

DISASTER MANAGEMENT IN THE DIGITAL AGE:  
A CASE STUDY OF THE ROLE AND IMPACT OF FACEBOOK  
DURING THE 2011 THAILAND FLOODS

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## **List of Abbreviations**

(CFO) Chief Financial Officer

(DSIT) Dynamic Social Impact Theory

(EAS) Emergency Alert System

(FOSS) Free and Open Source Systems

(hFOSS) Humanitarian Free and Open Source Systems

(HR) Human Resources

(ICT) Information Communication and Technology

(NGOs) Non-Governmental Organizations

(OD) Organization Development

(PwC) PricewaterhouseCoopers

(SNS) Social Network Site

(TAT) Tourism Authority of Thailand

(TV) Television

(VDO) Video

# **Disaster Management in the Digital Age: A Case Study of The Role and Impact of Facebook During the 2011 Thailand Floods**

## **Chapter 1**

### **Introduction**

#### **Introduction**

The main purpose of this case study is to explore how social media were used as a form of disaster management communication to assist Thai citizens during the deadly 2011 Thailand flooding that occurred between July and early December 2011. Because communication is critical during a disaster, it is important to study how communication technology is used as part of an effective disaster management plan. This case study of the Thai floods of 2011 presents an opportunity to learn how social media were employed during that disaster. By doing this research, both citizens and government officials may be able to apply some of the social media communication strategies to other disaster zones, especially when traditional communication channels are not working or are insufficient.

#### **Statement of the Research Problem**

Without effective communication channels during a disaster, citizens affected by the disaster may be deprived of information that could enhance their safety, give them peace of mind, direct them to needed resources, connect them to sources of assistance, and literally save their lives. As such, it is important to study new channels of communication that are or can be used during a disaster. These would include social media technologies that are increasingly being adopted by consumers. However, if government officials and others involved in disaster management do not understand how

these technologies can be best put to use during a disaster, this communication resource will have less value and effectiveness as a disaster management tool. This thesis will attempt to increase our knowledge of how social media can be used as part of a disaster management plan and how people have used social media in actual — not just hypothetical— disaster.

### **Main Objectives**

The main purpose of this case study is to explore and describe how social media such as the social networking site (SNS) Facebook were used for communication by Thai citizens as part of a disaster management plan and by the Thai government during the Thai floods of 2011. This case study also seeks to investigate “a contemporary phenomenon within its real-life context” (Yin, 1989, p. 23). This case study research will describe in-depth how the features of SNSs like Facebook were used as part of disaster management.

There are three main objectives of this case study:

- 1) To conduct empirical inquiry of disaster management in the digital age by studying how social media were used in the Thailand floods of 2011.
- 2) To apply theory in exploring the importance of social media for disaster management during the 2011 Thailand floods.
- 3) To make recommendations for future disaster management in the digital age.



## **Chapter 2**

### **Literature Review**

During the past few years, social network sites (SNSs) have become popular for social communications (comScore, 2009). Generally, users accessed social network sites in order to create their e-Profile for sharing thoughts and other interests on the sites among their networks (Boyd & Ellison, 2007). Some users who are interested in politics use SNSs to get involved. For example, one may visit a candidate's site when seeking the candidate's campaign information (Postelnicu & Cozma, 2008).

Today, users are interested in using social media in various ways. For example, during 2011 Thailand floods, many newspapers reported that Thai citizens engaged in using social media for disaster communication. Tech In Asia, an online news site, reported: "Online innovation has also flourished during the floods, as people in Thailand have tuned to social media for everything from sharing information to comic relief to serious calls for help" (Perry, 2011). This study explores how Thai citizens were engaged in using social media for disaster communication in disaster management during the 2011 Thailand floods.

#### **Distinguishing Social Media from Traditional Media**

In cultural studies, Miller used the term "social network" to describe a norm where people assimilated in similar behavior through coordination among one another (Miller, 2010). Miller (2010) described the natural rules of humans in using social networks. Miller (2010) included a study of social networks in Massachusetts, conducted by Christakis and Fowler, to explain a key characteristic of social media. Miller (2010) analyzed the usage of social networks and concluded that social networks changed

because individual users were influenced and changed by the people surrounding them. Likewise, “the influences spread through the town’s social networks like a virus, affecting not only people at one degree of separation, such as a spouse or relative, but also those at two or three degrees” (Miller, 2010, p. 214). The study showed a key point of social networks where similar behavior in a society can influence and affect one another in many degrees (Miller, 2010).

Naturally, people as social animals have few choices but to live in a society (Miller, 2010). A rule of human nature is social feedback. For example people “go to where they are getting a certain rate of positive feedback, avoid areas where they are getting negative feedback” (Miller, 2010, p. 211). When, in fact, in some situations that are a “matter of life or death” and people have short notice to communicate, “Watching what other people are doing is a reasonable strategy” (Miller, 2010, p. 212). One sociologist, Watts, talked about how when people are problem solving, not every problem can be solved from only one principle; people must follow group forms of networks (Miller, 2010). For example, one could not take some things for granted in order to solve every problem (Miller, 2010). As a result, using social networks in solving problems, such as dealing with disaster, humans also behave in the same pattern according to Watts, in which people follow and are affected by the group (Miller, 2010).

Miller (2010) gave an example of when people in two different groups rate and download a song via social network. In the first group, people were asked to listen to a song then rate it afterwards. The rating was from 1 to 5 with 1 meaning “I hate it” and 5 meaning “I love it”. After rating a song, another group was told to download a song that people in the first group already rated. Without listening to a song, the second group

downloaded it by only looking at the titles and the ratings score from the first group.

Miller (2010) learned that the rating scores of the songs influence downloading decisions of other people in the network. Regarding Miller's (2010) example of people's behavior on rating a song, scholars of sociology refer to Latane's theory, which explained how people in a network affect those participating in group networking.

### **Social Media Support in Latane's Dynamic Social Impact Theory (DSIT)**

Latane (1996) proposed a dynamic social impact theory "to account for how coherent structures of cultural elements emerge from the interactions of people located in space. In this conception, social structure is seen to result from individuals, differing in their ability to influence each other and in their spatial location, affecting each other in a dynamic iterative process of reciprocal and recursive influence" (p. 13). This theory viewed a society (a social network) as a self-organized, complex, system. In a society, individuals change and impact each other through communication within the same network. There are four forms of self-organizing societies cited in Latane's social impact theory that can be used to describe the influences within a network (Latane, 1996).

1. **Consolidation:** People can be influenced by behaviors/actions of the majority of a network (i.e., the number of members, size).
2. **Clustering:** People can be influenced by those closest to them. (i.e., closeness, sight distance). Also, these people tend to gather in a group where they can share common interest.
3. **Correlation:** People can be influenced by important information that their networks provided (i.e., credibility, salience). According to Latane (1996),

correlation is when opinions among users within a network affect various discussions and decisions are correlated.

