Creativity in Disaster Communication: #prayforpantaitimur

Mohd Khairie Ahmad, Mahathir Latib and Mohd Baharudin Othman

Abstract - At the end of 2014, Malaysia was rocked by the worst floods over the past half century. The states on the east coast of peninsular Malaysia, which consists of Kelantan, Terengganu and Pahang among the worst hit compare to similar disaster in 1971. However, the disparity that existed during this most recent catastrophe is that it happens in the era of communication technology advancement. This scenario has impact tremendously in term of disaster communication behaviour among the public. Thus, the question on how and what impact has the contemporary communication medium such twitter serve during disasters like floods are an interesting and significant question? Twitter hashtag #prayforpantaitimur have been analysed to answer these questions. A sum of 2711 Twitter messages during the first week of the disaster were content analysed. The analysis found that the Twitter messages shared during the disaster is focusing on sharing of information. Current information, reaction to the victims, sharing experiences and fund raising are four categories of twitter messages that were shared during this period of time. In summary, this study provides an empirical understanding of social media used in particular the Twitter during disaster in Malaysia.

Index Terms - disaster communication, Twitter, social media, creative communication.

1 Introduction

'Bah Kuning' is the nick name of the great flood which hit East Coast states of Malaysia in December 2014. It was recorded as the worst flooding in modern history of Malaysia that has caused more than 200,000 people sought refuge in flood relief centers opened in the states of Kelantan, Terengganu, Pahang and Perak [1]. Communication during and post-disaster situation is an important constituent of rescue and recovery. Disaster communication not only connects the victims, their families and the community with first responders, but also crucial for the disaster authorities. Reliable and accessible communication and information system are also pivotal to the community's resilience [2]. As communication technology proliferate and become sophisticated, social media (Facebook, Twitter, etc.) are increasingly engage to convey information during crises, sending warnings, generate awareness, and even to accelerate actions. The social media has been utilised in sustain dialogs and feedback loops among public, authorities, volunteer groups, the business sector and general public during calamities [3].

2 Research Statement

Latest studies on crisis communication have demonstrated the importance of social media systems to be adopted during disaster [4], [5]. Advancement of communication technology has allowed social media to be easily accessible and portable enough for ordinary citizen to realize its potential. On the other hand social media also have the potential to convey valuable change in risk and crisis communication.

Recent studies proved that behavioural changes are more easily achieved through personalise communication medium such as social media. Social media can be prevailing tools to persuade resilient actions in a community. The messages sent out can be adapted to diverse categories of the targeted community [6]. While there are many researches around the globe studying on the usage of social media during natural disaster, there are very less similar studies being conducted in Malaysia. In fact, Malaysian was found to be among the highest and active social media users in the world.

To better understand the social media phenomena during natural disaster, this research took the opportunity to study how Twitter was used during the 2014 East Coast flood. This paper may contributes to understand the roles and how social media in particular the Twitter responses to major disasters. In addition it enabled to expand the body of knowledge into how to utilise the power of social media to expedite disaster responses [7].

- *Mohd Khairie Ahmad is with the School of Multimedia Technology and Communication, Universiti UtaraMalaysia, Malaysia, Kedah 06010. E-mail: khairie@uum.edu.my*
- *Mahathir Latib is with the School of Multimedia Technology and Communication, Universiti UtaraMalaysia, Malaysia, Kedah 06010. E-mail: madeck77@gmail.com.*
- *Mohd Baharudin Othman is with the School of Multimedia Technology and Communication, Universiti UtaraMalaysia, Malaysia, Kedah 06010. E-mail: bahar@uum.edu.my.*

3 REVIEW ON DISASTER COMMUNICATION

Scholars have long recognized the roles of communication within disaster. They have examined a multitude of ways communication contributes to our understanding of disaster processes, before, during and after disasters. Other areas such as decision-making processes, technology and disaster, sense making and narrative, stress and social support, and persuasion and compliance gaining, which are all within the context of disaster have also gaining interest among communication researchers around the globe [8]. With the advent of new technology in communication, researchers has realised that the increasing accessibility of new 'bottom-up', 'many-to-many' 'interactive' communication besides the recognised conventional communication orientation ('top-down', 'few to-many' 'one-way'). The combination of these 'old' and 'new' media has facilitating communication process that significantly enhance the surveillance capacity. Importantly, these scenario can be an analogised of monitoring satellite sponsored by civil society in addition to governments [9].

