The town executive himself is convinced the social medium is "the best tool" he could use to bring him closer to his people.(Nieto 2014). He maintains four accounts with a total of 13,621 friends and a total of 34,368 followers for his two Facebook pages, as of Nov. 21, 2014.

Since September 17, 2014, when the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) first came out with an advisory, the residents of Cainta had already been informed via the local executive's Facebook account with PAGASA weather alerts as shared by the Local Disaster for Risk Reduction and Management Office of Cainta (LDRRMO Cainta).

On Sept. 19, as early as 3:30 a.m., residents were forewarned of yellow rainfall followed by office and class suspensions at 4:05 a.m. At the speed of light, all 22,926 followers were informed of impending danger and when, at 5:23 a.m., the executive called on all disaster units to convene in 15 minutes, his post was immediately shared 26 times and soon thereafter, residents started to report flooding in their area. Fifty out of 76 comments in the same thread were residents' reports on floods in their respective areas. The same post earned 621 likes. (See Table 1).

Seventy-one more flooding reports were received until 6:20 a.m. From there, posts for help started to pop up on the local executive's screen. The residents needed help to get to safer grounds, requested for food and water, needed to be rescued from a bus caught in deep flood waters, wanted electricity to be immediately cut, and sought for assistance in getting mall owners open their parking spaces to the public. Many posts were made on behalf of neighbors, friends and relatives who are already in distress.

While others just posted images to inform the local executive on the level of the flood in their areas, one resident, also trapped in the third floor of her house, kept posting calls for rescue for and images of her neighbors who were already on the roof of their bungalow houses. She also posted reports that she could hear children screaming for help but could not tell exactly which house the screams were coming from.

Residents also tried to be useful for others and posted 22 messages addressed to fellow users. They shared relevant information such as the water level of Marikina River, responded to inquiries on traffic and class suspensions, offered volunteer service, admonished everyone to refrain from posting non-flood risk related messages so as not to crowd the threads with unimportant posts, and reminded everyone to provide complete details on residents in need of help.

From 5:23 a.m. to 10:30 a.m. the town executive received a total of 202 reports on flooding and 98 calls for help. Inquiries were also received: 4 on class and office suspension and 11 on road/traffic inquiry to which the mayor replied 28 times. On three occasions, the town mayor also used the threads to get in touch with his units on the ground (See Table 1.)

Table 1. Comments on all Posts by Themes.

Posts	Time	Source	Class/Office Suspension Inquiry	Citizen Road Inquiry	Citizen Flood Reports	Mayor's Replies	Citizen Alerts for Team	Helpful Citizen Posts	Emergency Calls
1	8:54am	LDRRMO Cainta (Sept. 17)							
2	3:30am	LDRRMO Cainta							
3	3:53am	Cora Alvarez (User)	1			1			
4	4:05am	(Lalawigan ng Rizal/User Shared							
5	4:33am	LDRRMO Cainta							
6	5:07am	Emmanuel Tandoc (User)				1			
7	5:23am	Mayor Kit Nieto	3		50	2		7	
8	6:09am	Mayor Kit Nieto		3	45	1			
9	6:10am	LDRRMO Cainta							
10	6:10am	Mayor Kit Nieto		1	14				
11	6:11am	LDRRMO Cainta							
12	6:20am	Mayor Kit Nieto		3	12	2			1
13	6:23am	Ria Lomugdang (User)			1	2	1		
14	6:25am	Mayor Kit Nieto			32	1			30
15	6:46am	Mayor Kit Nieto			17	1		3	5

Posts	Time	Source	Class/Office Suspension Inquiry	Citizen Road Inquiry	Citizen Flood Reports	Mayor's Replies	Citizen Alerts for Team	Helpful Citizen Posts	Emergency Calls
16	7:29am	Jeffrey Mole (User)				1			1
17	7:37am	LDRRMO Cainta							
18	7:39am	Mayor Kit Nieto		1	12			1	17
19	8:14AM	Aladdin Doploso (User)				1			1
20	8:34am	Raena Tides (User)				1	2		1
21	8:43am	Fraine Sta. Ana (User)							1
22	8:44am	Reynald Javier (User)				1			1
23	8:45am	Lilian Javier (User)				1			1
24	9:29am	LDRRMO Cainta							
25	9:29am	Mayor Kit Nieto			11	5		11	21
26	9:3am	Gjell Mallari (User)		1		1			1
27	10:07am	Mayor Kit Nieto		2	6	5			11
28	10:24am	Mayor Kit Nieto			2	1			6
	TOTAL	368	**4**	**11**	**202**	**28**	**3**	**22**	**98**
	%	**100.00%**	**1.09%**	**2.99%**	**54.89%**	**7.61%**	**0.82%**	**5.98%**	**26.63%**