4. **Continuing diversity:** People can separate themselves into several groups within the same network, based on diversity of interests, yet they can still coexist within the same society or network.

### **Social Media and Disaster Management**

Communication and technology researchers have studied the connection between social media and disaster management. White (2012) mainly focused her work on how social media could be a support in crisis communication. During a crisis, White (2012) described that challenges arise in focusing the important information and focusing the right information to the right people, and at the right time. According to White (2012), social media has already become an important factor in communication for disaster management and emergency management. White (2012) emphasized using social media during mitigation, response, and recovery phases during crisis and emergency situations. White (2012) also focused on crisis communication groups such as non-governmental organizations (NGOs), volunteer organizations and citizens. She gave the example of Clark, who wrote “Onsite with Liz Clark,” on social media in Canada. Clark (2012) stated:

Communication and collaboration are critical cornerstones of emergency management. (p. 4)...Social media offers a solution to some communication challenges and so recognizes the importance of community engagement and social media, now firmly entrenched in the public domain, will need to play a more dominant role in communication and collaboration (p. 8).

Regarding Clark's statement, social media offered some communication and solutions. White (2012) gave another example of social media used in emergency situations. The California wildfires crisis in 2007 was a good example of how social media communication and technologies introduced people to a new way of interacting and exchanging information (White, 2012). This situation showed that firefighters and citizens preferred to communicate via social media (White, 2012). White (2012) explained that because social media were fast in disseminating information, people changed the way they reached out for help. Consequently, social media were beneficial for many people and organizations in many ways (White, 2012). As White (2012) described, social media became the important key for building and maintaining community resilience. For example, people were using social media to collect donations immediately during the crisis, and the American Red Cross organization raised money during post-crisis for recovery efforts by using social media (White, 2012). This example shows how technologies change the way individuals communicate. A new form of disaster management was created using social media (Sutton, Palen, & Shklovski, 2008).

### **Communicatory Utility in Social Media Information-Seeking**

In some circumstances, when friends and family members watched broadcast news on traditional media about the Thailand floods and discussed the situation with one another, information-seeking habits could influence people to use social media to further develop a topic (Papacharissi, 2011). Papacharissi (2011) concluded that social media and "new communication technologies make individuals salient, raising the potential influence of interpersonal sources as well" (p. 28).

Researchers who study social media and interpersonal encounters suggest that “individuals garner information from the media that they then elaborate in interpersonal encounters, to understand the issues that the media discuss” (Carr, Choi, DeAndrea, Kim, Tong, Heide & Walther, 2011, p. 29). Atkin (1972) explained that when having interpersonal encounters, the individuals’ motivation led to information-seeking in order to accomplish interpersonal goals, such as “behavior adaptation.” Atkin defined “behavior adaptation,” as “one of the primary motivations to seek information: Because of an individual’s need [of] information that is useful for directing anticipated behavior” (Atkin, 1973, p. 217). Atkin called the term “communicatory utility” to describe this information-seeking state (Atkin, 1973). In many ways, communicatory utility focused on people’s interaction when seeking information sources (Atkin, 1972).

Regarding communicatory utility, Westbrook gave the example of a situation in northern Alabama that fits this description (Westbrook, 2012). Northern Alabama was hit with severe storms, wind and hail across the state as the result of a tornado (Westbrook, 2012). This situation motivated people, both officials and the public, to seek tornado news via social media as a crisis communication tool (Westbrook, 2012). Because everyone was inspired from the previous severe storms at the central southeastern states that happened on April 24, 2010, they reported that “social media could leverage abilities to be the most useful...information gathering, dissemination, input, warnings, and damage assessments” (Westbrook, 2012, p. 84). Therefore, in tornado situations, people were directed to use social media to facilitate their communication and seeking further information (Westbrook, 2012). Forecast information on social media could warn people and direct behavior in dealing with situations (Westbrook, 2012).

## **Social Media “Backchannel” Communications in Disaster**

In White’s study (2012) of the California wildfires of 2007, she described social media as the backchannel communication. White (2012) explained that during the wildfires, firefighters as first responders used social media technologies for managing the emergency situations. The people who followed the traditional news also preferred social media “not intentionally, but because communications between individuals had changed. There was and remains a growing trend of traditional channels of communications...but technology is driving how people interact and social media sites and Web 2.0 technologies provide ways for people to interact and exchange information in many ways” (White, 2012, p. 10).

According to Sutton, Palen and Shklovski’s study (2008) of 2007 southern California wildfires, the term “backchannel communication” is defined according to McCarthy and Boyd as an unofficial or irregular means of communication. “Backchannel” or “peer-to-peer” is also defined as a form of communication that is opposite to formalness (McCarthy & Boyd, 2005). Through social media, this kind of communication supports the propagation of information that is often critical (McCarthy & Boyd, 2005). As a result, “backchannels” communication has become a tool for the public to generate and share more information with others (McCarthy & Boyd, 2005).

Although the information provided on social media to inform about the disaster can be useful and beneficial to the public, it may not be legitimate and trustworthy (Sutton, Palen & Shklovski, 2008). On the other hand, because of the increased presence of information communication and technology (ICT), the peer-to-peer communications and public participation have become more popular (Sutton, Palen & Shklovski, 2008).

A smartphone is a good example of a technology that supported backchannel communication activity to its community of users (Sutton, Palen & Shklovski, 2008). Since a smartphone has been accessible and widely used by the general public, it has become a powerful tool to connect people through social networks, such as Facebook and Twitter (Westbrook, 2012). Among other benefits of the social networks through smartphone technology, it has played an important role in emergency management (Westbrook, 2012). Westbrook (2012) gives the example of how in the United States warning messages can be posted to Facebook walls by utilizing the feature provided by the Emergency Alert System (EAS). Therefore, with the help of the social networks, a smartphone has the potential to influence millions of people from anywhere in the world real-time, in an instant (Westbrook, 2012). These examples show how media improved the flexibility of using technological devices to enable people to enhance their communication and respond to disaster (Sutton, Palen & Shklovski, 2008).

### **Social Media in Citizen Engagement**

Citizen engagement has been discussed at various levels from low to high in natural disaster management (Grieb & Noble, 2012). More importantly, Waugh and Strelb mentioned that “collaboration is a necessary foundation for dealing with both natural and technological hazards and disaster and the consequences of terrorism.” An example is when volunteers help a community by providing resources to those affected by unfortunate events (Waugh & Strelb, 2006, p. 131). Collaboration is always necessary at the local level because people in communities relied on volunteers’ skill and dedication for community (Waugh & Strelb, 2006). Therefore, “collaborative networks are a



fundamental component of any emergency response” (p. 134) and “collaboration is an expectation in emergency management” (Waugh & Strelb, 2006, p. 137).