Several researchers has highlighted in their study why social media has been one of the preferred medium of disseminating information during disaster. Social media emerge to play a significant role in emergency management for few bases. Firstly, it can facilitate in providing accurate, reliable, and timely information for public safety pre, during, and post of the incident. As people persist to adopt new technologies, the use of social media will probable raise. Furthermore, as its popularity is increase, a considerable number of people will likely prefer social media as their core source of information. Public may also have high expectation that authorities will also employ social media to congregate their informational needs [10]. In a report by the US Department of Homeland Security Science and Technology Center of Excellence [11], the researcher has collectively reveals multiple reasons the public uses social media during disasters. Bruns et al. [12] work on Crisis Communication on Twitter in the 2011 South East Queensland Floods, has outlined some major research areas with regards to social media in disaster that is important.

Recently, there has been an growing literatures on potential of Twitter in disaster circumstances, such as throughout the Great East Japan Earthquake that took place in March 2011 [13], 2011 South East Queensland Floods [12], [14], [15]. Denef, Augustin, Bayerl, & Kaptein [16] analyzed the tweets posted by London Metropolitan Police (MET) and the Greater Manchester Police (GMP) during the riots in August 2011 and found that both employed different approach when communicating with the public. While MET followed an instrumental approach in their communication, in which the police aimed to remain in a controlled position and keep a distance to the general public, GMP developed an expressive approach, in which the police actively decreased the distance to the citizens.

In a study, [7] analyzed the use of a Chinese microblogging site, Sina-Weibo, in response to the 2010 Yushu earthquake. The messages posted on Sina-Weibo were mainly categorized into five groups: opinion-related (33%), situation update (25%), general earthquake related (18%), emotion-related (16%), and action-related (4%). Kumar, Barbier, Ali Abbasi, & Liu [17] has presented a new application designed to help Humanitarian Aid and Disaster Relief (HADR) a relief organizations to track, investigate, and observe tweets. The function of this instrument is to assist responders gain situational awareness instantly a catastrophe or crisis happen. The tool is able to monitor and examine the location and keyword of specific Tweets with near-real-time trending, data reduction, historical review, and integrated data mining capabilities.

In conclusion, the scholarly review have provided the necessary framework and outlined research area for this study. It showed how social media can significantly function in disaster communication and emergency management. Previous studies have shown why twitter in particular has gain popularity over the traditional communication medium due to its many advantages. Previous researches on the usage of Twitter during disaster have provided the support for this research to continue the study on how people react to major disaster through twitter. Optimistically, it will help to expand the understanding on how to utilise the influence of Twitter in facilitating response during disaster such as flood.

4 METHODS

Tracking the relevant topical hashtags has been one of the challenges in this research. With so many hashtags been created during the East Coast Flood, the researcher has decided to list some of the most appended hashtags and decided on which has the most tweets during the peak of the flood. #prayforpantimur has been identified having the most number of tweets which is relevant to this study. While other hashtags like #bah2014, #banjir2014, #mybanjir2014 and #pray4pantaimur do get appended in a lot of tweets but the hashtags are either low in volume or does not have significant tweet to this study. 2711 tweets of #prayforpantaitimur were collected from 18 December until 24 December 2014 as this study sample. They include text and non-texts items that appeared along the mentioned period. Summative content analysis technique [18] was engaged in processing and analysing the data. Data from the 2711 tweets were coded based on these two categories: type of content and messages covered. Resulting from the content analyse was the generation of themes consisted of conceptualising elements that explained the categories of contents on the flood communication. Then, subcategories were further developed in order to intensify the probing for rigorous and reliable findings. Qualitative data analysis software, NVivo was engaged to code, analyse and organise the data.

5 FINDINGS & DISCUSSIONS

The flood in East Coast Peninsular of Malaysia was on its second wave during the last 3 weeks of December 2014. This study only covers on certain dates just before the peak of the flood that is from 18th December to 23rd December 2014 (6 days). During the period of 18th December to 23rd December 2014, number of tweets from the #prayforpaintimur was 2711. During the early period of flood, only a handful of tweets were recorded and started to increase sharply by 23rd December, when the flood was almost at its peak. The trend of the tweets can be clearly seen in Figure 1.

