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SOCIAL MEDIA AS COMMUNICATION TOOL IN THE CASE OF
KEMAMAN FLOOD

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Abstract

Flood is one of the natural disaster that affect Malaysia and 2014 had seen one of the worst flood in history. Kelantan, Pahang and Terengganu was the three states that were severely affected by the flood. However, Kemaman district in Terengganu was one of the place that was well managed despite severe flooding. Communications is one of the fundamental tools that were used to reduce the impacts in the case of Kemaman. This paper discusses on theories of disaster communication and how social media is used as a tool for communicating information to agencies involved during disaster as well to the public affected. This study applies a case study approach by means of: conducting field study at Kemaman District Office for observation, studying documents and interviewing key actors that were directly involved in the communication aspect of the Kemaman disaster. The result from this study is a better understanding on how communication in disaster are being practiced in Kemaman, especially the usage of social media. We conclude by reviewing ongoing challenges in communicating during disaster, and recommendation on how social media can be effectively used in disaster communication.

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1. Introduction

Flood is considered as an annual natural disaster in Malaysia especially in the East Coast of the Peninsular that experienced heavy monsoon season. However, the magnitude of flood of 2014 was considered the worst in history as water levels of the floods superseded the floods of 1967. The National Security Council (NSC) identified two main reasons for the unprecedented magnitude, which one is the changing climate pat-terns and the adverse weather effects, and secondly it could be the result of uncontrolled land management and exploitation of land resources.

Although the condition of flood in 2014 was considered worse, the district of Kemaman, Terengganu has managed to control the disaster and reported a milder impact. It was claimed that Kemaman has made earlier preparations according to Standard Operating Procedure (SOP) that was established by the council. The SOP implementation had entailed the tasks outlined to each of the agencies parked under the NSC which helped in coordinating the resources and assistance before, during or after the flood. However, proper coordination is not possible without having the right information at the right time, and assisted by having the correct tool for communication of all the relevant agencies.

This paper aims to examine and ultimately understand the use of social media in enabling communication in disaster management, looking at the context of Kemaman in handling flood. The next section will discuss on brief explanation on disaster, followed by how technology and social media can be utilized to promote better communication and help in coordinating works throughout the disaster lifecycle. As information can be collected from either the agencies or the public, the next section will look into how social media is used to gather quality information in coordinating the relief efforts. Followed by discussion on how social media is used in handling flood in Kemaman, and finally the conclusion.

2. Problem Statement

2.1. General Context of Disaster management.

Disaster is an unexpected event that requires the collaboration of multiple organizations in providing relief and impact reduction. The responses from the responding organizations need to be coordinated in ensuring relevant and accurate information are collected and passed to the correct agencies for decision-making throughout all the dis-aster management cycle. Although several literature were reviewed in understanding the information infrastructure needed in supporting the disaster management, it was difficult to understand the required information due to most of the literature only explained the use of information and communication technology (ICT) especially the use of information systems in disaster management. This is evident as most well-published issues typically relates to the establishment of core data and network infrastructures for disaster response teams (Iannella & Henricksen, 2007; Mendonça & Bouwman, 2011).

According to Iannella and Henricksen (2007), it is crucial in disaster management to deliver the right information to the right people in the right format in the right place at the right time. This information may be acquired from the locations of the disaster, nature of the damage, and from the victims on the site, in

different formats and nature. The need for information changes continuously during disaster and specific information is required in different phases of the disaster management (Comfort, Ko & Zagorecki, 2004; Janssen, Lee, Bharosa, & Cresswell, 2010; Seppänen & Virrantaus, 2015).

2.2. Communication challenges.

Based on recent researches in disaster, coordination and infostructure has been combined with the use of social media in addressing information dearth and overload issues to potentially save lives and reduce disaster risks. Infostructure consists of three components of information, structure and technology, and by having the technology component, it will include the use of ICTs in dealing with disaster. One of the most used ICTs in dealing with disaster have been the use of social media. With the rise in social media tools and services, and its easy accessibility, it has provide a new source of information that can be used in disaster activities. While it is a challenging and critical task for the agencies involved to collect quality data in responding to the disaster, social media tools has helped to collect data and promote information sharing across agencies. Only by having timely and accurate data, it can help the agencies to deliver the appropriate respond to the affected victims.

As the infostructure used in disaster (Latif, Arshad, & Janom, 2016) is a combination of information, structure and technology, this research will aim to focus on the usage of social media tool in coordinating activities in the event of a disaster. Social media tool is considered as one of the technology tool which fits into the definition of infostructure where is made up of the component of information, structure and technology. Information which is also one of the component of infostructure, may come from multiple resources during a disaster, in different formats and nature.