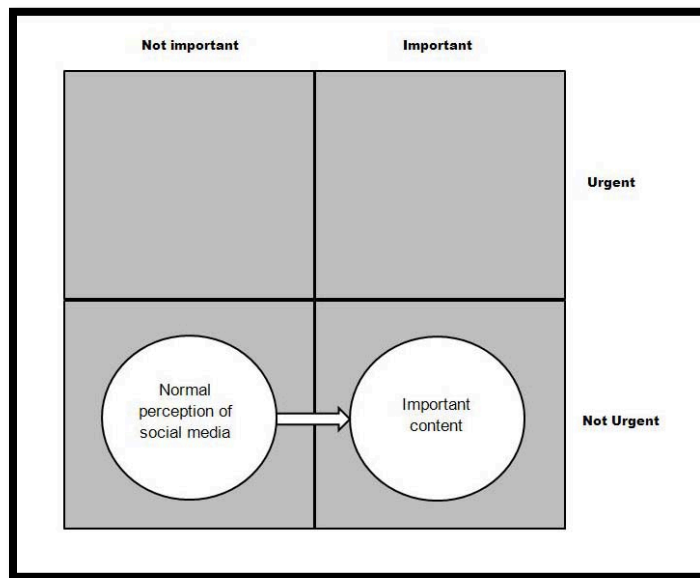
Some social media tools that were developed for disaster management use Free and Open Source Systems (FOSS) (Aud, 2012). The author analyzed social media as “the largest exchange of information in the history of humanity” (Aud, 2012, p. 243). The reason for this is because open source systems are free and flexible for communities and organizations to create their own group work (Aud, 2012). Aud (2012) gives an example of the Sahana disaster management system that uses humanitarian free and open source systems (hFOSS) for disaster management. (See Appendix E.) Boon (2012), a chair of the Sahana Eden project management committee, explained further that Sahana deployed hFOSS in response to Haiti’s earthquake, by supporting volunteerism efforts as Haitians used social media to “send help requests and news over the net, becoming a bastion for both news channels and relatives abroad” (p. 215). The open source systems are becoming more popular and are used by many communities. Aud said, “Many agencies and organizations will benefit from the development of systems that share information across organizational boundaries. The functions provided can serve many different groups, each in their own way to provide a unique need of each specific group. Much of the information is in real time providing decision makers with the best available information to make proper decisions during time-critical situations” (Aud, 2012, p. 242).

Aud analyzed public safety projects focusing on web 2.0 technology services through public engagement. One such case study examined the use of web 2.0 technology in border security (2012). An example of the lower Rio Grande River floods in Texas in 2010 helped Aud (2012) in explaining social media and collaboration of web 2.0

technology. Aud showed that social media were important in disaster response, and how social media empowered citizens in a critical time and played a major role. Aud (2012) identified how social media effectively were used by open-source by communities in collaboration responses for emergency situations. For example, members of many agencies such as federal, Texas state, and tribal, used “an open source-derived common operating picture pointed to the possibility of sharing and protecting data in the same system, and pattern for growth of social media was revealed in the deployment of a flood notification architecture” (Aud, 2012, p. 248).

Aud (2012) illustrated using three figures to show the pattern of how social media were used in the flood watch state in this Texas example as follows:

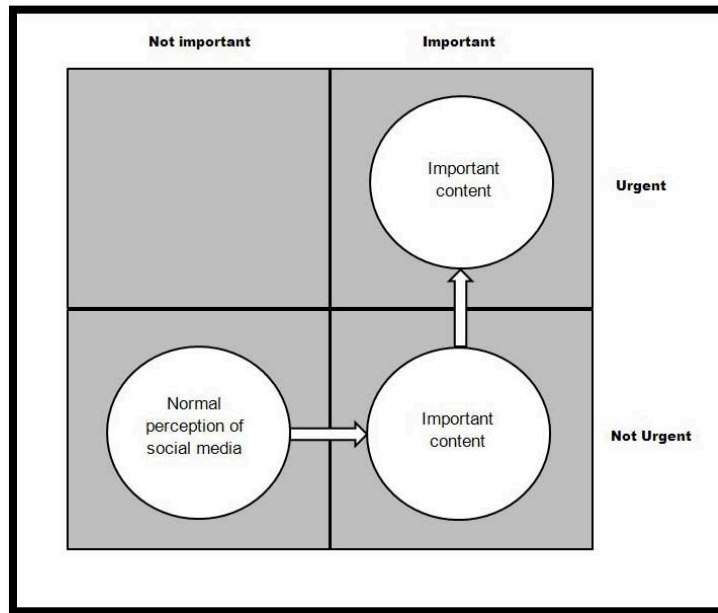
Figure 1 illustrates how social media as open source systems were deployed and effectively used in collaboration during the 2010 floods.



*Figure 1.* Migration of social media to position of importance. Adapted from Aud (2012, p. 258).

Figure 1 described the flood watch situation. Aud (2012) explained how social media were important for communities. Figure 1 illustrates the position of social media

that the content from social media “must be migrated from the ‘not important/ not urgent’ to at least the ‘important’ (Aud, 2012, p. 257). Aud (2012) explained that by contributing interesting information and consistently distributing useful information, “the importance of social media can be elevated” (p. 258). As a result, the community users knew how the content was important, as seen in Figure 2 below (Aud, 2012).



*Figure 2.* Migration of social media to positions of “important” and “urgent” to the user community. Adapted from Aud (2012, p. 259).

Figure 2 shows how the information on social media becomes important. Aud (2012) explained that by contributing reliable and useful information to the community, “The ‘value’ and ‘relevance’ of the content was elevated” (p. 258). In this state, if users of community ‘trust’ and rely on the information on social media sources and pass on that information to other users, trust becomes a key to position social media as important and urgent (Aud, 2012).