In an attempt to make sorting or messages faster, the local executive started a thread at 6:25 a.m. encouraging everyone to use the same thread for emergency requests only. However, some (17 out of 80 comments on the same thread) still could not help but to post non-emergency-related messages, despite admonishment from other commenters.

Even though the account belongs to the town executive, posts were also made in his behalf by the LDRRMO Cainta office. Out of 28 threads analyzed, seven were LDRRMO posts that were mostly focused on weather updates from PAGASA (See Table 2).

Of all the 28 threads analyzed, the posts of the local executive always had the highest number of comments, 571; shares, 640; and likes, 4,893 for all his 10 posts. (See Table 3 and Table 4.)

Each of the 28 posts was categorized according to the following themes: weather advisory, office and class suspension, road advisory, flood advisory, alerts for disaster workers and disaster response update. Fifteen (40.54%) were disaster response update, followed by six(16.22%) weather advisory and five (13.51%) each for road advisory and alerts for disaster workers. (See Table 5)

Table 2. Friends' Posts by Themes.

Posts	Time	Source	Weather Advisory	Class/Office Suspension Inquiry	Road Advisory	Flood Advisory
1	8:54am	LDRRMO Cainta (Sept. 17)	1			
2	3:30am	LDRRMO Cainta	1			
3	3:53am	Cora Alvarez (User)				
4	4:05am	Lalawigan ng Rizal (User)		1		
5	4:33am	LDRRMO Cainta		1		
6	5:07am	Emmanuel Tandoc (User)				
9	6:10am	LDRRMO Cainta	1			
11	6:11am	LDRRMO Cainta	1			
13	6:23am	Ria Lomugdang (User)				
16	7:29am	Jeffrey Mole (User)				
17	7:37am	LDRRMO Cainta	1			
19	8:14AM	Aladdin Doploso (User)				
20	8:34am	Raena Tides (User)				
21	8:43am	Fraine Sta. Ana (User)				
22	8:44am	Reynald Javier (User)				
23	8:45am	Lilian Javier (User)				
24	9:29am	LDRRMO Cainta	1			
26	9:34am	Gjell Mallari (User)				
		TOTALS	6	2	0	0

Table 3. Mayor Kit Nieto's Posts by Themes, Number of Comments, Shares and Likes.

Post	Time	Road Advisory	Flood Advisory	Alert for Disaster Workers	Disaster Response Update	Comments	Shares	Likes
7	5:23M	1		1		76	26	621
8	6:09am	1				72	166	542
10	6:10am			2		18	27	242
12	6:20am	1	3			30	56	264
14	6:25am			2	1	80	32	461
15	6:46am	1	1		2	48	46	263
18	7:39am				7	43	39	284
25	9:29am	1			3	125	216	1690
27	10:07am				1	39	29	276
28	10:24am				1	40	3	250
Total	29	5	4	5	15	571	640	4,893
%	**100.00%**	**17.24%**	**13.79%**	**17.24%**	**51.72%**			

The disaster response updates posted by the local executive comprised of informing the people that a truck or a boat is on its way, that cooked food are being delivered, that parking spaces are available in malls, advice for residents to stay home unless one lives in danger zones, updates on roads that are not passable, locations of evacuation centers including the number of families that are to be attended to, and updates on emergency response dispatches.

Table 4. Comments, Shares and Likes on Each Post.