2.3. Social media for disaster management.

Social media (SM) consists of tools or group of Internet-based applications that enable open and online exchange of information through conversation, interaction and ex-change of user-generated content. SM allows people to provide information while at the same time, interacting with the information receiver. Users can post news or links, dis-cuss them, share their opinion on certain issues during real times and even create poll (Simon, Goldberg, & Adini, 2015). SM can be used with minimal cost, making it one of the easiest and most cost effective channels for information dissemination, search, and has potential to be use as a tool to mobilize people. This has changed on how people get and share information, and certainly has helped to improve information sharing during a disaster.

During natural disasters, SM able to provide access to correct and timely information from both official and non-official sources, and it facilitates a sense of safety and connectedness to both family and responders. This enable the public to get real-time and updated information of the disaster, and it can assist them to get to a safer places or to get support and routes to assistance.

The easily accessible and affordable use of SM has seen the increase of social net-workers. These users has being utilizing SM for communication as it is cheaper and easy to use SM compared to earlier

communication tools like short messaging systems (SMS) or email. In the event of disaster, most of the information travelled through SM as public want to provide early warning to family or communities. The emergency authorities realized that it is possible to have a better emergency management by providing updated and authorized information to public using SM as official communication. By utilizing the SM, it provides opportunities for engaging citizens during the disaster management by both disseminating information to the public and accessing information from them (Simon et al., 2015). SM can be used as tool to improve the disaster lifecycle by linking the public with real-time, correct and authorized information that can be easily obtained through the official SM tool.

2.4. Social Media tools.

Social media has been an enabler for a better communication in disaster management, as it help to disseminate and exchange of timely and accurate information regarding emerging threats to disaster responders. The importance of SM is evident as social networking platforms such as Twitter and Facebook are being integrated into disaster environments and has become viable in promoting better public response during disasters (Comfort & Cigler, 2012).

Social media use in Malaysia is dominated by three main social media tools, which are Facebook, Twitter and WhatsApp. All of these three tools has been growing steadily in the number of users compared to several years go. Due to the popularity and extensive usage of these tools, this research will look into how these tools is being used in communication activities in the event of a disaster in Malaysia. Table 1 below showed the comparison of three social media tools that are commonly used in Malaysia.

Table 01. Comparison of three main social media tools in disaster management (Chinthakayala & Zhao, 2014)

| |  FACEBOOK |  TWITTER |  Whatsapp |
|----------------------|--|---|--|
| Aim/Purpose | Social sharing site | Micro blogging social site that limits each post to 140 characters | Instant messaging used to send and receive messages |
| Demographic of users | 1.79 billion | 313 million | 1 billion |
| Feedback | Provide diversified services for users. Popular services include online chatting, music, videos, | Focus more on the updates of person/organizations | Facilitating one to one and group conversations. It proves useful in sharing digital messages, images and even videos. |

| | | | |
|--------------------|--|--|--|
| | and photo album. | | |
| Source credibility | Cautions may be taken to evaluate the credibility of shared information. | Recommendation of people to follow in addition to friends. | Cautions may be taken to evaluate the credibility of shared information. |

Social networks' information exchange usage in disaster communication supports the persistence criteria stated by Palen & Liu. Persistency refers to communications that are visible, recordable, and/or transferable to other people over time. SM is assisting the process of collecting and disseminating information by making it easier for both public and disaster agencies to share and post information. Utilization of SM with affordable and accessible Internet connection, individuals are always connected, which enables them to share and distribute information regarding events in real time. In the event of a disaster, when certain telecommunication infrastructure is destroyed or networks are unable to cope with sudden load of calls, SM such as Facebook or Twitter have the capacity to deal with large volume of information. This enables them to remain online and providing the only means communication for the victims and disaster agencies, especially in requesting for aid (Bird, Ling, & Haynes, 2012).

The rise of new collaboration techniques, especially using social media tools and services has make it easier for disaster agencies to perform data collection and information sharing. This has strongly leverages voluntary participation in using social media services tools and services. This has encouraged the crowds to provide or share information at a reasonable cost, sometimes for free, and no limitation in terms of time or volume of information. However, it may poses considerable challenges, as they moved from traditional way of sharing information to unstructured, mass collaboration (Boughzala, De Vreede, & De Vreede, 2014). Although, more information can be received by using social media, it will be good to filter and improve the information received since not all information obtained from crowdsourcing is in good quality.