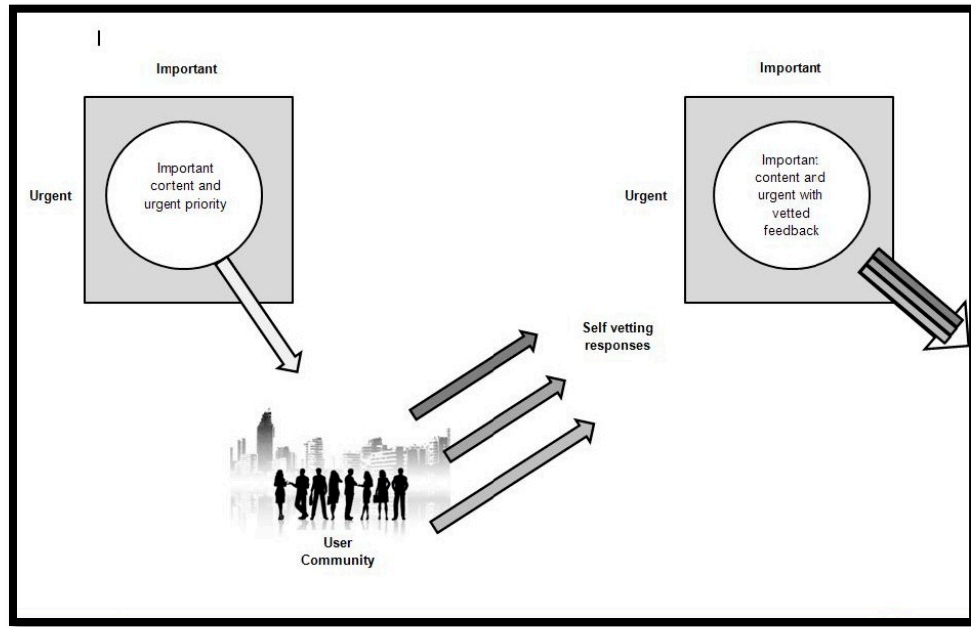


Figure 3. “Important” and “urgent” information with self-vetting response. Adapted from Aud (2012, p. 260).

Figure 3 depicts the relationship of trust and user communities’ engagement in social media (Aud, 2012). Figure 3 shows the relationship of trust between information contributors as a community group and user community after the information was provided to positions of importance and urgency (Aud, 2012). Trust can create a self-vetting response and leverage users’ engagement in social media. As Aud (2012) explained, “As social media facilitate the joining and interaction with the user community, they provide reasons for both receiving and contributing content. In the realm of emergency management, this can provide a means to tap real-time grass roots data sources, solicit input, and deliver critical information” (p. 260). Without self-vetting and critical thinking, information could lead to misinformation and rumors (Aud, 2012). Therefore, in a time of emergency, it was important to critique the information on social media sources, because with self-vetting of information, communication was likely to produce such effectiveness in disaster response (Aud, 2012).

According to social media and citizen engagement researchers, social media was important for emergency groups that citizens could create and use social media in order to fulfill communication collaboration (Sutton, Palen, & Shklovski, 2008). Collaboration in the web 2.0 environment provides social media with capacities, which show more efficiency in communication during a disaster (White, Turoff and Van de Walle, 2007a, White, Plotnick, Turoff and Hiltz, 2007b; Benbunan-Fich and Koufaris, 2007; White, Plotnick, Adams-Moring, Turoff and Hiltz, 2008a; White Hiltz and Turoff, 2008b; Turoff, Hiltz, White, Plotnick Hendela, and Xiang, 2008). Social media is more important in leveraging communication during a disaster when trust is created among citizen networks (Altschuller & Benbunan-Fich, 2008).

### **Summary**

Humans have always needed to respond to and manage disaster situations. Today social media is a key in social communication by people throughout the world (Tapia et al, 2011). Scholars who study communication in disasters anticipate the growing use of social media in disaster management (Tapia et al, 2011). During disasters, social media have become essential for developing online collaborative communities (Tapia et al, 2011). Tapia and colleagues studied how social media in citizen engagement supported a collaborative environment (Tapia et al, 2011). As Waugh & Strelb (2006) pointed out, oftentimes collaboration can be very helpful in disaster responsiveness. Without effective collaboration, it is very unlikely that a society can produce effective responses to disaster situations (Waugh & Strelb, 2006).

By studying social media through different disciplines, one can explain several definitions of social media in regards to each discipline. For example, exploring the key

characteristics of social media that distinguish it from traditional media by Miller (2010) and Latane's dynamic social impact theory (1996), the study helped explain social media with cultural theories. In addition, in terms of using social media for disaster management, useful communication theories apply, including information seeking, backchannel communications that focus on peer-to-peer communication and smart technologies, and citizen engagement using a self-vetting response system. Therefore, this study of social media theory/ communication strategies can help explain the importance of communicating through social media for disaster management.

### **Research Questions**

According to the literature review, studying social media/communication strategies can help the researcher explain how social media were applied to the role and impact of disaster management in the digital age for the case of the Thailand floods in 2011. In addition, the goal of this research is to help researchers describe the disaster situation during the Thailand floods to make better recommendations about the use of social media and disaster management in other natural disaster events in the future. Thus, it leads to the research questions in this case study:

The present case study research addresses the following research questions:

**RQ1.** How did Thai citizens use Facebook for disaster management during the 2011 Thailand floods?

**RQ2.** What participant recommendations of using Facebook for disaster management can be made for citizens in future disasters?

## Chapter 3

### Method

#### Research Design

This research is a case study. Yin (1989) quoted Schramm's definition (1971) of a case study. "The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a *decision* or set of decisions: why they were taken, how they were implemented, and with what result" (p. 23). This case study research sought to explore the importance of communication in how Thai citizens used Facebook for disaster management during the 2011 Thailand floods. This study also makes recommendations about using Facebook for disaster management for citizens in the future.

According to the case study research strategies, the method for this study is qualitative. The qualitative method mainly employed interviews. This section introduces research methods that social media sites like Facebook were applicable to disaster management to some degree. The interrelationship between social media and disaster management were played out the 2011 Thailand floods event. Thus, by finding future recommendations of using social media for disaster management, the qualitative method can help to investigate it. As McCracken (1988) defined, the qualitative method explores relationships between categories. The purpose of the qualitative methods in this regard is to help expand understanding from the 2011 disaster situation. Therefore, case study research is considered the most appropriate for in-depth research about the 2011 Thailand floods phenomenon. The following section will explain interviews, sampling, participants, interview administration and data analysis.

## **Interviews**

The main method of this case study was interviewing. The interviews were conducted during the summer from May to July 2012 in Bangkok, Thailand. Babbie (2010) said, “Qualitative interviews are based on a set of topics to be discussed in depth rather than standardized questions” (p. 318). The interview used open-ended questions during the interviews. There were twelve interview questions for the informants to discuss and talk about their experiences using Facebook for disaster management during the 2011 Thailand floods. (See interview questions in Appendix B.) All interviews were held during face-to-face encounters with the informants. Babbie (2010) also mentioned that the interview was typically done by face-to-face questioning. Also Yin (1989) emphasized, “One of the most important sources of case study information is the interview. Such a conclusion may be surprising, because of the usual association between interviews and the survey methodology. However, interviews are also essential sources of case study information” (p. 89).