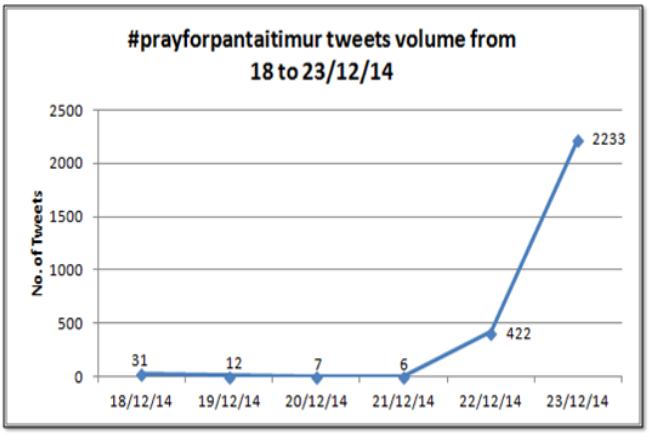

Fig. 1. #prayforpantaitimur Tweets Frequency.

Additionally, other than the frequency of #prayforpantaitimur tweets along the studied period, this study also tracked and analysed the type of tweets. It is very useful to determine the type of tweets of #prayforpantaitimur. The analysis found there were three types of tweet: original, reply and retweet. According to Bruns and Stieglitz [19], identification the type of tweets able to lead to more details tweeting activity of the community. Generally, analysis identified there were 2336 original or freshly created tweet, 205 tweets were a reply and there were only 21 tweets are categorised as retweet. During the early period of flood, mainly original tweets could be observed. As it approaches the peak period of flood, reply and retweet activities started to emerge as users begin conversion about the flood and sharing more information.

Overall, the content analysis of #prayforpantaitimur tweets found there are four main categories of content or messages that emerged: Information, Experiences, Reaction, and Help and Fundraising. Figure 2 shows the relative occurrence of such tweets content in the studied hashtag. Based on the findings, Help and Fundraising, and Experiences content category were notably small in percentage. Respectively, there were only 2.7% of Help and Fundraising content and 4.1% of the total tweets representing Experiences category. The small number of tweets representation on these two content or message categories may be due to the data collection period which it is in early period the flood. This study sample was chosen just before the peak of the flood and people are much focus on information about what is happening or what is the situation? This scenario can be supported with data that representing tweets content related to Information and Reaction. These two categories constitute the biggest percentage which respectively indicates representation of 52.9% and 40.3%. The scenario can be explained as Twitter users has started to disseminate information about the flood that they gather from various sources. Furthermore, images of the flood have started to surface and were just being shared in the twitter sphere.

Within the Information theme as shown in Figure 3, it could be further breakdown into few subthemes which are promoting, situational information, advices and request for information. Promoting the hashtag "#prayforpantaitimur" indicate the highest which is 73% or 1050 tweets. This theme has indicates a strong wish by the twitter users to promote the hashtag among

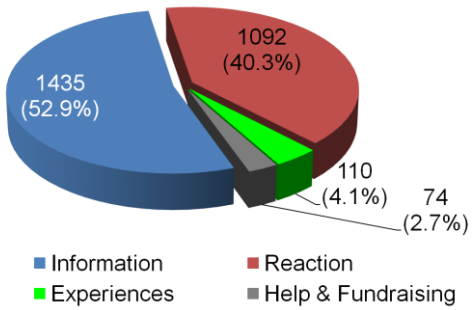

Fig. 2. #prayforpantaitimur Tweets main categories.

the users followers and usually contain no messages at all. It is also a technique in creating awareness among social media users about the disaster. There are also a handful of users who promotes this hashtag to friends who are not their followers. Second highest subthemes is situational information (21% or 303 tweets), followed by advices (4% or 54 tweets) and lastly request for information (2% or 28 tweets).

