

Information, Cities and Disaster Mitigation

A Look at Social Media Use by Cities in Metro Manila, Philippines

Given the recent disasters that struck the Philippines for the past few years such as Typhoon Yolanda (Haiyan) in 2013 and Glenda (Rammasun) in mid-2014, the clamor for awareness and alertness on local conditions and updates of Filipino citizens has been more pronounced. In particular, this trend was evident in social media, which is now seen as new conduit for more effective information dissemination. National agencies and local government units (LGUs) who are greatly affected and concerned with disasters are now using the social media platforms to update citizens on potential disasters. Metro Manila, being the center of economic activity and home to a large percentage of the Philippine population provides quite a number of circumstances by which social media aids in providing information not only in weather-related, but also man-made disasters. Thus, this study looks into how many LGUs, particularly cities, are utilizing social media, specifically Facebook and Twitter for disaster risk mitigation and management. It seeks to explore how local governance works with technology through social media and look at the challenges it imposes on disseminating information to help out in disaster risk mitigation.

KEYWORDS: governance, disaster, information, policy, media

Composed of sixteen adjacent cities and a municipality, the National Capital Region of the Philippines, also known as Metro Manila is home to around thirteen million Filipinos, and the center of state and economic activity of the country. Geographically situated between two large bodies of water – the Laguna de Bay at the southeast and the Manila Bay westwards, it presents a vulnerability and susceptibility to disasters caused by heavy downpour of rain, particularly flooding.

Given the urban set-up of the area, a number of man-made problems are also being encountered such as traffic, and at times, clogging of drainage as a result of improper garbage disposal. These partially contributes to the fact that even if only a portion of Metro Manila is within the path of natural disasters such as typhoons, damages can be done and casualties happen. In 2009, Tropical Storm Ondoy (Ketsana) made its way through the Philippines slightly north of Metro Manila. However, the heavy rainfall within the periphery of the storm caused flooding and hundreds of people died within the capital. Typhoon Yolanda (Haiyan) on the other hand, greatly affected the Visayas. Once again, Metro Manila felt the ‘indirect’ effect through heavy rains from the weakened storm when it neared the area.

The two events mentioned seemed to provide lessons and wake-up calls to act and help mitigate disaster. In particular, during Typhoon Haiyan’s onslaught, people have kept themselves posted on the current situation through social media – garnering lots of activities and online interactions, as well as dialogues from both the citizens and the national government agencies. Given the ‘highly-urbanized’ status of the 16 cities, the infrastructure of both public and private spheres to participate through social media are adequate for interaction.

Recently, the National Disaster Risk Reduction Management Council (NDRRMC) has recognized what social media can do to help mitigate disasters. On December 2014, slightly more than a year after Haiyan broke through Central Philippines, a massive storm with potentially the same magnitude (Hagupit) also crossed the same path, slightly angling north towards parts of Southern Luzon. With the use of Twitter, Facebook, hotline numbers and emails, faster response was achieved by the Ruby Response cluster (Rappler.com, 2014).

Since 2010, through the Republic Act 10121 or the “Philippine Disaster Risk Reduction and Management (DRRM) Act of 2010,” the Philippine government recognized the need to build a framework for DRRM and encouraging the participation of the local governments and communities in helping out minimize casualties and losses upon recognition of their geographical vulnerabilities and needs to face disasters. As the act puts it, disaster mitigation is defined as *‘the lessening or limitation of the adverse impacts of hazards and related disasters... including improved environmental policies and public awareness.’*

Within this context, information dissemination of disaster-related information was mainstreamed in social media, with various agencies linking with each other to keep track of the urgent news about upcoming and existing hazards. As the North Carolina Department of Cultural Resources (2010) puts it, *‘social media is an effective and efficient way for local governments to communicate.’* This study therefore explores the current usage of social media in spreading information related to DRM and how these play in local governance in the case of Metro Manila.

POINTS OF THE STUDY AND POLICY RELEVANCE

This study is mainly an overview of the usage of social media within Metro Manila, providing an insight on what areas platforms such as Twitter and Facebook could help in information dissemination. With the current discussion of disasters and vulnerability of cities in the National Capital Region, it seeks to answer the question: **how does local governance work with technology in terms of information dissemination in social media?**

To be able to answer this overall question, the study will discuss answers to the following queries:

- In what ways or instances do cities use social media, particularly Facebook and Twitter for disaster risk management purposes?
- What kinds of information do they generally post and who are the sources of these information they share with their constituents?
- What are the policies and regulatory mechanisms employed by selected LGUs in making sure that they are sharing relevant and correct information?

Given the vulnerability of Metro Manila to disasters, the increasing number of users, as well as widening networks provided by social media has made it a bit more complicated in terms of information management. As such, the approach and management of local governments, especially cities, in dealing with social media will be crucial in delivering the right information before, during and after disasters.

The need to set up the needed policy in terms of ensuring that the information are adequately delivered, and that the people are also able to reach out to the authorities through social media must be ensured. Furthermore, the classification of information being dealt with in this case – disaster – is of utmost urgency. Unlike other information concerning awards, public announcements of winners and festivities, announcements on what need to be done to prepare for upcoming hazards need to be immediately received, understood and processed by the people who can potentially be affected.

REVIEW OF RELATED LITERATURE

It can be considered that among the most significant catalysts of information dissemination in this age is the birth of social media. As defined by Kaplan and Haenlein (2010), social media is a group of internet-based applications and platforms, which allows for the creation of user-generated content and used for interaction and exchange.

In the Philippines, platforms such as Facebook and Twitter have gained prominence as tools for information blasts. According to eBiz MBA Rank (2014), these two social media networks are the most popular worldwide, with Facebook having an estimated 900M unique users and Twitter with 310M. Fraustino et al (2012) further gives detail that Facebook is a social media network which provides a venue for users to interact and share information, while on the other hand, Twitter is more of a platform for its users to keep up with updates, news and activities, in real-time.

Gaining ground on participatory governance

Apart from personal posts and interaction with fellow users, these networks have also been recently considered for more functional purposes. As private companies and other marketing institutions have used Facebook, and even Twitter to achieve their organizations' objectives, government agencies have also ventured in reaching the citizens and opened their doors to feedback through these channels, aside from the usual information they provide in websites.

However, in order to facilitate participation and encourage citizens to rely on information provided by government-managed social media accounts, Cabotaje and Alampay (2013) stresses the need for 'intermediaries' or 'go-betweens' who can filter information. In this sense, filtered information are considered more valid and reliable, and as such, can earn the trust of citizens and their confidence to participate in online discussions.