The informant interviews were conducted orally. Interviews were conducted with specific individuals from specific groups: both flood volunteers and flood victims, who used social media, namely Facebook, for disaster management purposes during the Thailand floods 2011. As Babbie (2010) stated, interviewers need to focus on “selecting informants when attempt[ing] to understand some social setting.” An informant is “someone who is well versed in the social phenomenon that you wish to study and who is willing to tell you what he or she knows about it” (p. 195). Interviewees were free to talk in-depth on specific topics that could further detail the individuals’ experiences and information about social media used in disaster management of the 2011 Thailand floods.



In addition, the interviews were conducted in Thai language. Before interviewing, the consent forms were distributed to inform the interviewees of the purpose of this study. Consent forms were included asking for permission to record. (See consent form in Appendix A.)

This type of interview is a focused interview (Yin, 1989). A focused interview is one “in which a respondent is interviewed for a short period of time— an hour, for example” (Yin, 1989, p. 89). The approximate time was 30 minutes to 1 hour per interview. The interviewing locations occurred in Bangkok, Thailand, depending on the interviewees’ selection for a meeting place. Most of the interviews happened at coffee shops and the informants’ office. The interviews were documented with an audio recording and paper note taking. Even though a focused interview is a brief interview, the interviewing derived from following the case study protocol (Yin, 1989). The data of the interview record were translated into English language in order to interpret and answer the proposed research questions in this study.

### **Sampling**

A sampling for social research could mean a unit of observation (Babbie, 2010). Qualitative research, according to Babbie’s text, is to treat each interview/informant as a unit of observation since it is a non-probability sampling method for social groups (Babbie, 2010). A non-probability sampling must select specific groups and informants in order to conduct interviews. As Babbie (2010) said, “The units are selected on the basis of the purpose of the study” (p. 193). Hence, Thai citizens in both groups, flood volunteers and flood victims, who used social media (Facebook) during the 2011

Thailand floods were selected in this study. In other words, the interviewees were Thai flood informants, with each interview treated as a unit of observation.

A few interviewees were selected from the researcher's contacts, which the researcher found if he/she was using Facebook during the 2011 Thailand floods as either flood volunteer or victim. Snowball sampling technique was used after the researcher interviewed the first few informants. As Babbie (2010) recommended to employ snowball when, "Each person interviewed may be asked to suggest additional people for interviewing" (p. 193). Snowball sampling was used in this study because some people were hard to contact. In order to interview and contact them, snowball sampling was appropriate using for interview as some interviewees were able to suggest their connections to interview.

### **Participants**

Interviews were conducted with 20 Thai flood informants. The participants' careers were various (e.g., lawyer, creative, chief financial officer, supervisor, etc.), but all of them were included because they were experienced using Facebook for disaster management during the 2011 Thailand floods either as victim or volunteer. (See Table 1.) Ten participants were selected as they were flood victims. Another 10 participants were selected as flood volunteers. Twenty of them were selected with their agreement to participate. All participants agreed to be audio recorded. This study defined victim informants as people whose houses were affected by floodwaters in the 2011 Thailand floods and volunteer informants as people who volunteered to help out in flood relief activities and to assist flood victims.

Table 1. *Details of informants/participants:*

No.	Informant/ Participant	Flood Group	Career	Gender
1	Informant A	Victim	Freelance Photographer	Male
2	Informant B	Victim	Housewife	Female
3	Informant C	Victim	Researcher of Chulalongkorn University	Male
4	Informant D	Victim	Marketing Executive of GMM Grammy (GMM Z)	Female
5	Informant E	Victim	Graduate Student of Dusit Thani College	Female
6	Informant F	Victim	Account Executive of Thai Airways International PCL's	Male
7	Informant G	Victim	Undergraduate Student of Thammasat University	Female
8	Informant H	Victim	Supervisor of Krungsri Bank	Male
9	Informant I	Victim	Supervisor of Inglife Limited	Female
10	Informant J	Victim	OD (Organization Development) of Thai Oil Public Company Limited	Female
11	Informant K	Volunteer	CFO (Chief Financial Officer) of GMM Grammy	Male
12	Informant L	Volunteer	Pearl Bakery Owner	Female
13	Informant M	Volunteer	Freelance/ Thai Actor	Female
14	Informant N	Volunteer	Leader of ArsaDusit volunteer group and ArsaDusit community fan-page of Facebook	Male
15	Informant O	Volunteer	Creative Freelance/ Volunteer Creative of Roo Su Flood/ VDO maker: Blue Whale "Fight flight" of community fan-page of Facebook	Male
16	Informant P	Volunteer	Sirithana Cooling Co.,Ltd. (Company Limited)	Female
17	Informant Q	Volunteer	Lawyer of The Comptroller General's Department	Female
18	Informant R	Volunteer	HR (Human Resources) of PwC (PricewaterhouseCoopers)	Female
19	Informant S	Volunteer	Volunteer for Emergency Medical Institute of Thailand, Ministry of Public Health	Male
20	Informant T	Volunteer	Assistant Secretary-General of Emergency Medical Institute of Thailand, Ministry of Public Health	Male

Among the participants who were flood victims, most of their houses were affected by floodwaters during the month-long crisis. Therefore, they had to move out and stay at other places such as condos or second homes. Several schools and offices were also affected by the floodwaters. During the time, schools were closed and most of the offices participated in the “work from home” campaign for people to stay at home and work. As for the flood volunteers, half of them also got their houses flooded with waters but they still volunteered for flood relief activities. Another half of flood volunteer participants were only volunteered for flood relief activities to assist flood victims since their houses were in safe zones.

### **Interview Administration**

After identifying participants for the interviews, the researcher contacted them individually and asked each to participate with this research. The researcher contacted them by phone and explained the purpose of research. Upon the participants’ agreement of participation, the researcher emailed them an informed consent form to participate. (See consent form in Appendix A.) Next the researcher made an appointment with them individually when mutually convenient for the interview. The interview never exceeded an hour. All participants were asked the same set of questions from the interview questions. (See interview questions in Appendix B.) In a few cases, when the researcher did not quite understand the answer, the researcher asked additional questions for helping the researcher clarify the findings in this research. With participants’ agreement to participate in the interview, the interviews began and the audios were recorded. After finishing the interview, the researcher transcribed the interview records for data analysis.

## **Data Analysis**

This study used qualitative data analysis, which Babbie (2010) explained qualitative data analysis as a strategy that the findings should be converted as one written document. In the other words, findings from an interview transcript will be transferred for use in a research report (Babbie, 2010). Thus, this research requires qualitative coding format, which helps to transcribe answers in this case study research. As Babbie (2010) highlighted, the coding content of conversations method is essential in making sense of raw data. Coding method helps classify data and also proves to be effective in determining the underlying communication meaning (Babbie, 2010). This research analysis of data helped identified how Thai citizens used Facebook during floods of 2011 accordingly to the research questions.