3. Research Questions

The present study will look at the rise of the rise of new collaboration techniques, especially using social media tools and services. The research question was if social media can bring significant contribution to the area of disaster management, specifically in assisting the communication during a disaster. Given the traditional ways in communicating among multiple disaster agencies, the study will look into how social media can bring change in information sharing in providing relief to the affected victims.

4. Purpose of Study

Disaster researches mainly focus on coordination among the stakeholders in providing fast relief to the stakeholders involved in the disaster. In this case, more stakeholders involved in disaster management,

the complexity of managing the disaster will increase. Coordination relies heavily in proper communication, which has been identified as the main method in sharing and transferring information in assisting coordination among the various stakeholders, including authorities, agencies, public and victims. The use of social media in communication during disaster has increased as it encourage the public to share information in assisting the agencies in saving lives and reducing risks. The purpose of this study is to identify how social media can be used as communication tool in disaster, specifically looking at the context of Kemaman.

5. Research Methods

This research involves a case study approach by means of conducting field study at Kemaman District Office for observation at the Disaster Command Centre of Kemaman; studying documents and interviewing key actors that include officers from disaster agencies in Kemaman though open-ended interviews.

Review of literatures were obtained from National Security Council Directive No. 20, Operation Fixed Regulation (Peraturan Tetap Operasi) from the agencies involved, and academic literatures relating to social media usage in disaster management. Interviews were held with main authority for Kemaman flood which is the District Office of Kemaman, headed by a District Officer as well firemen from Kemaman Fire and Rescue Department. These officers were selected as they were directly involved in the communication aspect of the Kemaman disaster. The meeting objective is to gather information on roles of district office in managing flood. From the interviews, the explanation on information regarding the roles and procedures of the agency in managing flood in Kemaman was provided. The information obtained helped to identify the fundamental information of how flood is being managed in Kemaman, and how social media has help to improve communication during flood.

Information obtained from all these sources was then compiled and analyzed as preliminary input for this study. These methods have helped the authors to analyse actual communication situations and initiatives that have been implemented during the 2014 flood in Kemaman.

6. Findings

This section will highlight the usage of social media in the context of disaster in 2014 for the district of Kemaman, Terengganu. As explained in earlier section, interviews were conducted at the district office, followed by discussion and presentation of tool that was used in supporting communication during disaster

6.1. Stakeholders of Kemaman disaster.

According to Directive No. 20, for floods, a committee called National Flood Disaster Relief Machinery (NFDRM) will be deployed when flood occur, which is headed by the Minister of Information with its secretariat at the National Security Council (NSC). Theoretically, NFDRM is responsible for all

operations at the national, state and district levels. However, in reality, it only coordinates operations at the national and state level. The activity in each state is left to be run by the respective state authorities, which in the case of Kemaman, it is run by the District Office. Its main task is to ensure that assistance and aid are provided to flood victims in an orderly and effective manner, which need to be supported by proper coordination for all relevant disaster agencies.

District Officer of Kemaman is appointed as the District Disaster Director in the event of flood in Kemaman. The Director will relay information relating to the disaster continuously to the Disaster or NSC Secretary at the State level. In the district level, a sector leader for each State Legislative Assembly (Dewan Undangan Negeri) will be appointed that will be responsible in managing all villages in the district of Kemaman, as well with the evacuation centers. Figure 01 below showed a typical organization chart of the Kemaman District Disaster Management Committee.

A ‘disaster room’ will be declared as officially open once a village has been hit by flood, and evacuation has taken placed. The disaster room will be stationed at the District Office of Kemaman, and simultaneously the Kemaman Control Center (KCC) will also starts its operation. The State Disaster Control Center will be notified once any of the district control center under its jurisdictions has been opened to ensure that all in-formation relating to the disaster will be channelled directly to the state officials.

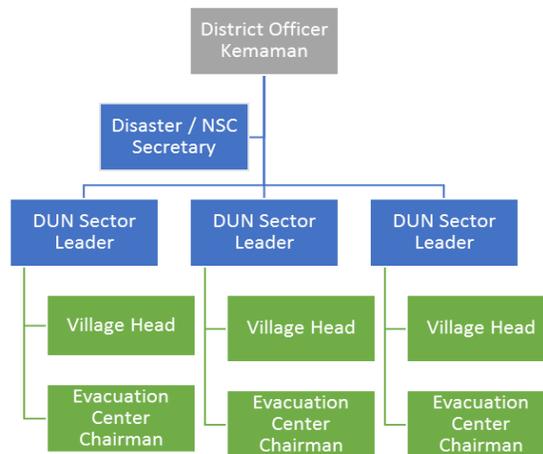


Figure 01. Organization chart of Kemaman District Disaster Management Committee

6.2. Communication tools.

Flood relief activities in Kemaman relies on a specialized portal that aim to be the main channel in information sharing among the disaster agencies. All agencies that re-reported to the District Office will start sending information once the ‘disaster room’ is opened and news to the District Office will be distributed by using a specialized portal, named as Kemaman Integrated Flood Disaster Management Portal, developed by the Communications and Multimedia Com-mission (MCMC).