The interactions of government-owned Facebook and Twitter accounts and citizens can be seen in various sectors of governance. Recently, as shared by Cabotaje and Alampay (2013), these have been used widely in tourism campaigns and disaster related activities in the Philippines. The use of social media, especially for the latter, has been recognized not only locally, but globally, as one of the critical ingredients for having well-informed citizens in the midst of disasters.

Social Media and Disasters

Fraustino et al (2012) claims that public activity in social media heightens during disasters. Disaster communication, as the authors call it, pertains to disaster-related information disseminated by governments, emergency organizations, as well as those communicated by journalists. Antoniou and Ciaramicoli (2013) affirms the idea of communicating using social media in times of crisis. Disasters and crisis, in this sense, does not only conform to the dangers posed by nature, but also of man-made disasters and accidents. However, most of the cited cases wherein social media is at play presents natural disasters.

Countries such as the US and Japan have documented and affirmed the usefulness of social media for disaster management. Antoniou and Ciaramicoli (2013) and Fraustino et al (2012) cited disasters of the

current decade such as the Haiti earthquake, East Japan earthquake and tsunami, Hurricane Sandy in the US, and flooding in the City of Calgary in Canada. In these instances, social media was instrumental in various phases of the disaster management cycle. First, pre-disaster warnings were disseminated to the public. Secondly, during the disaster, social media works as a monitoring and updating mechanism. Lastly, in the aftermath, disaster management organizations were able to organize relief efforts to reach the public. Gilbert-Knight (2013) for instance, has noted that during Hurricane Sandy, around 20 million tweets were made only within a week, which is composed of these efforts.

Likewise, in the Philippines has its own set of examples. Gilbert-Knight (2013) referred to the case of Typhoon Pablo in 2012, wherein the United Nations Office for Coordination of Humanitarian Affairs (OCHA) had a taskforce who analyzed 20,000 tweets in 10 hours, which served as basis for crisis mapping. Alampay and Cabotaje (2013) cited the activities during Typhoon Sendong (Washi) which damaged large parts of Mindanao. They mentioned the role of Facebook as a communicating tool, as well as for matching of resources for disaster response.

Last year, the disaster brought by Typhoon Yolanda (Haiyan) got a worldwide solicitation for aid, and one of the tools which facilitated this is social media. Aside from natural disasters, accidents are also covered such as that of the MRT incident last 13 August 2014, which also produced social media hype.

Why social media in disaster?

As Antoniou and Ciaramicoli (2013) and Fraustino et al (2012) points out, “disaster management organizations and the public has increasingly resorted to social networks.” The Federal Emergency Management Agency (2012) also mentioned the social media empowers them to communicate in timely, cost-effective and interactive ways, things highly needed for emergency response. Smith (2013) added that social media data is “a real-time pipeline of information on victims’ needs.”

These claims were also affirmed by Fraustino et al (2012) in their tally of reasons for social media use. Among these are convenience, basis on social norms, ability to determine disaster magnitude, timely information, ability to check in family and friends, self-mobilization, and maintenance of a sense of community.

In the Philippines, it is for these reasons that an increasing relevance of social media in the disaster management cycle has been observed, especially in the preparatory phase. In fact, some LGUs have already started pushing for a more ‘institutional use’ of social media for disaster preparedness, particularly in the Western Visayas (Region VI). The Philippine Information Agency (PIA), in partnership with Smart Telecommunications, recently conducted trainings and seminars for disaster preparedness in the said region (Smart, 2014).

The Philippine DRRM Act of 2010 has also indirectly initiated this mainstreaming of social media in local governance. This act mandated the establishment of Local Disaster Risk Reduction and Management Offices (LDRRMO) to facilitate DRRM activities and strategies at the local level, with some offices creating social media accounts (CDRRMO in the case of Metro Manila) to link with the citizens and relevant national offices to facilitate information sharing in times of disaster.

Issues and Challenges on Social Media Use

However, it should not be discredited that social media use also has its own risks. In July 2014, after the onslaught of Typhoon Glenda (Rammason) hundreds of families went out of their homes in Candelaria, Quezon and San Juan, Batangas to flee from a tsunami, as an unknown source advised. However, it turned out that the said alert was unreliable and invalid and even left a person dead during the evacuation (ANC, 2014). Such an incident, which caused disarray in communities, is not rare – it also occurred in different parts of the Philippines and in other countries as well.

The need to identify policies which will regulate and filter the flow of information being disseminated through social media is one of the things to consider in making a clear DRM strategy. As pointed out by Antoniou and Ciaramicoli (2013), anonymity in using these platforms causes doubts on the reliability of some data which the citizens receive. In addition, they also stressed to be mindful of the technological and infrastructural gap, as this affects accessibility of social media to both the government and the people.

While various authors on social media use recommend including them in planning and disaster management strategies, how the public perceives and use the information they receive must be considered as well in effectively promoting reliable information.

METHODOLOGY AND DATA SOURCES

The data gathered for the study includes quantitative and qualitative aspects of Twitter and Facebook accounts of the sixteen cities in Metro Manila. The study employed qualitative observation methods such as text-mining, network analysis and content analysis on the tweets and re-tweets, as well as Facebook posts, re-posts and share within a period of eight (8) months, from August 2014 to March 2015. The research also recorded the number of tweets and followers, as well as the number of Facebook 'likes' within the first ten days of every month. This is to be able to look at trends and patterns on the number of people following these accounts and the level of activity of posts. The qualitative data also looks at the linkages of the LGUs in terms of the information they share, particularly on the re-tweets and re-posts. Thus, the primary data to be looked into is the generated baseline data on tweets, followers, and posts and the Twitter and Facebook pages of the sixteen cities.

To standardize the type of account to be followed and monitored, study implementors made it a point to search for the LGU 'official' account, which is linked to the city's official website, or the City Information Office account. In addition to this, it was checked whether the city has a separate account made by the City Disaster Risk Reduction Management Office. If none of the above-mentioned accounts are available, the account of the Local Chief Executive (LCE) or the City Mayor may be considered.

Limitations

It should be noted that some quantitative data are not included in this study. This includes the frequency of posts on Facebook and the frequency of 'hashtags' on Twitter, thus, increase in activity cannot be measured extensively using quantitative methods but by observation of account content. Secondly, as the study is mainly focused on the LGU utilization of social media, very few details will be mentioned in terms of interaction with the constituents in the through comments and replies. Lastly,

the study does not cover all city social media accounts, as some cities may have an account for each of its departments/offices. There are generally three classifications of accounts – the main LGU/ Information Office, CDRMO, and the incumbent city mayor’s account.

FINDINGS

To clearly present the data gathered, this section will be divided into three parts: first is the presentation of the baseline data, secondly, a discussion of the observations on the management of accounts, and third is on providing information on the content. Emerging trends that were observed will also be cited, and some citations will also be made in terms of policies and regulatory mechanisms.