Post	Time	Source	Comments	Shares	Likes
1	8:54am	LDRRMO Cainta (Sept. 17)			1
2	3:30am	LDRRMO Cainta		1	3
3	3:53am	Cora Alvarez (User)	2		
4	4:05am	(Lalawigan ng Rizal/User Shared	2	11	3
5	4:33am	LDRRMO Cainta			
6	5:07am	Emmanuel Tandoc (User)	1	2	1
7	5:23M	Mayor Kit Nieto	76	26	621
8	6:09am	Mayor Kit Nieto	72	166	542
9	6:10am	LDRRMO Cainta		1	
10	6:10am	Mayor Kit Nieto	18	27	242
11	6:11am	LDRRMO Cainta		1	
12	6:20am	Mayor Kit Nieto	30	56	264
13	6:23am	Ria Lomugdang (User)	3		
14	6:25am	Mayor Kit Nieto	80	32	461
15	6:46am	Mayor Kit Nieto	48	46	263
16	7:29am	Jeffrey Mole (User)	3		
17	7:37am	LDRRMO Cainta			
18	7:39am	Mayor Kit Nieto	43	39	284
19	8:14AM	Aladdin Doploso (User)	2		1
20	8:34am	Raena Tides (User)	3	1	1
21	8:43am	Fraine Sta. Ana (User)	1		
22	8:44am	Reynald Javier (User)	2	1	2
23	8:45am	Lilian Javier (User)	1		
24	9:29am	LDRRMO Cainta			
25	9:29am	Mayor Kit Nieto	125	216	1690
26	9:34am	Gjell Mallari (User)	2		
27	10:07am	Mayor Kit Nieto	39	29	276
28	10:24am	Mayor Kit Nieto	40	3	250
		TOTALS	**593**	**658**	**4,905**

His post at 9:29 a.m., where he announced the availability of parking spaces at Robinson's Mall for vehicles stranded in the area and that talks with management of Sta. Lucia Mall to do the same was ongoing, earned 216 shares and 1,690 likes. The same post also earned the highest number of comments, 125 in all. (See Table 5).

However, majority or 77 are only casual thoughts and non-categorized images -- non-flood risk management related comments -- and are only expressions of gratitude and praises for the local executive (See Table 6). Notably, some comments from concerned residents were also to inform the local executive that GMA's morning variety talk show "*Unang Hirit*" wanted to interview him as some Cainta residents in distress had called the television network for help.

Table 5. All Posts by Themes.

Time	Source	Weather Advisory	Class/Office Suspension	Road Advisory	Flood Advisory	Alerts for Disaster Worker	Disaster Response Update
8:54am	LDRRMO Cainta (Sept. 17)	1					
3:30am	LDRRMO Cainta	1					
3:53am	Cora Alvarez (User)						
4:05am	Lalawigan ng Rizal (User)		1				
4:33am	LDRRMO Cainta		1				
5:07am	Emmanuel Tandoc (User)						
5:23am	Mayor Kit Nieto			1		1	
6:09am	Mayor Kit Nieto			1			
6:10am	LDRRMO Cainta	1					
6:10am	Mayor Kit Nieto					2	
6:11am	LDRRMO Cainta	1					
6:20am	Mayor Kit Nieto			1	3		
6:23am	Ria Lomugdang (User)						
6:25am	Mayor Kit Nieto					2	1
6:46am	Mayor Kit Nieto			1	1		2
7:29am	Jeffrey Mole (User)						
7:37am	LDRRMO Cainta	1					
7:39am	Mayor Kit Nieto						7
8:14am	Aladdin Doploso (User)						
8:34am	Raena Tides (User)						
8:43am	Fraine Sta. Ana (User)						
8:44am	Reynald Javier (User)						
8:45am	Lilian Javier (User)						
9:29am	LDRRMO Cainta	1					
9:29am	Mayor Kit Nieto			1			3
9:30am	Gjell Mallari (User)						
10:07am	Mayor Kit Nieto						1
10:24am	Mayor Kit Nieto						1
TOTAL	37	6	2	5	4	5	15
%	**100.00%**	**16.22%**	**5.41%**	**13.51%**	**10.81%**	**13.51%**	**40.54%**

The fact that residents called for help from a television network could be an indication of either desperation due to slow response or that indeed, not many Cainta residents are aware of the

hotlines they need to call in times of emergency. In fact, one commenter specifically requested the local executive to post the town's emergency hotline number.

The incident could also indicate that more Cainta users still rely on traditional mass media in times of emergency. Only 23,000 of the 311, 845 (7.4%) residents of Cainta are connected to the social media account of the mayor.

