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**GATR Enterprise** [002360364-P]  
21-8-15, Taman Bukit Angkasa,  
Jalan Pantai Dalam  
59200, Kuala Lumpur

Tel: 603-22011665

Mobile: +6018-3619766

Whats App: +6017-3690275

Fax: 603-22011665

Email: [info@gatrenterprise.com](mailto:info@gatrenterprise.com)

Website: [www.gatrenterprise.com](http://www.gatrenterprise.com)

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## Exploring the Use of Social Media for Information Sharing during the 2014 Flood in Malaysia

Tengku Siti Aisha Tengku Mohd Azzman Shariffadeen <sup>1\*</sup>, Saodah Wok, Aini Maznina A. Manaf, & Rizalawati Ismail

<sup>1</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

<sup>2</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

<sup>3</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

<sup>4</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

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### ABSTRACT

In December 2014, one of the most perilous floods in recent years occurred in Malaysia. The east coast of Malaysia, including the states of Pahang, Kelantan and Terengganu were areas that were badly affected, and many lost their lives, homes, material possessions, and even homes. The main objective of this paper is to explore the use of social media, and other communication technologies, for example, mobile messaging applications, for the specific purpose of information sharing about the flood in Malaysia. Survey questionnaires were distributed among families directly affected by the flood in east cost Malaysia ( $N = 507$ ) in order to examine their use of social media during the flood, and the main source of information used for the purpose of information sharing strategies. The implication in using social media and other communication technologies, as an important and critical source of information during disaster periods in Malaysia will also be discussed. In light of the recent popularity of social media, especially among young adults in Malaysia, this paper could shed light on how social media could be utilized to facilitate relief efforts, or to share critical information during disaster periods, where traditional mainstream media, may not be readily available.

**Type of Paper:** Empirical paper

**Keywords:** Communication technology, flood, information sharing, social media, Malaysia

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\* Corresponding author: Tengku Siti Aisha Tengku Mohd Azzman Shariffadeen

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia  
Saodah Wok

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia  
Aini Maznina Abd Manaf

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia  
Rizalawati Ismail

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia

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**Tengku Siti Aisha Tengku Mohd Azzman Shariffadeen <sup>1\*</sup>, Saodah Wok, Aini Maznina  
A. Manaf, & Rizalawati Ismail**

<sup>1</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

<sup>2</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

<sup>3</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

<sup>4</sup>International Islamic University Malaysia, 53100, Gombak, Malaysia

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### **ABSTRACT**

In December 2014, one of the most perilous floods in recent years occurred in Malaysia. The East Coast of Malaysia, including the states of Pahang, Kelantan and Terengganu were areas that were badly affected, and many lost their lives, material possessions, and even homes. The main objective of this paper is to explore the use of social media, and other communication technologies, for example, mobile messaging applications, for the specific purpose of information sharing about the flood in Malaysia. Survey questionnaires were distributed among families directly affected by the flood in East Coast Malaysia ( $N = 507$ ) in order to examine their use of social media during the flood, and the main source of information used for the purpose of information sharing strategies. The implication in using social media and other communication technologies, as an important and critical source of information during disaster periods in Malaysia will also be discussed. In light of the recent popularity of social media, especially among young adults in Malaysia, this paper could shed light on how social media could be utilized to facilitate relief efforts, or to share critical information during disaster periods, where traditional mainstream media, may not be readily available.

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\* Corresponding author: Tengku Siti Aisha Tengku Mohd Azzman Shariffadeen

E-mail: [taisha@iium.edu.my](mailto:taisha@iium.edu.my)

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia

Saodah Wok

Email: [wsaodah@iium.edu.my](mailto:wsaodah@iium.edu.my)

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia

Aini Maznina Abd Manaf

Email: [maznina@iium.edu.my](mailto:maznina@iium.edu.my)

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia

Rizalawati Ismail

Email: [rizalawati@iium.edu.my](mailto:rizalawati@iium.edu.my)

Affiliation: Department of Communication, KIRKHS, International Islamic University Malaysia