Within the eight-month monitoring period, the study was able to cover a number of events that could spell out social media activity for both natural and man-made disasters:

Table 1. Events affecting Metro Manila, Aug. 2014-Mar. 2015

Month/Year	Events/ Potentially Disastrous Events
August 2014	MRT Accident
September 2014	Typhoons Luis (Kalmaegi) and Mario (Fung-Wong)
October 2014	Typhoon Ompong
November 2014	Undas (All Saints and Souls Day)
December 2014	Typhoon Ruby (Hagupit) New Year’s Eve
January 2015	Feast of the Black Nazarene (Manila) Papal Visit Typhoon Amang
February 2015	
March 2015	Fire Prevention Month Typhoon Betty (Bavi)

A. Baseline Data

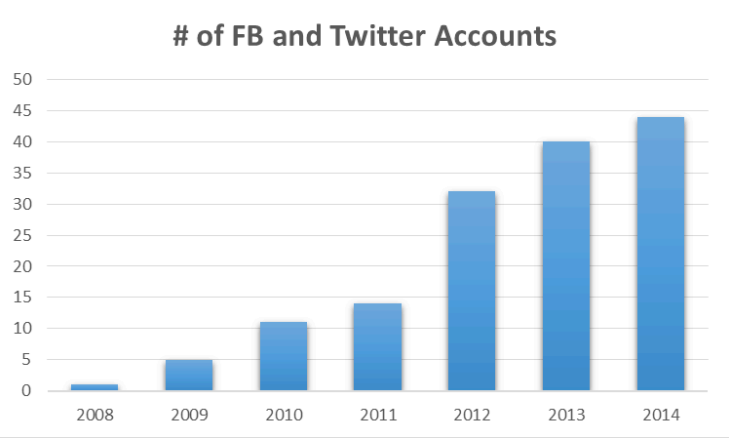
The process of looking for the relevant FB and Twitter accounts based on the guidelines mentioned in the study methodology proved quite challenging, primarily because of the presence of duplicating accounts and identifying government-run pages as against those ran by random community groups or local businesses. Sticking with the established methodology, the following presents the composition of the baseline data:

Out of the 16 cities monitored within Metro Manila, all have Facebook accounts, while only fifteen (15) have Twitter accounts. However, this does not mean that there is one account only for one city – there are multiple social media accounts utilized by each. For Twitter, a total of 21 accounts were monitored while in Facebook, 23 accounts were checked for the purposes of the study. All are active¹ users, except for one Twitter account, which ceased to tweet for more than a year already.

¹ Activity or non-activity of a social media account was determined by checking whether the account posts or tweets on or after April 1, 2014 – exactly a year after the last monitoring was made.

Metro Manila cities started to use social media as early as 2008 for Facebook and 2009 for Twitter. Figure 1 below shows the increasing number of accounts.

Figure 1. No. of FB and Twitter Accounts created, 2008-2014

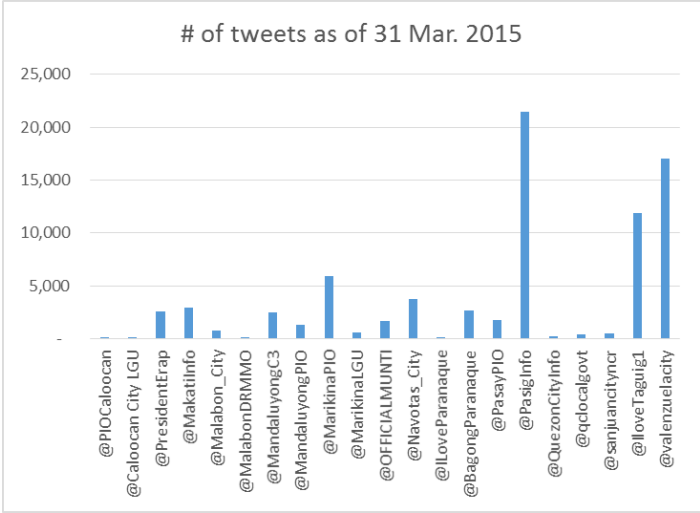


As shown, most accounts were created in 2012. However, the age or how long the account existed does not necessarily contribute to the number of people reached through social media, nor the level of activity (number of tweets). Table 2 below shows the top 5 oldest LGU accounts for Metro Manila for Twitter with the number of Tweets and followers.

Table 2. Oldest Cities' Twitter Account vis-a-vis no. of Tweets and Followers

	Account	Time Started	# of Tweets	# of Followers
1	@PresidentErap (Manila)	May-09	2,616	118,408
2	@valenzuelacity	May-09	17,073	29,920
3	@Navotas_City	Jun-10	3,721	8,164
4	@MarikinaPIO	Aug-10	5,896	62,393
5	@Malabon_City	Nov-10	735	5,530
6	@IloveTaguig1	Nov-11	11,890	29,326

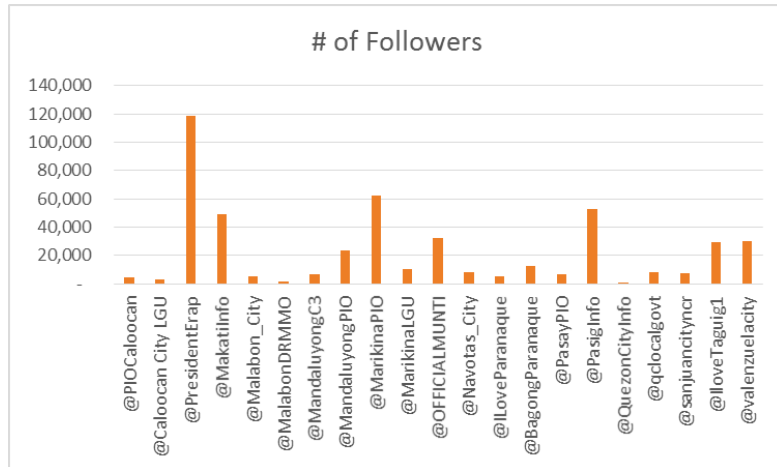
Figure 2a. Number of Tweets of Metro Manila LGUs



In terms of activity, Pasig City can be considered as the most active user of Twitter, garnering the highest number of tweets (Figure 2a), with more than 21,000 tweets since August 2012.

With the exception of Former President Estrada’s Twitter account, Marikina, on the other hand, has the highest reach for Twitter (Figure 2b), while Valenzuela City has the highest number of ‘likes’, again with exception of the former.