The portal is being used by several agencies, which are the Ministry of Health, Fire and Rescue Department, Police Department, Civil Defense, Public Works Department, Department of Irrigation and Drainage and Welfare Department. All these agencies use the portal as means to enter real-time, accurate and relevant information that aim to promote better coordination for relief activities. The portal is used to store variety of information, including list of evacuation centers, list of resources available and list of residents of Kemaman.

Access to the portal is given to selected representatives of these agencies, and they need proper equipment such as a working PC and reliable internet connection to supply information to the portal. In actual disaster, information need to be disseminated at the right time, and sometimes the proper equipment may not be available. To overcome this problem, agencies started to rely on other dissemination systems such as Short Messaging System (SMS) and with the rise of social media, Twitter and WhatsApp has been the secondary tools in sharing information.

6.3. Social media usage in Kemaman disaster.

The increasing use of smart phones has contributed to the increase usage of social media in information dissemination during a disaster. As landlines are often affected that disable the use of telephones or fax, mobile networks has being used as the primary tool so information can be shared and disseminated to the right people during the disaster (Connie & Linda, 2010; Dufty, 2012).

A command center is only triggered when a village has been hit and the first evacuation center is in operation, and the information relating to these trigger is sent by the Village Head (Pengkulu) to the Kemaman Command Center, headed by a District Disaster Director. It is vital for these trigger information to be sent immediately to the KCC, and the fastest tool that can be used is only by using the social media, which in this case, is by using WhatsApp. This can be seen from the recent disasters as more disaster agencies are using social media tools such as WhatsApp to help victims during evacuation as information can be sent faster, and the responders know where to find the victims that need to be evacuated faster and easily. Table 02 describes the characteristics of WhatsApp usage during flood in 2014.

Table 02. Characteristics of WhatsApp usage in 2014 Kemaman flood

| Features | Description |
|------------------------------|---|
| Owner | District Officer |
| Objectives | To facilitate fast and easier communication among agencies during disaster |
| Membership of WhatsApp Group | Two selected representatives from disaster agencies, including: <ul style="list-style-type: none">• Fire & Rescue Department• Police Department• Civil Defense• Public Works Department• Department of Irrigation and Drainage• Welfare Department |

| | |
|-----------------------------|---|
| Type of Information Sent | <ul style="list-style-type: none">• Early warning or information• Official documents that contain directives or instructions (in form of snapshot or image) |
| Verification of Information | Each agency is responsible to verify information relating to disaster before sending it out through WhatsApp |
| Sharing of Information | Information shared through WhatsApp will be entered into Kemaman Integrated Flood Disaster Management Portal |

The use of WhatsApp has been a dominant tool for information sharing during disaster as it was used heavily during the flood period in 2014, especially for victims in sharing latest and important information of the flood (Aisha, Wok, Manaf, & Ismail, 2015). Flood victims that has to be evacuated to a safer place will typically lose their common method in knowing the latest news, through the television, newspapers, radio or computers. As mobile phones are a necessity to everyone these days, people will bring their phones around, and will always been connected to the Internet. By using their mobile phones, it is the most important and only communication tool for the flood victims. They can easily send and receive variety of media of the disaster including text, photos, videos, documents, location and voice calls.

In the case of Kemaman district, all the agencies involved have their own WhatsApp group for communicating especially in passing important information of the disaster. It is an efficient communication tool as the user can communicate with other teams based in different locations. This has proved effective as the responders were scattered through several places during flood, and by using WhatsApp, they were able to send latest news, resources available or needed and information on victims. Figure 02 shows an example of how WhatsApp was used as communication during the disaster.