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## 1. Introduction

During any natural disaster events, such as floods, wildfires, earthquakes, or tsunamis, information sharing is necessary, as it can help alleviate stress, provide social support among those affected by the natural disasters, and also provide crucial information needed in order to deal or cope with the natural disaster. Currently, social media is considered as a prominent, near real-time communication channels used to share information during the times of calamities and natural disaster (Paladin, Ramos, & Capulong-Reyes, 2015; Simon, Goldberg, Aharonson-Daniel, Leykin, & Adini, 2014). Accordingly, several studies have explored the use of social media as an alternative or ‘backchannel’ tool to communicate about disaster events, by sharing and disseminating information about natural disasters (Liu, Fraustino, & Jin, 2015; Mersham, 2010; Cho & Park, 2013). In some research, a primary reason why individuals may turn to social media during disaster times is to assuage risk and to reduce uncertainties (Merrifield & Palenchar, 2012). Despite numerous empirical research conducted to examine social media use during disaster events, they were mostly studies focused on the use of Twitter as a tool to share information about natural disasters (Paladin et al., 2014, Palen, Starbird, Vieweg, & Hughes, 2010; Simon et al., 2014; Umihara & Nishikitani, 2013). Moreover, previous studies on social media use for disaster events have examined a wide range of natural disaster events ranging from earthquakes (Cho & Park, 2013; Lobb, Mock, & Hutchinson, 2012), wildfires (Merrifield & Palenchar, 2012; Sutton, Palen, & Shklovski, 2008) and tsunamis (Mersham, 2010; Perry, 2007). However, the use of social media as an information-sharing tool may differ significantly across disaster types, and according to various countries and cultures. Consequently, it is worth focusing on social media use during a different type of natural disaster e.g., floods in a country like Malaysia, where floods can be devastating, in terms of potential loss of human lives and also financial liabilities (i.e. Ali Khan, Shaari, Achmad Bahar, Baten, & Nazaruddin, 2014). As such, a general purpose of this paper is to explore the use of social media and other new communication technologies during the recent 2014 flood in Malaysia. Specifically, the objectives of this research are:

- To explore the usage of social media during the 2014 flood;
- To examine the use of social media for information sharing during the 2014 flood; and
- To analyze the effects of social media use for information sharing on information sharing behaviors, and satisfaction gained from sharing information during the 2014 flood

## 2. Literature Review

### 2.1 2014 Flood in Malaysia

Floods are a common occurrence in Malaysia. However, the recent monsoon flood from December 2014 to January 2015 was regarded as one of the more devastating floods to hit Malaysia in decades, with more than 100, 000 flood victims evacuated from their homes (Reuters, 2014). The East Coast of Malaysia consisting of the states of Pahang, Terengganu, and Kelantan were considered as the most badly affected states by the flood. In the aftermath of the flood, problems continually faced by the flood victims include shortage of food supplies, electricity, clean water, banking service, and erratic communication problems (Malay Mail, 2014). Additionally, there were complaints that assistance from the government to flood victims has been slow (Al-Jazeera, 2014). Therefore, private citizens and non-governmental organizations were using social media to facilitate rescue efforts and to share updated information about the flood. For instance, Ng (2014) reported that flood victims in Kelantan were pleading for assistance through the use of social media, such as Instagram, Twitter and Facebook.

## *2.2. Social media use during natural disaster*

Parallel with the advanced technology, social media is becoming popular and increasingly used to share and obtain information during natural disaster throughout the world (Liu et al., 2015). Social media are digital or mobile tools that are interactive, allowing users not only to access but also to create or influence content (Wright & Hinson, 2009, as cited in Liu et al., 2015). In the 2007 wildfire disaster in the United States, peer-to-peer communication through social media such as social networking sites, text and instant messaging applications, blogs, wikis and other web forums are widely used for supporting additional, often critical and accurate, dissemination of information within the public sphere (Sutton et al., 2008).