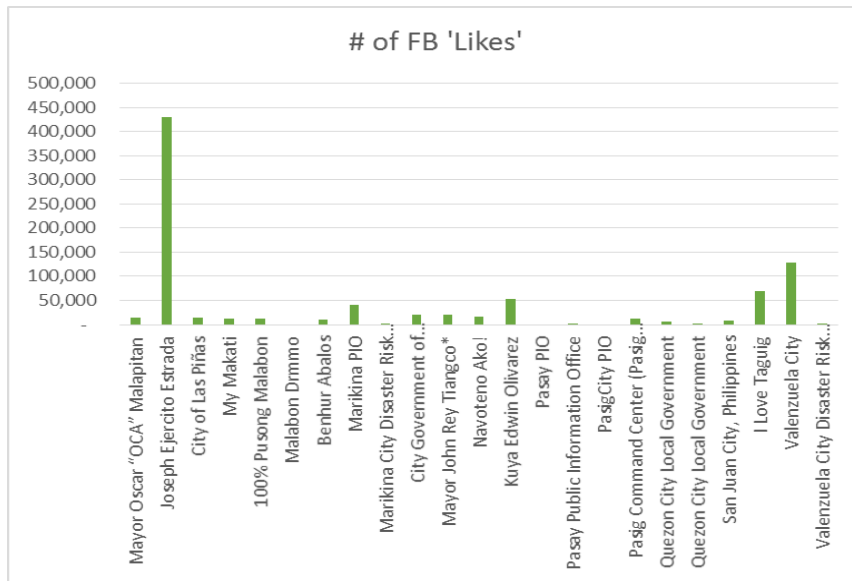
Figure 2b. Number of Followers of Metro Manila LGU Twitter accounts



Box 1. The Case of the City of Manila

Surprisingly, the Philippine Capital has no ‘official’ LGU account named after the city per se. Using the protocols followed by this study for determining accounts to follow, if no other account is found aside from the LGU, Information Office or Disaster Risk Management Office account, the Local Chief Executive’s (City Mayor) account should be looked into. The current City Mayor of Manila is quite the exception because of his status as the former President of the Philippines (Joseph Estrada, @PresidentErap). Based on further observation and linkages of the account, most of the updates were actually posted by the Vice Mayor, thus excluding the account from being monitored for the study.

Figure 2c. Number of ‘Likes’ on Metro Manila LGU Facebook accounts



B. Account Management

It was also observed that the Metro Manila cities have differences in terms of who manages their Facebook and Twitter accounts. As mentioned in the methodology of the study, the targeted accounts to be monitored are that of the ‘official’ city accounts determined by its linkage to the city’s official website, or currently being ran by the City Information Offices (CIO), or the City Disaster Risk Reduction

Management Offices' (CDRRMO) accounts, with the LCE's account as the last resort, or rather a non-government community.

Figure 3a. Distribution of Type of TWITTER Account Managers of Metro Manila Cities (for 21 accounts)

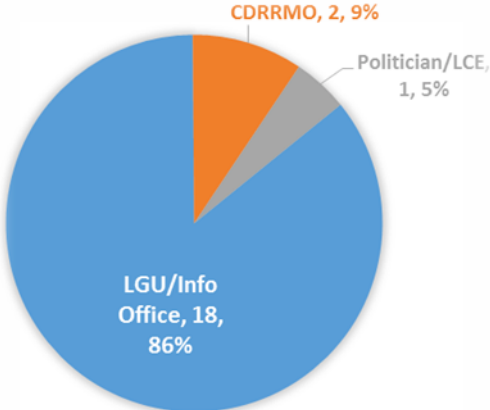
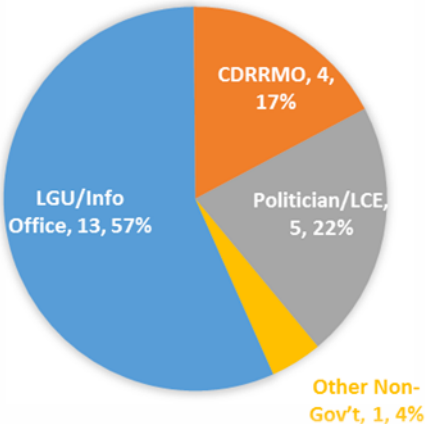


Figure 3b. Distribution of Type of FACEBOOK Account Managers of Metro Manila Cities (for 23 accounts)



Looking at Figures 3a and 3b, most of the accounts are that of the LGU and CIO offices, as targeted, followed by CDRRMOs. It can be mentioned that there are more FB accounts, as FB presents a vast array of possibilities for an account, unlike Twitter which handles unique account names and shorter labels.

In a sense, the few number of DRRM offices handling social media accounts (and relatively few followers/likers) may also mean that DRRM may not be as mainstreamed and is available to quite limited number of people. If we are to focus on DRM – then the potentially best way to get ‘focused’ information from LGUs is through the CDRRMO accounts.

Table 3. LGU/CIO vs CDRRMO account followers/likers (as of March 2015)

City	Social Media Type	LGU/CIO	Created	CDRRMO	Created
Malabon City	Twitter	5,530 followers	2010	1,414 followers	2013
	Facebook	12,719 likes	2012	1,648 followers	2013
Mandaluyong City	Twitter	23,704 followers	Aug. 2012	6,304 followers	Sept. 2012
Marikina City	Facebook	40,259 likes	June 2012	2,346 likes	Nov. 2012
Pasig City	Facebook	6,028 likes	2011	12,403 likes	2012
Valenzuela City	Facebook	128,272 likes	May 2009	1,119 likes	July 2014

All of the listed LGUs in Table 3 have the same pattern – the number of potential ‘reach’ that the CDRRMO is smaller compared to the LGU/CIO account, except for Pasig City, a case worth exploring further. This pattern may not be that surprising, since CDRRMO only focuses on one sector and the table shows that CDRRMOs have relatively younger accounts. What needs monitoring and work would be to increase the percentage of common followers to ensure that many will receive DRM-related information.

Data Gathered from Twitter vs. Facebook

The two platforms examined for this study also have their share of differences. Technically, determining which account to follow was relatively easier for Twitter accounts, perhaps because of some restrictions in its nomenclature, as it allows for shorter names. What made it difficult to locate Facebook accounts is the presence of Personal pages which can only be accessed by those that the account manager accepts as 'friends.' Out of the 23 monitored FB accounts, there are two which present the said setup. This may need attention, given that the information provided is public, and having a 'personal' setup may limit the participation and reception of information.

In terms of content, Facebook allows lengthier posts as compared to Twitter which limits tweets into 140 characters (Twitter, 2015). In effect, this allows further details to be posted on FB, and in practice, a number of LGUs practice tweeting links to their FB posts instead, which is likely set by the LGU as an automatic function set between these two platforms they use.