A case study research, on the other hand, requires using a linear-analytic structure method (Yin, 1989). Linear-Analytic structure “is a standard approach for composing research reports. The sequences of subtopics involves the issue or problem being studied, the method used, the findings from the data collected and analyzed, and the conclusions and implications from the findings” (p. 138). The findings were described from the social media/communication strategies that were explained in the literature review. Yin (1989) also asserted that the structure was applicable to explanatory, descriptive, or exploration case studies. Yin (1989) gave an example: “An exploratory case may cover the issue or problem being explored, the methods of exploration, the findings from the exploration, and the conclusions (for further research)” (p. 138).

In brief, the qualitative data analysis helped interpret how social media were commonly used for disaster management. Findings were classified to conclude how

Facebook was/was not important for disaster management for these specific Thai citizens during the 2011 Thailand floods.

## **Chapter 4**

### **Findings**

#### **Findings**

The main purpose of this case study was to explore the importance of communication of social networking sites (SNS) such as Facebook that were used by Thai citizens as part of disaster management during the Thai floods of 2011. This study was designed to study how new channels of communication could be used during the floods, as applied by each informant interviewed. It also sought to increase knowledge and understanding of the important features of Facebook that were used in real-life experiences during the 2011 Thailand floods in terms of making recommendations for future disaster management. The data came from 10 flood victims and 10 volunteers who used Facebook during the 2011 Thailand floods as part of disaster management.

In addition to Facebook, informants used other innovative social media approaches. This research found one informant who created a very popular flood community fan-page feature on Facebook called “Roo Su Flood” (Know and Beat the Flood) and a famous VDO clip (comic relief series) which was known very well, during the 2011 Thailand floods. (See Appendix C.) Moreover, the researcher found one informant who was a leader of the “ArsaDusit” (Volunteer Dusit) volunteer group, a non-profit organization, which used social media such as Facebook on a community fan-page feature to communicate with Thai citizens during the 2011 Thailand floods. The rest of the informants were either victims or volunteers who used Facebook for flood-related purposes during the flooding in 2011.

## **RQ1. How did Thai Citizens Use Facebook for Disaster Management during the 2011 Thailand Floods?**

Based on the interviews, the researcher found that there are many ways that Thai citizens used social media such as Facebook during the 2011 Thailand floods as a communication tool for disaster management. These strategies include emergency and disaster response, reaching out for help, information-seeking, exchanging information, both receiving and providing (sharing) information, getting connected with many users, building and maintaining community resiliency, and volunteering for flood relief effort activities. The findings allow the researcher to understand how social media were used during the 2011 Thailand floods for disaster management. The participants were asked to discuss the main goal of using Facebook for flood-related purposes during the flood. The questions allowed each participant to explain why did he/she select Facebook and how he/she used it in detail.

### **Communicatory Utility for Information-Seeking**

Every participant selected prominently discussed Facebook as a communicatory utility for information-seeking. There were three main reasons that most participants mentioned in detail for seeking information on Facebook.

#### *1. To understand situation*

The first reason for seeking information helped the participant to understand the situation and issues discussed.

#### *2. For behavior adaptation (to stay safe)*

The second reason for seeking information on Facebook was to help the participant accomplish “behavior adaptation” in order to be aware of the situation,



especially during the flood watch. Seeking and finding information on Facebook helped keep informants safe from floods and showed how he/she applied the information to prevent and protect him/herself.

3. *To receive news from friends' networks*

The third reason for seeking information on Facebook helped him/her receive updates on important news and good information from friends in the Facebook network.

Informant P (Volunteer) mentioned the first reason of information seeking: that he would like to understand situation. He said:

Seeking information on Facebook was something that I could check the current update in floods situation, especially the volunteer event to help flood victims. Because often time, I found good information for volunteer groups that gather on Facebook. Otherwise, I would not know what volunteer group I could join. In addition, sometimes Facebook users comment was useful about something I was unsure and curious. Those comments earlier already gave me the answer without asking. What's more, forum pictures sharing on Facebook were very helpful because with pictures, that information created more trust, attractiveness and reliability for me. More good things about checking information on Facebook was whenever I needed information I could look it up at all times and I could check back to the old information that was already posted too. Unlike TV when news was reported, if I could not catch up on the news it was hard to go back and check what TV already reported.

Informant H (Victim) also mentioned the first reason that he would like to know and understand the situation. He said:

I always was seeking updated information, especially nearby my house area. Even though I had to move to the south part of Thailand because my house was flooded, I still worried about my house situation in Bangkok. Not only I looked for my house information, but also I looked for volunteer events that I probably could go help out with. Even though I was a flood victim, I wanted to volunteer, too. In my opinion, Facebook was easy to use and provided real time information. Compared to original media like TV, Facebook was real-time, faster and more accurate for flood information. So Facebook became a useful medium and benefited me in both roles, victim and volunteer, this time.

Next, informant J (Victim) talked about how she stayed safe from floods and evacuated in time, which she explained related to the second reason in regard to behavior adaptation. She said:

Because of seeking information on Facebook, I found a good campaign of TAT Thailand (Tourism Authority of Thailand) that offered to help flood victims by providing free five stars hotel for a week. The information was interesting to me since I had nowhere to evacuate right at the moment except a second home in the north part of Thailand. That was because my family decided not to move to the north so I had to look for a temporary place to live. Then I registered to TAT Thailand, left my information and waited for the answer whether I would get the hotel or not. Finally I got a

reply from the TAT, and I got to stay in the five stars hotel for a week and stay safe from flood.

Informant D (Victim) mentioned the third reason: receiving news from friends network. She said:

Good information and important news were available on Facebook, especially from the flood community fan-pages that I clicked LIKE to join with. I joined two fan pages, which were “Roo Su Flood” and “Roo Tan Nam.” It was very easy to click LIKE on two flood community fan-pages and I could get what’s important to focus on. That updated information had already been screened and organized by the flood community fan-pages. One good option about Facebook was the “News Feed” wall that updated information from my friends network and those flood community fan-pages I joined, automatically stumbled upon and frequently reported as news feed. It was easier for me to check and follow up. From my experience, I could tell that both flood community fan-pages provided important facts, up-to-date and reliable information.

### **Distinguishing Qualities of Social Media**

The main purpose of how participants used Facebook during the 2011 Thailand floods in general was their focus on floods information. Facebook maintained a good communication platform that impressed the users in many ways about flood related-information. On Facebook, information seeking was primary. Sharing information was important, but 10 out of 20 participants selected it as secondary with the reason that sharing information in the network to others was more essential. According to cultural

studies, Facebook represents the norm and coordinates people to behave in similar ways. The findings showed that as sharing information on Facebook became a trend, people used and shared more information with others.