## *2.3. Information sharing via social media during flood disaster*

According to the American Red Cross, about 60% of the general population receives disaster related information online including Facebook (18%) and Twitter (15%) (Harman, 2011, as cited in Maxwell, 2012). Young generations are more likely to use social media in sharing the related information during this critical period (Maxwell, 2012). The unavailability of traditional forms of communication during chaotic time has led victims to move from using traditional media to social media. When most of the areas in a state are badly affected by flood, the only choice available for the victims is social media that is characterized as instant and mobile. Using social media, the flood victims could be the content providers and able to help others with the information when the traditional media fails to provide news as timely as social media do. People are more likely to share information with others about flood when their motives are to help them (Ahmad, Mohamad Zani, & Hashim, 2015). Although the information shared via social media can be possibly inaccurate, flood victims might feel that the unofficial reports from individuals using social media can be more accurate and beneficial than nonexistent official reports (Mersham, 2010). Similarly, the use of social media is seen as the only medium, which could console the anxiety and fear felt by the people involved in flood (Maxwell, 2012). When telephone and all wired media are disrupted due to flood, social media such as Facebook and Twitter are the last resort to interact with others. When family members live in a distance and the traditional media are down, social media allows them to interact with one another. Hence, they will be relieved to know that their family members or friends are safe.

## *2.4. Uses and gratifications theory*

In order to understand social media use among the flood victims and satisfactions derived from using the social media to gain information about flood disaster, the authors used uses and gratifications (U&G) theory (Blumler & Katz, 1974). Taking U&G as a premise, we believe that the flood victims are active users of media and seek to use social media to satisfy their needs in obtaining useful information about the flood incident. Hence, this postulation is the complete opposite from the earlier assumption that audience members are undifferentiated mass that passively receives media messages (Kaye & Johnson, 2002). According to Katz, Blumler, and Gurevitch (1973), the U&G theory focuses on how people use the media and reward their own needs. In addition, it also helps researchers to identify function and consequences as a result of need, motives and behaviors. Accordingly, researchers used the theory to study social media use during disasters. For instance, Maxwell (2012) used the U&G theory to study about Twitter during EF-4 tornado that occurred in Alabama. The researcher was interested to understand how students at the University of Alabama used Twitter during the warning, impact, and recovery stage of the disaster. The results indicate that those motivated by social, entertainment or information needs tweet more during the impact and recovery stage. In line with Maxwell (2012), U&G is an appropriate theory used in the current study for studying social media. The two-way nature of social

media requires an audience to actively choose the medium it wants as well to decide how it will use the medium. Social media is totally different from traditional media as it allows the audience to choose the action. Therefore, based on the discussion above, the following hypotheses are proposed:

- H1: Usage of social media for information sharing is positively related to satisfaction gained from information sharing.
- H2: Information sharing behaviors is positively related to satisfaction gained from information sharing.
- H3: There is a positive relationship between usage of social media for information sharing, information sharing behaviors, and satisfaction gained from information sharing.

### 3. Methodology

The study utilized the quantitative approach; with a cross-sectional survey as the research method in exploring the use of social media for information sharing during the 2014 flood in Malaysia. A survey questionnaire was distributed among 507 Malaysian flood victims from three different states in the East Coast of Malaysia (Pahang, Terengganu, and Kelantan). Four main measures were used to explore the use of social media during the 2014 flood in Malaysia. To measure social media use (Facebook, Twitter, Instagram, blogs, and WhatsApp) during the 2014 flood, a 5-point Likert scale was used, with response ranging from 1 (*never*) to 5 (*always*). To measure the likelihood of using social media and mother communication technologies (Twitter/Facebook and WhatsApp) for information sharing, a 5-point Likert scale was also used, with response items ranging from 1 (*very untrue of me*) to 5 (*very true of me*). Additionally, to measure information sharing behaviors, three measures were used. First, one measure explored the quality of information exchanged about the 2014 flood, with a 5-point Likert scale. The response items ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). An example of an item for this measure is, "I had updated information about the flood victims". There was 13 items included in this measure. The other measure for information sharing behavior analyzed range of information (i.e. different types and categories) shared about the 2014 flood, and it was measured using a 5-point Likert scale, with response items also ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An example of an item for this measure is, "I shared information related about the flood in general". There was 10 items included for this measure. The third measure for information sharing behaviors analyzed the frequency of information sharing activities with friends and family members about the 2014 flood, and it was measured using a 5-point Likert scale, with response items also ranging from 1 (*never*) to 5 (*everyday*). An example of an item for the measure is "I give more information to my friends/family members/relatives about the flood". There were 5 items included for this measure. Finally, the study also focused on positive feelings and satisfaction gained from sharing information about the 2014 flood. It was measured using a 5-point Likert scale, with response items ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An example of an item for this measure is, "After sharing information, I feel that someone cares for me". There were 13 items included for this measure. Variables used in the study were also subjected to reliability testing and accordingly, the Cronbach alpha values indicated that the measures used in the study were highly reliable, with scores ranging from .90 to .93.