C. Post and Tweet Content

Given how the study contextualizes disaster in the metropolitan setting, there are a number of things that cities in Metro Manila post or tweet that can be considered relevant to disaster mitigation. Within eight months, a number of events took place which have directly and indirectly affected the Philippine capital. The following is a list of the content of social media accounts within the 8-month monitoring period.

Typhoon Warnings and Weather Alerts. Among the most cited information by Metro Manila cities are advisories from the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), the government institution mainly in charge of providing forecasts on upcoming weather conditions. Being in a tropical region, having more or less twenty typhoons a year is enough reason for LGUs to be alert should there be warnings of upcoming Low Pressure Areas (LPA) that are 'brewing' tropical depressions. Posts observed were generally regarding the path of Typhoons Luis (Kalmaegi), Mario (Fung-Wong), Ompong (Vongfong), Ruby (Hagupit) and Amang (Mekkhala) and the affected areas.

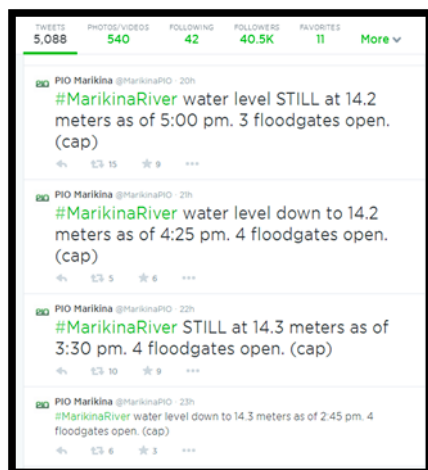


Figure 4. Sample post from @MarikinaPIO

Water levels (rivers and coastal areas). As part of the monitoring for typhoons, low lying areas near water bodies such as the cities of Marikina, Navotas, and Malabon are regularly posting information on water levels within their areas. For instance, Navotas and Malabon posts the high tide and low tide duration and the estimated water levels, while Marikina, which was devastated by the flood brought by Typhoon Ondoy in 2009 now posts the water levels at Marikina river. Generally, these cities post daily updates, but more posts are observed when there are weather disturbances affecting Metro Manila.

Earthquakes. Unfortunately for earthquakes, no preparatory announcements can be made as to where the disaster might

occur. However, within the monitoring period, recorded tremors by the Philippine Institute of Volcanology and Seismology

(PHIVOLCS) around a Batangas and Zambales (province south and north of Metro Manila, respectively) in January 2015 has affected parts of the capital. These were then posted by the respective cities on a collective scale.

Power interruption, declogging schedules. While not necessarily a ‘disaster’ in itself, but to help the affected constituents prepare for possible consequences, the cities post the schedules of power and water services interruptions as advised by the power and water companies. Maintenance schedules are also included, as well as roadworks that might affect water flows within the areas.

Traffic updates and vehicular accidents. To avoid potential occurrence of vehicular accidents and to forewarn users on the slow-moving, vehicle-congested areas, real-time updates, especially through twitter is generally practiced by the cities of Valenzuela, Makati, Taguig and Pasig. Valenzuela can be dubbed as the gateway to the Northern Luzon Expressway, experiencing build-up of large delivery vehicles and provincial shuttles, while the three latter cities are centers of business with high volumes of vehicles, since these are being traversed by the main Metro highway – the Epifanio Delos Santos Avenue (EDSA). Should road accidents occur, these are immediately posted in the Twitter and FB pages of the concerned LGUs. Traffic updates are generally posted through Twitter.

Class suspensions. Perhaps among the favorite updates of the netizens are the announcements from their cities on whether classes are suspended or not. Aside from the Department of Education (DepEd) of the National Government, LGUs have the power to suspend classes, a prerogative of the Local Chief Executive based on the current situation of his/her jurisdiction. LGUs’ individual accounts therefore share this kind of information, which oftentimes use the ‘#walangpasok’ (no classes) for updates, together with some leading news networks such as Rappler.com, who compiles the names of cities and schools which declared suspension of classes.

What to do or not to do during disaster and Safety tips. The cities randomly post some advisories in the form of videos and infographics on the Do’s and Don’ts particularly on disasters such as typhoons and flooding, earthquakes, fire, and even some health issues such as the Ebola virus outbreak in the latter part of 2014. From December 2014 until early January, posts and tweets on safety in handling firecrackers were quite rampant. On March 2015, which is considered Fire Prevention Month, infographics on the potential causes of fire were also present in various city social media sites.

Availability/schedule of DRM-related trainings. Cities with CDRRMO accounts also showcase the availability and conduct of disaster response trainings undertaken by their DRM offices. While the photos of trainings are immediately posted, announcements that indicate invitation for the constituents to attend may tell that these events are not exactly open for everyone to attend. However, the mere evidence of government employees undertaking these kinds of activities tell that preparatory activities for potential disaster are underway, and that there are people equipped to carry out response operations.

Response teams and post-disaster activities. Should there be chances to take photos, some LGU officials oftentimes post their pictures taken during response operations right after the disaster. The aftermath of the disaster which struck parts of the metropolitan area are also posted to provide ideas as to the extent of damage the city has sustained, which can be deemed as a call for help from LGUs who were not affected by the disaster. Some government officials also take the opportunity to post photos of themselves checking on families in evacuation centers, especially when areas are flooded – one of the alternatives to project good imagery among constituents.

Hotline numbers. Lastly, to ensure that citizens are able to contact the right persons in case of emergency during disasters, cities make it a point to post hotline numbers of their emergency teams once in a while for faster response. Aside from LGU teams, some also practice to post numbers of private and non-government organizations such as the Philippine Red Cross to provide alternatives in case the LGU cannot accommodate all requests. Numbers of entities accepting donations are also posted on Facebook and Twitter Pages.

EMERGING TRENDS

There are four general trends seen for social media accounts observed within Metro Manila that may be worth considering in social media management, research, and exploration of new avenues for use.