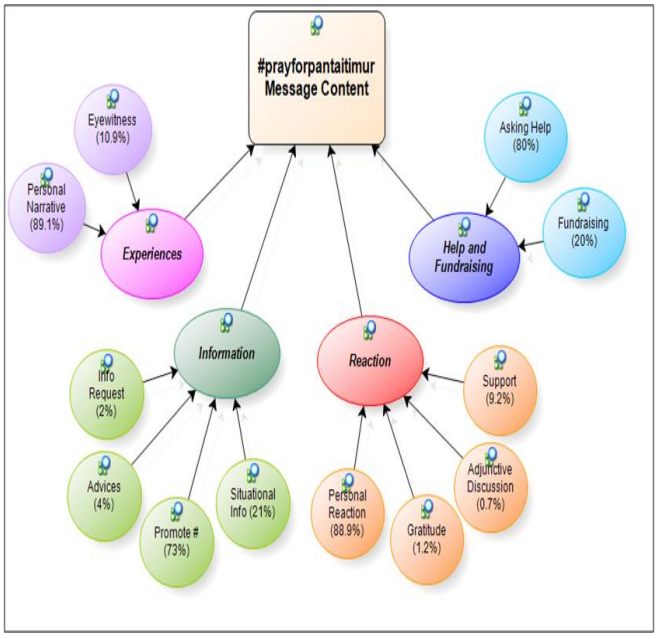

Fig. 3: Themes analysis of #prayforpantaitimur Message Content

Personal reaction, support, gratitude and adjunctive discussion were found to be the subthemes that supports reaction theme. Personal reaction found significantly support the reaction theme with total of 88.9% or 971 tweets. In Malaysia context, prayer and appreciative are generally dedicated to the tragedy situation as a whole and this expression is normal and expected in a predominantly Muslim country. Remaining subthemes were represent by 9.2% or 100 tweets (support), 1.2% or 13 tweets (gratitude) and 0.7% or 8 tweets (adjunctive discussion).

Experience is all about personal narrative and eyewitness tweets at the disaster area. It was suspected that due to utility failure especially electricity and mobile networks, the amount of tweets under this category was not as high as expected hence the people who are at the flood scene can't tweet their message.

There are also difficulties to differentiate between tweets send by eyewitness or tweets send base on words of mouth or from other news resources. This information is crucial in distinguishing between messages that are intended to distribute information reported in news outlets and those that are personally experience [20]. The data only registered 110 numbers of tweets representing this subtheme. Nevertheless, the recorded tweets describe the intensity and the seriousness of the flood situation as the disaster unfolds.

As mentioned earlier, the specific period of this study was just before the peak of the flood in the East Coast. Thus, it is remarkable to note that the volume of tweets asking for 'Help' and organising 'Fundraising' was infinitesimal. Only 8 tweets were identified to signify 'Help' subtheme. Nevertheless, only 2 tweets were found to denote 'Fundraising' subtheme. Considering the seriousness of the disaster, this type of tweets should be much higher and visible.

7 Conclusion

This study clearly concludes the prevailing usage of the social media specifically the Twitter during the recent flood disaster in the East Coast of Malaysia. Analysis of the data during the initial stages of flooding indicates interesting usage of the social media in disseminating information during disaster. While conventional communication such as landline telephone, radio and television were interrupted or impaired, the new telecommunication system such social media has become the most practical medium in connecting those affected. It's quite clear that the social media members were active audience as majority of the tweets indicates that they are original tweets. In terms of the content, findings found large amount of tweets present information that benefited the flood victims as well rescue teams.

This also study explains those involves in disaster communication should be aware of the social media potentials and take the opportunity to refine and improved the whole standard operating procedures. On top of the above points, authorities could use findings from this study to develop their social media communication platform which enable them to actively involve and provide relevant and accessible information for the general public in the event of a natural disaster. In order to gain better insight, it is recommended that the sample of future study to include longer period of time especially during the post-flood.

References

[1] M. Rohana, Laporan Khas. Utusan Malaysia. Retrieved from http://blis2.bernama.com.eserv.uum.edu.my/getArticle.do?id=6314&tid=135&cid=3, 2015.

[2] AP and NORC. Communication During Disaster. Associated Press-NORC Center for Public Affairs Research, 2013.

[3] C. Wendling, J. Radisch, and S, Jacobzone, "The Use of Social Media in Risk and Crisis Communication", OECD Working Papers on Public Governance, No. 24. OECD Publishing, 2013.

[4] K.R. Bryce, "The Role Of Social Media In Crisis Management At Carnival Cruise Line", *Journal of Business Case Studies*, vol. 10, no.3, pp.231–239, 2014.

[5] J. Yin, A. Lampert, M. Cameron, B. Robinson, and R.Power, "Using social media to enhance emergency situation awareness", *IEEE Intelligent Systems*, vol. 27, pp.52–59, 2012.