### 4. Findings of the study

#### 4.1 Demographic background of respondents

Based on the 507 respondents, the study found that approximately 63% of the samples were females while the rest (37%) were males. The respondents were also relatively young ( $M = 35.90$ ,  $SD = 14.39$ ), with age that ranged from 14 to 76. More than half were married (55%), while others were single (39%), and a minority were either divorced (1%) or widowed (3%).

One-third was relatively well educated, with at least a bachelor's degree (31%), diploma (24%), and more than one-third had completed at least a secondary school education (35%). However, only a minority had some post-graduate education (2%), while only 2% did not possess any formal education. Regarding occupation, the flood victims were gainfully employed; most were working full-time (60%). Some had professional positions (24%), worked in sales and services (26%), or in administration and management (20%). Finally, almost half of the respondents (47%) consisted of household with relatively low income, with RM200 or less earned per month.

#### *4.2 Usage of social media during the flood period*

Based on the data, Facebook is the most popularly used social media application ( $M = 2.99$ ,  $SD = 1.58$ ) compared to blogs, Instagram, or Twitter. However, findings also revealed that other types of communication technology, specifically, WhatsApp ( $M = 3.67$ ,  $SD = 1.60$ ) were used most frequently during the flood period. Finally, the respondents reported using mobile phones ( $M = 4.48$ ,  $SD = .96$ ) and SMS services ( $M = 3.95$ ,  $SD = 1.29$ ) most often during the flood period. Additionally, when comparing the use of social media during the 2014 across age, the Pearson's bivariate correlations analysis revealed a consistent pattern. Younger users were more likely to use social media during the 2014 flood; specifically, there was a significant, negative relationship between age, and the use of Facebook, Twitter, Instagram, blogs, and WhatsApp during the flood period.

#### *4.3 Using social media for information sharing*

The next research question examines different social media use for sharing information, such as following newsfeeds and celebrities on Facebook/Twitter, and using WhatsApp. Findings revealed that the victims of 2014 flood were highly reliant on WhatsApp for information sharing about the flood ( $M = 3.57$ ,  $SD = 1.45$ ). Other types of social media were perhaps regarded as a more secondary source of information. Social media was used for information sharing either through following the newsfeed on Twitter/Facebook ( $M = 3.19$ ,  $SD = 1.42$ ) or following politicians and celebrities on Twitter/Facebook ( $M = 2.59$ ,  $SD = 1.36$ ). Additionally, the correlations analysis indicates that frequent users of social media for information sharing were also more likely to engage in information sharing behaviors, such as sharing a wide range of information, sharing higher quality information, and engaging in information sharing activities more frequently.

#### *4.3 Effects of using social media for information sharing on information sharing behaviors and satisfaction gained from information sharing*

Finally, to analyze the effects of information sharing using social media, a multiple regression analysis was conducted to determine the relationship between social media usage for information sharing, information sharing behaviors, and satisfaction gained from sharing information about the 2014 flood (Table 1). The dependent variable was satisfaction gained from information sharing. In the first step, usage of social media for information sharing was entered into one block. The use of social media accounted for 4.3% of the variance in satisfaction from information sharing. However, only the use of WhatsApp emerged as a significant, positive predictor at this step. Therefore, there was partial support for H1. At step 2, the extent to which the three types of information sharing behaviors engaged in was entered into the equation. They accounted for an additional 38% of the variance, and the  $F$  change was significant ( $p < .001$ ). Therefore, H2 was supported. Use of WhatsApp ceased to be a significant predictor at this step. Information sharing behaviors (i.e., quality of information, types of information shared, and frequency of information sharing activities) were significant, positive predictors to satisfaction gained from information sharing behavior.

The final equation accounted for 42% of the variance being explained in satisfaction gained from information sharing behaviors. The results suggested that those who tended to engage in information sharing behaviors were likely to feel more satisfied when sharing information about the flood. Therefore, H3 was also supported.