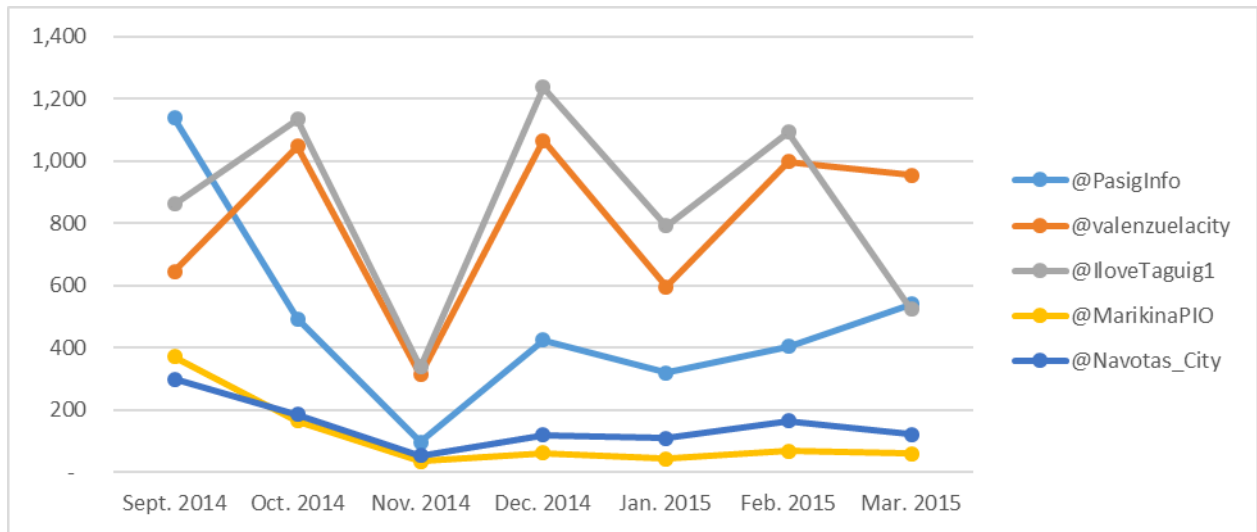
A. Emphasis on Preparedness

As this study implies, disaster mitigation is one of the key results that LGUs wanted to achieve through social media. It general helps spreading information to the citizens and perhaps within the organization, to make the necessary precautions on upcoming disaster. The inclination of available information to preparedness recognizes the idea that if the disaster itself cannot be stopped, then the next step is to minimize the damage that it can potentially bring to the communities. Normal citizens would not have had the capacity to address disaster while it is happening, except if they know what to do beforehand, more so if information is provided after the damage has been made.

B. Increase in Social Media Activity in the presence of potential disasters

The case of Metro Manila confirms the findings of Fraustino et al (2012). Within eight months, it is worth mentioning that social media has indeed became an alternative source of information as evidenced by the increasing Twitter and Facebook of activity when there are upcoming disasters. Figure 5a below shows the trends in the number of tweets produced by selected accounts from September 2014 until March 2015. It can be noted that significant increase in activity occurred between November and December 2014, primarily because of the active posting of updates regarding Typhoon Ruby (Hagupit). Increases were also observed within January to February 2015 to get information on latest news regarding the Papal Visit.

Figure 5a. Monthly Number of Tweets of selected city Twitter accounts, Sept. 2014 – Mar. 2015



The activity in terms of the number of followers (Twitter) and likes (Facebook) were likewise noted monthly. Based on the data shown in Figures 5b and 5c, the trend is more pronounced in terms of the number of likes compared to the Twitter followers. However, the trend within November to December 2014 is more evident as compared to January to February which shows some decreases on the number of people following and liking the cities' social media accounts. Curiously, some of the selected accounts lost hundreds of 'likes' within March 2015, something that may need verification from the LGU account managers on possible reasons.

Figure 5b. Monthly number of followers added for selected Twitter accounts, Sept. 2014 - Mar. 2015

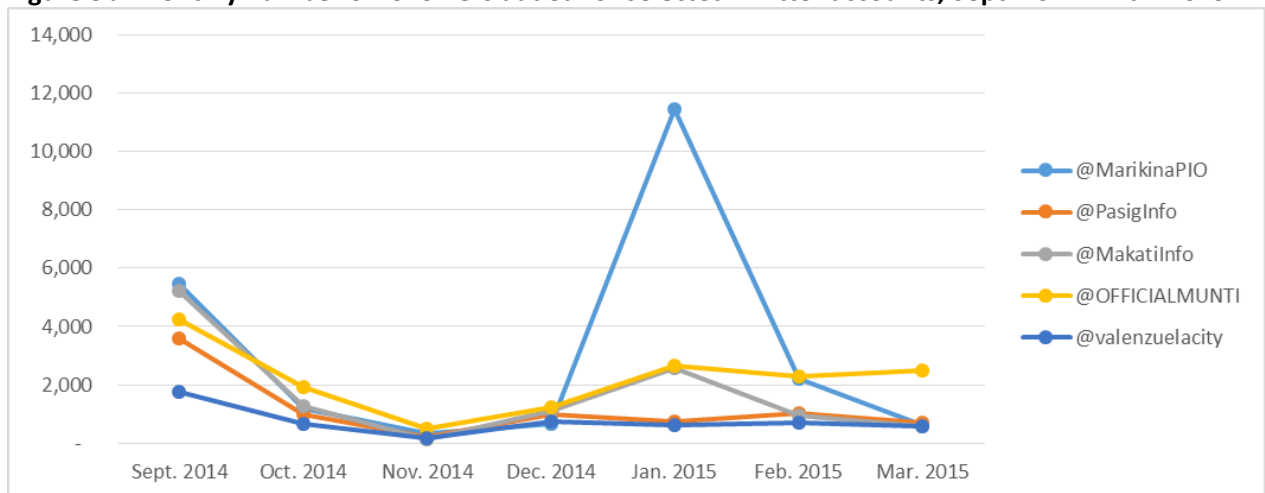
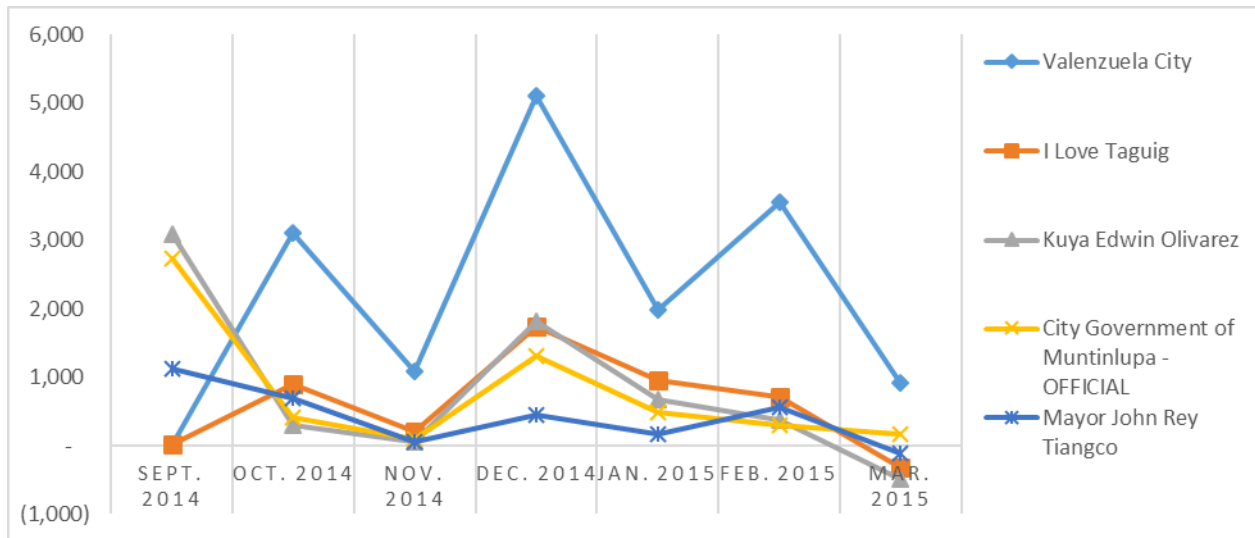