On top of that, the findings identified why participants shared information on Facebook. Facebook could expand to reach many users, not just among their network but other networks, like a chain. Participants' reasons echoed a key characteristic of a social network, which Miller (2010) noted: in the network, people were contagiously affected at many degrees of separation. Regarding the findings, sharing information on Facebook could be distinguished in more details.

One volunteer (Informant K) stated about Facebook that after “seeking for floods information, I always shared good links and important information by posting on my wall. So my update would appear on others' news feed wall. ... because sharing on Facebook was like broadcasting news, as that information reached a number of users like a chain and effected many users as well.” But other reasons informant K supported Facebook included the freedom to communicate, unlike original media. Facebook was interactive and fast to disseminate information. Similarly, Informant E (Victim) said, “My Facebook usage was very helpful because I could share good information with others and it was so fast (real-time information) to reach many users from one-to-one and one-to-many. As for my opinion about Facebook, I had no idea where that information I shared would end up.”

Informant E (Victim) gave an example about where her idea came from. Once she shared a link asking only her friends to donate food and money for helping flood victims, but results were more than she expected. She obtained so much money and food from

many Facebook users. The important thing was those who donated were not only her friends' network but also friends of friends. From the donating link incident she said, "Sharing information on Facebook could spread out in many degrees and influenced a number of users, too."

However, 10 participants also mentioned other reasons that caused them to use Facebook during the 2011 Thailand floods. They mentioned that there was a good deal of crowd sourcing available on Facebook, especially the flood community fan-pages to join. Therefore, joining flood community fan-pages on Facebook was another way how they used Facebook during the floods. Furthermore, in the interviews all participants were asked to discuss the floods group-support pages. The questions allowed each participant to detail whether they participated in any flood communities fan-pages on Facebook during the flood or not, and the reasons why they chose to participate or not. Plus, each participant was free to provide an example for participating or not. Fourteen participants out of 20 chose to join flood community fan-pages. (See Table 2.)

Table 2. Informants joined different flood community fan-pages on Facebook:

No.	Informant	Name of flood community fan-pages on Facebook						
		Roo Su Flood	Roo Tan Nam	Nam Kuern Hai Reeb Bork	Siam Ar Sa	Thai Flood	Others Flood Community Fan-Pages	Cannot remember
1	A							
2	B							x (2 fan-pages)
3	C	x						
4	D	x	x					
5	E							
6	F	x	x			x		
7	G			x				
8	H	x	x	x				
9	I	x						
10	J	x						x

11	K							
12	L							
13	M	x		x				
14	N			x	x		x (4 fan-pages)	
15	O			x	x			
16	P		x					
17	Q							x
18	R							
19	S					x		
20	T							

Table 2 showed “Roo Su Flood” (“Know and Beat the Flood”) community fan-page was in the first rank, where 7 participants chose to join. Second rank showed that 5 participants out of 14 who LIKE flood community fan-pages joined “Nam Kuern Hai Reeb Bork” (“When the Waters Rise, We Post”). The third rank was “Roo Tan Nam,” where 4 participants joined this group during the 2011 Thailand floods.

### Latane’s Dynamic Social Impact Theory (DSIT)

The researcher also found that 6 participants who joined flood community fan-pages gave reasons that may be categorized as forms of social tendencies from Latane’s theory model. The participants identified different reasons why social media had influenced them to join in floods groups. There were 14 participants who joined flood community fan-pages but only 6 participants gave the reasons involved that matched four tendencies of Latane’s dynamic social impact theory.

(See Table 3.)

Table 3. *Informants’ reasons for joining flood communities fan-pages were influenced based on four social tendencies in group of Latane’s dynamic social impact theory*

		Four forms of social tendencies in group of Dynamic social impact theory (DSIT)			
No.	Informant	Consolidation	Clustering	Correlation	Continuing diversity
2	B		x		
4	D	x			
7	G	x			

16	P	x			
17	Q	x	x		
19	S		x		

***Consolidation***

Informant D (Victim) explained that “because I saw so many people viewed, shared and recommended these two community fan-pages a lot... I decided to join too.” Informant G (Victim) also said that “because Nam Kuern Hai Reeb Bork (“When the Waters Rise, We Post”) fan-page was so popular, I saw a lot of Facebook users LIKE this group. Therefore I wanted to join too.” In the same way, informant P (Volunteer) said, “because when I saw a number of “Likers” of the fan-pages “Roo Tan Nam” I felt that those sources were more reliable, so I then followed the flood community fan-pages just like the others.” Similar to informant Q (Volunteer), she gave the same reason that “the number of members of the fan-page made me want to follow up and join the group.”

***Clustering***

On the other hand, informant Q (Volunteer) also gave more reasons why she had to join. She said, “because of my close friend introducing fan-page to me then I joined.” This was the important reason for joining the community fan-page for her as well. Likewise, informant B (Victim) joined the community fan-page because of her friend’s suggestion. In the same way, informant S (Volunteer) explained that, “By joining the community fan-page on Facebook, I could see the similar attitude and goal within the group. So I got to feel that why flood groups were created and how were they very helpful especially during floods situations.”

The interviews found no participants that gave reasons directly representing the correlation and continuing diversity categories.

### General Reasons of Joining Flood Communities Fan-pages

Besides those reasons from Latane’s theory, there were other general reasons why participants participated in flood community fan-pages on Facebook during the 2011 floods. Six participants agreed that “because they were interested in more flood-related information and those flood community fan-pages were well-organized, it was easier for them to look for and check it up as they wanted.” Moreover, the information from communities was not only well organized but also was always available for the new updated information to the floods situation. For example, informant I (Victim) said, “To participate in flood community fan-pages somewhat made me less panic about information overload and the floods situation. I already knew what was updated and what I needed to be aware of to be safe from floods.” There were two participants, informant H (Victim) and informant J (Victim) who talked about comparing Facebook to watching flood news on television: Both agreed that receiving floods news from Facebook platform and community fan-pages was faster than watching on television. Yet, receiving information from Facebook was easier for them to check because notification on Facebook always let them get real-time information.

On the contrary, there were definitely participants who did not participate and disagreed with joining community fan-pages. Six participants gave various reasons for not joining. (See Table 4.)

Table 4. *Informants’ reasons for not joining community fan-pages*

No.	Informant	Disagreement of joining
1	A	Not interested in community fan-pages.
5	E	Because what she had received both from Facebook and television was already enough.
11	K	Not confident in community fan-pages because he did not know who created the fan-pages.
12	L	Because she always had her mom sharing more floods information at



		all times and that too much already.
18	R	Because she assigned her assistant to join and share with her if only when the updated information was important.
20	T	He selected only information he needed to focus on and flood information from his friend's account was good enough.