Table 1. Summary of regression analysis for predicting satisfaction gained from information sharing.

| Variable  | <i>B</i> | <i>SE B</i> | $\beta$ |
|---|----------|-------------|---------|
| <b>Step 1</b>   |          |             |         |
| Following politicians/celebrities on Facebook/Twitter | .00      | .03         | .00     |
| Following newsfeed on SNS                             | .05      | .03         | .11     |
| WhatsApp messaging                                    | .05      | .03         | .13     |
| <b>Step 2</b>   |          |             |         |
| Following politicians/celebrities on Facebook/Twitter | -.01     | .02         | -.03    |
| Following newsfeed on SNS                             | .01      | .02         | .01     |
| WhatsApp messaging                                    | -.01     | .02         | -.03    |
| Range of information shared                           | .08      | .03         | .13     |
| Quality of information shared                         | .49      | .04         | .52     |
| Frequency of information sharing activities           | .07      | .03         | .11     |

Note:  $R = .22$ ,  $R^2 = .05$ ,  $F(493, 3) = 8.41$ ,  $p < .001$  for Step 1,  $R = .65$ ,  $R^2 = .43$ ,  $\Delta R^2 = .38$ ,  $F(490, 6) = 60.81$ ,  $p < .001$  for Step 2.

## 5. Discussions and Conclusions

Overall, the results indicate that the use of new communication technology for information sharing is important during times of natural disasters. Flood victims seem to gravitate especially to mobile messaging applications, such as WhatsApp. It is used vigorously during the flood period, and used most frequently for information sharing during the flood period. As flood victims were also displaced from their homes for a period of time, they probably did not have access to television, newspapers, radio, or computers. Because mobile phones are portable and instant, perhaps it is the most important communication tool for these flood victims. Due to the relatively young age of the respondents, it is expected that they are also more savvy users of new communication technology and were more likely to adopt the use of new communication technology for various reasons, including for information sharing.

However, the findings also indicate that following politicians/celebrities on Facebook/Twitter, or following newsfeeds on SNS did not significantly predict information sharing behaviors, or satisfaction gained from information sharing. Possibly, flood victims were reluctant to share information obtained from mediated sources, i.e. media personalities and friends on their social network, and preferred to share information with friends through interpersonal contact. Further, perhaps what matters more for flood victims is not the source through which information is shared, but more importantly, the nature of information shared with others. Viewed from the perspective of the flood victims, results indicate that they were

more satisfied with the information sharing process, when the information shared about the flood tended to be high quality, wider ranging, and frequently exchanged. Thus, agencies involved with flood management should ensure that the information shared through their webpages, social media, or through mobile messaging should be updated, accurate, and reliable in order to ensure that the information shared with the public are disseminated to a wider audience.

Additionally, the findings did provide some support for the U&G theory; in the context of natural disasters, active users of new media (i.e. WhatsApp) were more likely to turn to these communication technologies in order to gratify their needs for information sharing, and this in turn lead to greater information sharing behaviors. Future studies could add to these existing findings by examining the relationships between motivations to use social media and new technologies for information sharing, and how these needs were gratified with specific use of social media for information sharing, in the context of other types of natural disasters in Malaysia, such as landslides, tsunamis, or earthquakes. Further, the positive outcomes experienced by flood victims from information sharing perhaps indicate indirectly that anxieties and uncertainties experienced by victims during natural disasters could be quelled by actively sharing updated and varied types of information about the flood, and engaging in various information sharing activities more frequently. Future studies could investigate discrepancies experienced with uncertainties and information seeking behaviors during disasters times, and how this would influence their decisions on information management (i.e. whether they were motivated to seek information or choose to avoid seeking information), as viewed from an alternative theoretical lens, such as the theory of motivated information management (TMIM), which has been applied to understand information seeking behaviors in various contexts, including interpersonal and health related situations (Afifi & Afifi, 2009; Afifi & Weiner, 2004; 2006).

In sum, as one of the more critical area of complaint for flood victims of 2014 in Malaysia was the slow disaster relief efforts by the government, this study demonstrated that social media and mobile technologies could potentially be used to facilitate disaster efforts and share updated, critical, and important information about the flood with other flood victims, such as neighbors or family members. As social media and other new communication technologies maybe regarded as point of reference in times of crisis, particularly among younger adults, the Malaysian government, and other non-governmental agencies participating in flood relief efforts should take advantage of the availability of these technologies in order to aid flood victims and to ensure greater efficiency and effectiveness of flood management in the future.

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