Figure 5c. Monthly number of 'Likes' added for selected Facebook accounts Sept. 2014 – Mar. 2015



C. Use of Information through Linkages

As previously mentioned, re-tweets and re-posts from certain institutions from the government, private sector and civil society organizations serve as a main type of information disseminated by the cities. Given its metropolitan setting, more or less, wide-scale disasters such as typhoons will affect the cities collectively, and given the adjacency of these cities, it is more likely that the disaster may affect the others.

Apart from this, since Metro Manila is also conceptualized as the National Capital Region, it is the government and business center of the entire country, and the cities' social media linkage is more or less reflective of its physical institutional linkages. As such, cities subscribe to information mainly generated within the central government, among these are PAGASA (for weather, @dost_pagasa), and PHIVOLCS (for earthquakes) and the National Disaster Risk Reduction and Management Council (NDRRMC, @NDRRMC_OpCen). Metro Manila also has an 'umbrella organization' overseeing affairs within the capital – the Metro Manila Development Authority (MMDA, @MMDA), whose posts and tweets are oftentimes traffic-related. For class suspensions, DepEd's is one of the well-tweeted or posted sources of information, and followed by students and employees alike. Of course, cities also follow and like social media accounts of the Philippine Information Agency (PIA), particularly that which is focused in the NCR (@PIA_NCR) for news in general. Another agency that posts official announcements is the Official Gazette of the Philippines (@govph). In some cases, cities also re-tweet or re-post messages from other departments within the LGU such as the social welfare and community development office/department.

Some prominent television networks and non-government organizations are also being followed by the cities for pertinent information. Special mention should be given for Rappler.com, a social news network



Figure 6. Snapshot of Navotas City re-tweet of I M Ready weather forecast

that

is currently spearheading initiatives for faster reporting of disaster-related information through a crowdsourcing platform called Project Agos. Apart from Facebook and Twitter, the said platform 'combines top-down government action and bottom-up engagements with the community to provide the necessary information for disaster risk reduction and climate change adaptation' (Rappler.com, 2013).

All in all, the information from these linkages can be considered the 'lifeblood' in spreading the word to facilitate DRM not only among cities in Metro Manila but different parts of the Philippines.

D. Information 'mixing bowls' and delineation of information sharing

Lastly, it is worth discussing that in terms of information and social media account management, each city has its unique way of spreading information. These can be generalized into two: those who make use of a single account to spread different kinds of information, and the other is using multiple accounts based on the classification of the subject matter, limiting it to be posted by a single office within the LGU in charge of particular affairs.

To give an example of an information 'mixing bowl', the Taguig City Twitter account tends to post all kinds of information related to the city through @ILoveTaguig. Unfortunately, if the information includes that of hourly updates such as traffic, the tendency is to ease-out the most relevant information from the news feed, the first line of posts or tweets that a follower or liker could take note of upon his or her visit to the LGU's social media account. For instance, a vehicular accident was recorded, however, due to the rapid updates, that particular information will be missed out since there are too many information recorded about different things.

Cities' information offices tend to post or tweet different kinds of information, as long as it is related to the city. However, this situation seemed to be an opportunity also for local politicians for image-building. Aside from traffic-related information, there are some accounts bombarded with pictures of elected officials making their move on disaster-hit areas within the locality. This also, in part adds up to the fast rate of updates, which might not necessarily be the interest of the constituents during and after a disaster takes place.

There are some cases which do not rely solely on a single account to spread all kinds of information. As previously mentioned, the cities of Malabon, Mandaluyong, Marikina, Pasig and Valenzuela have separate accounts managed by their CDRRMO. Official LGU/Information offices may have re-tweeted/re-posted information from the CDRRMO once in a while, but there seems to be filtering on posting only the most relevant information in the CIO accounts and leaving the more detailed updates to be posted within the CDRRMO account. In a way, this helps in managing the information being sent and having more account spread the information right away. If an LGU decides to pursue this setup, then it might be helpful that citizens, likers and followers be briefed to prevent confusion on which accounts should be followed.

SOME NOTABLE PRACTICES

With the overview provided by this paper, the fact that some cities have displayed notable behavior in using social media should also be cited. Two special cases, with their designated unique social media for DRM management styles may be worth looking into:

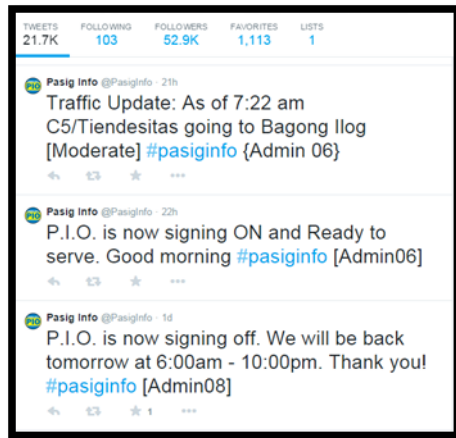


Figure 7. Sample posts from the @PasigInfo account

Pasig City (@PasigInfo). Being a city surrounded by issues of potential flooding and heavy traffic among others, Pasig City could be cited as one of the cities with the best practices in Disaster Risk Mitigation in terms not only of social media use, but also response operation. It has been cited by Maria Ressa, the President and CEO of Rappler.com, as one of their working partners in continuing to develop the LGUs’ capacities for DRRM. From this study however, what can be cited is the practice of a possible form of accountable management of information through the signing-in and signing-off of a number of social media administrators with their designated numbers (i.e., Admin 08). All posts and tweets within the Pasig City

accounts also include the administrator number. This indicates and validates the presence of administrators within the day who could answer queries from followers and likers, and who may be held accountable (or for tracking purposes) should there be erroneous information disseminated. Administrators usually operate within 6:00am until 10:00pm daily, including weekends.