In his post-disaster reflection post, the mayor expressed his dismay on the incident and said: "While at this (attending to calls for help, prioritizing and dispatching rescue teams) I was chastised by an anchor of a TV station for not monitoring their program. I thought it was the other way around - that I will work and they will report."

As shown in Table 6, comments were generally categorized in two: flood-risk management related posts or relevant messages and casual thoughts or non-relevant posts. Of the total 593 comments, 368 (62.06%) were flood risk management-relevant comments and 226 (38.11%) are not. This situation made it harder for emergency dispatchers to validate which post deserves their attention and which ones do not.

Because Facebook is a social media, its very nature is also its limitation when it comes to using it for risk management. Even after the local executive had specifically indicated what comments should be posted in the thread he opened for emergency calls, residents still posted non-emergency comments or posts, categorized in this study as casual thoughts, slowing down emergency response.

The threads are also clogged with cries for help that are not specific enough -- i.e. what assistance is needed, where they are, how many of them and who they are -- which would have helped emergency response teams come up with immediate and more appropriate response.

But overall, social media played a significant role in the town's flood risk management efforts. Residents were forewarned of heavy rainfall at as early as 3:30 a.m. and class suspensions at 4:05 a.m. avoiding a situation where children, the more vulnerable ones, would be trapped in the streets stranded in floods. Social media also provided the town's disaster risk management team with numerous first-hand information from the ground, as residents posted flood reports, both in text and images. Motorists also succeeded in their request for malls to open their parking spaces.

Many calls for help posted on Facebook saved lives (as could be inferred from the many updates on emergency dispatches to affected areas), the people were constantly updated on what their government was doing, and most important of all, the town executive's presence was felt by his people -- at least those who are connected to his online community -- in the entire duration of the disaster.

(*Only the first 24% or 28 of the total 118 posts were included in the content analysis for this paper. All 118 posts were coded and analyzed in the author's master's thesis titled: Social Media for Flood Risk Management: A Study on the Use of Facebook by the First Class Municipality of Cainta, Rizal*.)

Table 6: Distribution of Risk and Non-Risk Related Comments.

Post	Time	Source	Risk-Related	Non-Risk	Total
1	8:54:00am	LDRRMO Cainta (Sept. 17)			0
2	3:30am	LDRRMO Cainta			0
3	3:53am	Cora Alvarez (User)	2		2
4	4:05am	(Lalawigan ng Rizal/User Shared			0
5	4:33am	LDRRMO Cainta			0
6	5:07am	Emmanuel Tandoc (User)	1		1
7	5:23M	Mayor Kit Nieto	62	14	76
8	6:09am	Mayor Kit Nieto	49	23	72
9	6:10am	LDRRMO Cainta			0
10	6:10am	Mayor Kit Nieto	15	3	18
11	6:11am	LDRRMO Cainta			0
12	6:20am	Mayor Kit Nieto	18	12	30
13	6:23am	Ria Lomugdang (User)	4		4
14	6:25am	Mayor Kit Nieto	63	17	80
15	6:46am	Mayor Kit Nieto	26	22	48
16	7:29am	Jeffrey Mole (User)	2		2
17	7:37am	LDRRMO Cainta			0
18	7:39am	Mayor Kit Nieto	31	12	43
19	8:14AM	Aladdin Doploso (User)	2		2
20	8:34am	Raena Tides (User)	4		4
21	8:43am	Fraine Sta. Ana (User)	1		1
22	8:44am	Reynald Javier (User)	2		2
23	8:45am	Lilian Javier (User)	2		2
24	9:29am	LDRRMO Cainta	0		0
25	9:29am	Mayor Kit Nieto	48	77	125
26	9:3am	Gjell Mallari (User)	3		2
27	10:07am	Mayor Kit Nieto	24	15	39
28	10:24am	Mayor Kit Nieto	9	31	40
		TOTALS	368	226	593
		PERCENTAGES	**62.06%**	**38.11%**	**100%**

CONCLUSION

Social media affords users a high degree of social presence, making them the best tool for creating and nurturing small online LGU communities with a strong support for interaction, social integration and the strengthening of "*bayahihan*" (heroism) spirit.

Social presence refers to an individuals' awareness of the presence of other individuals with whom he could interact (Short et al, 1976).