[6] C. Wendling, J. Radisch, and S.Jacobzone, "The Use of Social Media in Risk and Crisis Communication", OECD Working Papers on Public Governance, No. 24. OECD Publishing, 2013.

[7] Y. Qu, C. Huang, P. Zhang, and J. Zhang, "Microblogging after a major disaster in China: a case study of the 2010 Yushu earthquake", ACM Conference, pp.25–34, 2011.

[8] B.K. Richardson, and L. Byers, "Communication Studies and Emergency Management: Common Ground, Contributions, and Future Research Opportunities for Two Emerging Disciplines", Emergency Management Institute. Retrieved from http://training.fema.gov/hiedu/docs/emt/disaster chapterdraft one12.23.04.pdf, 2004.

[9] S. Cottle, "Rethinking media and disasters in a global age: What's changed and why it matters", *Media, War & Conflict*, vol.7, pp.3–22, 2014.

[10] Lindsay, B. R. "Social Media and Disasters: Current Uses, Future Options and Policy Considerations", *Journal of Current Issues in Media & Telecommunications*, vol.2, pp.287–297, 2010.

[11] J.D. Fraustino, B. Liu, and J. Yan, *Social Media Use during Disasters: A review of the Knowledge Base and Gaps*. College Park, MD: START, 2012.

[12] A. Bruns, J. Burgess, K. Crawford, and F. Shaw, "qldfloods and @ QPSMedia : Crisis Communication on Twitter in the 2011 South East Queensland Floods", *Methodology*. Retrieved from http://cci.edu.au/floodsreport.pdf, 1–57, 2011.

[13] M. Kaigo, "Social media usage during disasters and social capital: Twitter and the Great East Japan earthquake", *Keio Communication Review*, vol. 34, pp. 19–35, 2012.

[14] C. Cheong, "Social Media Data Mining: A Social Network Analysis Of Tweets During The 2010-2011 Australian Floods", *PACIS 2011 Proceedings*, pp.1–16, 2011.

[15] C. Ehnis, and D. Bunker, "Social Media in Disaster Response: Queensland Police Service - Public Engagement During the 2011 Floods", *Proceedings of the 23rd Australasian Conference on Information Systems*, pp. 1–10, 2012.

[16] S. Denef, S. Augustin, P.S. Bayerl, and N. Kaptein, "Social Media and the Police — Tweeting Practices of British Police Forces during the August 2011 Riots", *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 1–10, 2013.

[17] S. Kumar, G. Barbier, M.A. Ali Abbasi, and H. Liu, "TweetTracker: An Analysis Tool for Humanitarian and Disaster Relief", *Fifth International AAAI Conference on Weblogs and Social Media*, pp. 661–662, 2011.

[18] H.F. Hsieh, and S.E. Shannon, "Three approaches to qualitative content analysis", *Qualitative Health Research*, vol. 15, no.9 , pp. 1277-1288, 2005.

[19] A. Bruns, and S. Stieglitz, "Towards more systematic Twitter analysis: metrics for tweeting activities", International *Journal of Social Research Methodology*, vol. 16, no. 2, pp. 91–108, 2013.

[20] M. Imran, S. Elbassuoni, C. Castillo, F. Diaz, and P. Meier, "Extracting information nuggets from disaster-related messages in social media", *ISCRAM*, pp. 791–800, 2013.

M.K. Ahmad received his Bachelor in Public Administration from Universiti Utara Malaysia 1997 and MA in Communication from Universiti Sains Malaysia in 1999. He received his PhD in Communication from the University of Queensland. His research and scholarly efforts include Communication and media for Social Change, Health Communication, Political Communication and Communication Management. He is currently a Senior Lecturer at the School of Multimedia Technology & Communication, Universiti Utara Malaysia.

M. Latib obtained his bachelor degree in Business Administration from Universiti Teknologi MARA Malaysia and Master of Science in Managerial Communication from University Utara Malaysia. His research interests focuses on political economy, social development and community well being. Currently he is serving the Malaysia Parliament as Private Secretary since 2013.

M.B. Othman obtained his bachelor degree in Arts from University of Malays. He holds a Master of Philosophy in Publishing Studies from University of Stirling, Scotland. His research interest focuses on communication and social change and media-society. In particular, he is interested in community responses to development agenda. He has served University Utara Malaysia as Senior Lecturer since 2003.