Valenzuela City (@valenzuelacity). Among the oldest running social media accounts, with its Facebook and Twitter pages set up both on May 2009, Valenzuela City provides an example of a sustainable social media account – sustainable in a sense that it has been continuously operational over the years, despite changes in leadership. While the accounts may have been the same for almost six years, the continuity may partly be due to the political configuration of the city since within the time period, the two mayors who led the city were actually brothers (Gatchalian), and have covered both the mayoral and congressional positions alternately. While an observed change in social media accounts can be partly attributed to change in leadership, the case of Valenzuela is quite interesting to follow should the Gatchalian term come to an end.

Aside from Pasig and Valenzuela, developments on whether cities in Metro Manila will subsequently create separate accounts for their DRM-related concerns can be considered for updates. Currently, some cities such as Manila, Mandaluyong and Makati has a separate account for concerns that need real-time updates such as traffic, these accounts, however, were not included in this study.

SUMMARY

Indeed, tons of information can be facilitated and delivered through technology, particularly with the use of social media. Emphasizing the urgency of information related to disasters, local governments have seen social media as a new approach in governance when it comes to informing constituents about real-time situations and what needs to be done to minimize casualties on potential disasters that can occur.

In general, cities in Metro Manila have utilized social media by spreading information that gives premium to **preparedness** should disasters occur. A range of updates from typhoons, water levels, flooding, earthquakes, traffic and vehicular accidents, and power and water utility interruptions are shared by the LGUs. In addition, they provide advisories in terms of class suspensions, emergency hotline numbers, maintenance schedules, roadworks, and safety tips on what to do to prevent man-made disasters such as fire outbreaks and spreading of unfavorable health conditions. Through photos, the cities make their constituents feel that they respond and act to the citizens' call for help. These include disaster preparedness seminars, and post-disaster activities.

The availability and continuous usage of the range of information enumerated contributed to the **increasing activity** in the presence of disasters within social media platforms, resulting to an increase of followers who, by clicking the 'follow' and 'like' buttons, have subjected themselves to subscribe to information provided by relevant, disaster-related entities. The kind of activity or disaster being warned about in certain areas corresponds to the vulnerability of the area – as posed by hazard maps created by the Mines and Geoscience Bureau (2014). This finding also suggest the observation of Reeder et al (2014) on the difference in messages conveyed during an 'event' versus the 'non-event' days – that messages become more strategically structure in the presence of a hazard to convey the necessary information to prepare for the upcoming disaster.

As a **networking** tool, social media also enables cities to integrate data that will specifically help their constituents based on the information relayed by their national counterparts, and other relevant agencies. The wide range of information coming from different sectors concerned have, in a sense, been 'filtered' to be able to fit to the needs of the locality – at a level wherein the people can 'affiliate' themselves and that they will be affected by the news at hand.

Lastly, each city in Metro Manila has provided different **models in managing social media use for DRM** – some have placed all information 'under one basket', and some preferred to have a delineation of the kind of information a specific office can post, tweet or share. While still subject to validation, results show that there are some cities that provide mechanisms to ensure that correct information is delivered to the public, and that each have their own policies in place for such purposes, especially if it concerns urgent information such as those linked with disaster, especially in an urban setting.

As this is an overview study, there are still some underlying questions that are yet to be answered, such as: Have cities in Metro Manila maximized the use of social media in terms of reach? Can LGUs serve as plausible alternative sources of disaster-related information aside from what they share through linkages with the national government? Perhaps, these are the challenges faced by local governance and DRM in the age of social media in the Philippines – and more lessons to come aside from the Ondoy (Ketsana) and Yolanda (Haiyan) experiences.

RECOMMENDATIONS

Based on the findings of the study, a couple of recommendations could be given for information management for DRM-related activities in social media.

1. *Creating protocols in creating, naming and determining official LGU accounts.* Among the difficulties encountered in this study is identifying the accounts of the cities, since their names may vary, and at times, may not even include the name of the city itself. Since Twitter has more restrictions in naming compared to Facebook, this might be more applicable to the latter because of the relatively free naming environment. Having informal names may also cause those who search for LGU social media accounts to overlook, or not to take it seriously, particularly those classified as 'community' or 'local business' as opposed to those labelled as 'government organizations.' If a social media account is easily searchable, then there may be a higher tendency for more people to follow or like it. More importantly, these accounts must be linked with the official LGU website to ensure its authenticity, authority and functionality as one being operated by the city itself. A social media account may be considered more 'institutional' in this manner.
2. *Delineation of roles according to tweet or post content.* It was mentioned in the study that some cities have more than one account taking care of DRM-related information. However, a number of cities tend to pool all kinds of information in one account, whether in Twitter or Facebook, and may defeat the purpose of information dissemination if the most relevant events are not highlighted or easily out of the newsfeed because of too much updates. As such, one account (preferably the city information office account) can highlight the most important announcements, and the detailed reports or updates within a designated office where the information is most relevant. In the case of CDRRMOs, all information regarding weather updates can be posted using the CDRRMO account, and the main announcements be put up in the official city/ information office account. There are also special cases such as traffic updates that are highly recommended to be housed in a separate account since updates tend to be tweeted or posted real-time or on an hourly basis.
3. *Installing accountability mechanisms for posting.* Among the greatest issues in managing social media is how to ensure that all posts are authentic, and that people who post are held accountable for the information they share. While there is no concrete and detailed plan to recommend in addressing this issue, the case of Pasig City provides a model that might be worth replicating. Giving social media administrators a code to attach to every post they make, so as not to clash with their privacy, could be one plan of action. All in all, an official protocol for posting information must be formulated.
4. *Disentangling official accounts from personal accounts.* It has also been observed that some of the accounts monitored were that of local politicians. In these cases, the LCEs account works as a substitute for the official LGU account, which may not be quite favorable and may appear as a personal and political promotion. Thus, a need for a social media account that carries the name of the city/LGU rather than the politician who leads it.
5. *Linking official LGU and CDRRMO accounts with key DRRM institutions.* Although this is already being done, for LGUs who have yet to use social media, it is important to like/follow/repost key national agencies such as those in charge of weather forecasts, traffic monitoring and other agencies keeping track of disasters. These are the primary sources of information that need to be referred to for relevant preparatory measures to be done.

6. *Use of social media to announce and open DRM-related events such as trainings and workshops to the public.* As observed in some cases, some city offices post photos of DRRM training programs and workshops for the city employees. However, given that through social media, information can be easily spread, should the city have enough funds to invite more participants, these events can be opened to the public in the form of announcements. Giving an open invitation for constituents to participate in city government events may also be an opportunity to garner more people who can receive information and a network of people that can be tapped to further spread DRRM-related news. Thus, the approach combines both social media and actual interaction between the LGU and the constituents.

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