As for the centralized disaster management for Kemaman, a central WhatsApp group was created, which is administered by the District Officer. The aim of creating the communication group is to ensure that information can be shared easily among all the agencies especially information that need to be sent fast such as number of victims, location and available assets for rescue works. The group is joined by minimum of two representatives of the disaster agencies, which include Fire and Rescue Department, Police Department, Civil Defense, Public Works Department, Department of Irrigation and Drainage and Welfare Department. Other agency participation can be added based on the need of the agency in receiving information from the central WhatsApp group

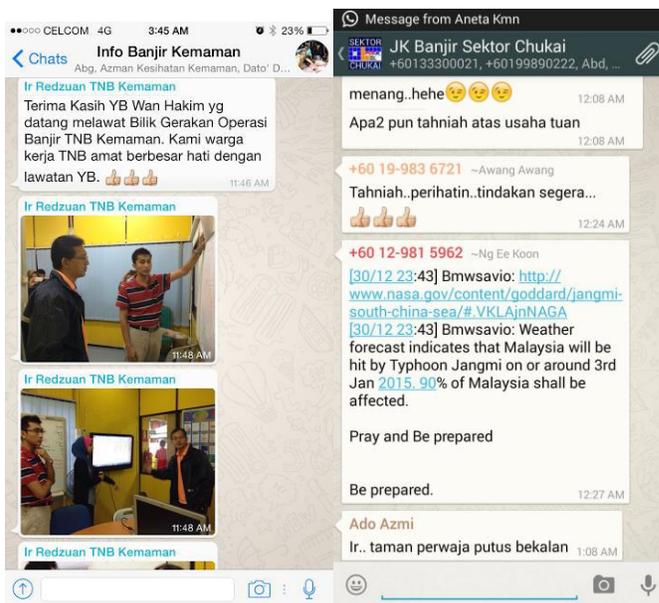


Figure 02. WhatsApp messages that was sent among disaster agencies during 2014 Kemaman flood

Early warning or information were sent through WhatsApp, including official documents that contain instruction or directive from agencies' headquarters or NSC. A snapshot of the official documents were sent through WhatsApp to all the members of the WhatsApp group. This is to ensure that prompt response can be given to victims without waiting for the actual documents to arrive at the disaster scene.

Each agencies in the WhatsApp group will use the application to send the latest information relating to the flood especially information relating to evacuation matters or the rising level of rivers. The information received through the WhatsApp channel are considered as valid and accurate as each agencies representatives need to ensure that the information distributed or shared through WhatsApp has been verified by its own agency. Apart from using WhatsApp for information sharing among agencies, the same information will be entered into the Kemaman Integrated Flood Disaster Management Portal. This is to enable the other agencies including Non-Governmental Organizations (NGO) to follow the progress of the relief and recovery works of the disaster.

The other social media tool used to share information during the flood is Facebook and Twitter. Facebook was mainly utilized by public or non-governmental organization to disseminate information on the actual situation of the disaster. Users can simply search information on flood by just typing the keyword into Facebook. One of the community-created group is 'Info Banjir' that collects or source any related information on the media and place them inside Facebook. As for Kemaman, the district office created a page entitled 'Kemaman Siapsiaga' that provides disaster information to the public, including information on weather, tide and sea condition that enable the residents to anticipate the climate condition and to have early preparation before the disaster hap-pen. Most of the information on this page is being provided by the office and public can also respond to any of the information provided.

Twitter can relay short messages to the public, and they can have conversation thread from the initial tweet. Users can easily search the hashtag such as ‘flood’ or ‘disaster’, and they will be connected to the flood or disaster information posted by the public. Twitter can be used as a channel as a go-to online venue for related people to know or being updated on what is happening in any given moment. This is vital during a disaster as people affected need to get their hands on the disaster information in order to think of their next step in dealing with the disaster. They can use the information to prepare their family members, to alert the village, to store their properties at a safer, higher place or to know which evacuation center to go to. One of the most used Twitter account for flood is ‘@kemaman’, shown in Figure 03, which contains relevant information on flood, real-time updates of the flood including number of victims or the activities that is being carried out by the responders. The recent update of Twitter has introduced a new feature called “Moments” that highlights breaking news stories, which is extremely useful in the event of a disaster, which it can highlight latest news on disaster.



Figure 03. A screenshot of Kemaman Terengganu (@Kemaman) Twitter that showed tweets on flood latest information

7. Conclusion

SM tools are increasingly being used in providing assistance to disaster management activities, used significantly in coordinating activities as well as providing quick information dissemination to relevant agencies and affected victims. Lessons learnt from disaster in Kemaman have shown that SM tools has served as an important component of crisis response especially in the communication aspect of disaster.

SM has introduced vast amount of information for disaster managers to utilize, which most of it originate from the public. Disaster authorities, NGOs and governments relied on information originating from the social media, especially WhatsApp and Twitter in planning and executing the right response in the event of disaster. Information that collected from the use of SM will be able to provide better assistance in a time of disaster in the future. As social media is still not widely used in disaster management in

Malaysia, a better understanding is needed to effectively leveraging social media in executing an effective disaster management. Social media usage need to have better governance in terms of understanding on who owns the data and the most efficient way in disseminating the data to have better coordination and communication if a disaster occurs.

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