National government agencies such as the Metropolitan Manila Development Authority (MMDA), PAGASA and National Disaster Risk Reduction & Management Council (NDRRMC) have attempted the above but failed due largely to the volume of posts that became too cumbersome for them to process and respond to.

Likewise, traditional mass media, including their online counterparts, would not also be the best alternatives for they are at their best only when it comes to providing support for information dissemination and creation of public opinion and not in community organizing and mobilization.

When it comes to community risk management, the almost perfect fit would be LGUs and social media. LGU's efforts for community risk management would greatly be supported and improved with the use of social media. On the other hand, the potential of social media for the good of mankind would be at its best when used for community risk management.

What sets social media apart from all other forms of technology-based communication medium is that they are collaborative and participatory. Their salient feature is a multi-way model of communication that allows for interactivity among all communication participants while enabling them to single-handedly or collaboratively create and share content, blurring the line that separates the communication sender from the receiver. Content creation and distribution have been democratized and are no longer a role confined to well-oiled institutions but to ordinary individuals as well.

Aside from all the gratifications traditional mass media could offer, social media afford users so much more. They allow users to freely create their own communities or join existing communities of their choice where their needs and motivations are best gratified. Online communities are smaller in size, mirroring familiar elements of real life communities, and the members are bound together by personal needs and motivations which include the need to gratify personal relationship and surveillance needs.

When disaster strikes in a community, members get alerted almost instantly. A strong sense of community is awakened among members and they turn to their respective online communities or "virtual gathering spaces" (Palen 2007) for information seeking and sharing. They feel the need to communicate with one another not only to seek help and support but also to share updates, to share feelings and experiences, to check on the situation of other members of the community, and to offer help when possible like what real-life communities do.

Social media played a significant role in Cainta's flood risk management efforts. Residents were forewarned of impending risks, the community responded by providing valuable information from the ground while the government did its job of constantly providing the community updates on what it had done. All throughout the duration of the town-wide flood, the town executive's social presence was felt by his people, at least those who are connected to his online community.

IMPLICATIONS AND RECOMMENDATIONS

The Philippines' geographic location combined with poor infrastructure and widespread incidence of poverty make it highly vulnerable to risks. Filipinos are exposed to risks related to volcanic eruptions, earthquakes, health hazards, forest fires, typhoons, floods and more. While these do not happen every day, the reality is that they do happen. And when they do, governments, particularly LGUs, should be prepared.

Societal crisis situations such as disasters are serious development problems. They could have adverse effect on the development programs of governments as more public funds which could very well be spent on development-oriented initiatives such as on education, peace and order, social welfare and infrastructure projects get diverted to focus on rescue, retrievals and rehabilitation.

Since the use of social media as a delivery and crowdsourcing tool for critical information is a relatively new practice, very little is known about its real functions or critical role, the opportunities it provides, as well as its limitations in crisis situations. Likewise, not many has documented the various roles and expectations of both local government communicators as well as the citizenry in times of emergency.

This paper is an attempt to help LGUs improve community risk management and emergency response using social media. It provides managers basic knowledge on the nature of social media, their affordances, and lessons drawn from actual application or implementation by a local government unit.

The experience of Cainta necessitates the need to institutionalize the use of social media for community risk management and emergency response. LGUs eyeing to tap social media should launch an information, education and communication (IEC) campaign to make residents aware of the account or page; to attract them to join or link up to the account so as to increase community participation; encourage increased socialization online to develop stronger bonds; to teach residents online etiquette; and to guide them on how to make useful reports and on how to make valid calls for help.

While membership to the online community is still low, LGUs also need to monitor traditional mass media as many residents would still most likely turn to them for help.

This paper only attempted to provide managers basic knowledge on the nature of social media, their affordances, and basic lessons from their actual application or implementation. It did not attempt to find out as to how the use of social media by the government of Cainta, Rizal impacted its flood risk preparedness.

Other areas that need to be explored for further studies include the following: the resources and activities that had been utilized and the outputs and outcomes of these inputs; the ways, intended or unintended, the use of social media impacted critical information management by the local government: tp what extent the use of social media by the local government served the residents' need for critical information and the government's desire to gather critical information from the ground; and what is the extent to which the use of social media in flood risk preparedness had been institutionalized.

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