To summarize about disagreement in joining flood community fan-pages, the actual reason that came from social media like Facebook was found only in Informant K (Volunteer). As informant K (Volunteer) said: "I was unsure about the administration of the community fan-pages, which Facebook opened and allowed anyone to create and share anything on community fan-pages." The rest of the disagreements in joining community fan-pages were from their own desire not to.

#### **“Backchannel” Communications in Disaster**

According to the interviews, the researcher found that most participants focused on peer-to-peer communication in order to share and exchange flood information with many users on the Facebook network during the 2011 Thailand floods. Traditional media like TV and radio were less helpful to people for disaster management. The government hid some facts about the floods situation and failed to announce some information to the public. Therefore, the interviews allowed the researcher to understand how social media facilitated “backchannel” communication during the emergency response. The reason was because peer-to-peer communication helped expand the use of Facebook for disaster management instead of only receiving information from traditional media. The participants were asked to discuss whom did each participant connect with during the floods. The questions allowed each participant to explain with whom did the participants connect via Facebook and why.

### **Peer-to-Peer Communication**

There were 16 out of 20 participants who normally used Facebook to connect among their friends in the Facebook account and many users on the Facebook network. A common reason among 16 participants gave to explain included “exchanging, sharing and broadcasting information on Facebook with friends helped expanding information and interaction for disaster management.” For example, informant A (Victim) said, “Facebook supported sharing activity as peer-to-peer communication. For me, hearing from my friends, the sources were more reliable. Therefore, peer-to-peer communication on Facebook was powerful for me to trust information on Facebook and for disaster management.” Furthermore, Informant E (Victim) similarly asserted, “The information that I got from my friends on Facebook was trustworthy. Once I decided to donate money for floods with my friend via Facebook. Regarding donation activity, I could see that communication on Facebook with friends supported me in more activities for disaster management.” In addition, informant F (Victim) explained that for him “exchanging information during floods between my friends and I on Facebook became peer-to-peer communication, which helped my friends and I filter out common floods information for disaster management such as information for a sand bag volunteer event.”

Yet, there was a more obvious example from informant O (Volunteer). This participant turned to use Facebook as peer-to-peer and backchannel communication for disaster management especially when creating “Roo Su Flood” community fan-page and VDO comic relief videos. He indicated:

By doing both blue whale VDO animation and “Roo Su Flood” community fan-page, both tasks were needed to connect and communicate

with many people on the cyber space such as other volunteers, many experts on the different websites, and other flood community fan-pages on Facebook. Because doing this alone was impossible and the information must get from variety sources on the internet. For me to get good information in making VDO and community fan-page I must need peer-to-peer communication and to share my VDO and all the floods information on community fan-page I must need Facebook as backchannel communication tool. Without other resources by other volunteers and my friends on the Facebook network and Facebook networking sites, blue whales VDO and community “Roo Su Flood” fan-page could not be achieved.

Consequently, making VDO and “Roo Su Flood” community fan-page on Facebook gained peer-to-peer communication, which could help facilitate other users’ communities and informant O used Facebook as backchannel communication tool for disaster management. Blue whale VDO animation and “Roo Su Flood” were successful worldwide and were well known during the 2011 Thailand flood. (See Appendix C.)

Although social media like Facebook emphasized peer-to-peer communication for backchannel communications, there were four participants that did not focus on this. One participant, informant C (Victim) pointed out that, “Even though I was a flood victim, after I moved in town (my second home) there was nothing much for me to worry about. Then using Facebook for me during the time did not help anything. Only Facebook provided me with floods information and situation updates.” Regarding informant C (Victim)’s situation, since he already moved, he still struggled to find drinking water.

Because of the crisis and flood disaster, food ran out and drinking water was hard to find. Therefore his primary worry was only about water. Again he affirmed, “Even Facebook provided good information but my need and Facebook’s purposes did not match for solving this matter.” Facebook was not necessary to him even for peer-to-peer or backchannel communications in the 2011 floods disaster.

### **Smartphone and Computer Technologies as “Backchannel” Communication**

Technology was another factor that was significant in talking about Facebook and backchannel communications in disaster. That was because either a smartphone or computer technologies helped people in using Facebook more to communicate. Traditional media like TV and newspaper were slower announcing information and less effective in spreading flood news update. Importantly, social media like Facebook was applicable in using a smartphone, which facilitated more potential in better communication such as quickly accessing the information, easily using it everywhere, and real-time responding than traditional media. The interviews allowed the researcher to understand how technologies helped expand the use of social media like Facebook and how it helped enhance their communication as “backchannel” communications tool for disaster management during the 2011 Thailand floods. The participants were asked during the flood, which kind of technologies did each participant use to access Facebook. The questions allowed each participant to share in detail more about the reason why he/she used Facebook with technologies during the floods.

Interestingly, the researcher found from the interviews that most participants used Facebook on smartphones and computers in dealing with disaster, in addition to receiving flood news on TV or reading news from a newspaper. (See Table 5.)

Table 5. *Number of informants using technologies to access Facebook during floods*

		Technologies that participants using to access Facebook for communication/disaster management during floods	
No.	Informant	Smartphone	Computer
1	A	x	x
2	B	x	x
3	C		x
4	D	x	x
5	E	x	x
6	F	x	x
7	G		x
8	H		x
9	I	x	x
10	J	x	x
11	K	x	
12	L	x	
13	M	x	x
14	N	x	x
15	O	x	x
16	P	x	x
17	Q	x	
18	R	x	
19	S	x	x
20	T	x	x

Table 5 showed there were 13 out of 20 participants who used both technologies, smartphone and computer, to access Facebook during the floods. However, there were 17 out of 20 participants that selected to use more on smartphone and only smartphone. The most common reasons were because: (See Table 6.)

Table 6. *Most common reasons why informants used smartphones to access Facebook during Floods*

Reasons for Using Facebook on Smartphone	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Can take picture/ VDO	x					x					x	x							x	
Easy to share picture/update status/post information	x	x		x	x	x			x	x	x	x		x				x	x	x

on Facebook																			
Handy			x		x			x	x		x		x		x	x	x	x	
Can access anytime/ everywhere				x						x			x	x			x		
Already connect to mobile Internet									x				x		x				x
Fast/ real-time													x	x			x	x	
Alert system/ Notify														x					

Although informant M (Volunteer) used both technologies, she only mentioned that, “I changed to use computer when I needed to watch VDO on Facebook. The reason was I used my iPhone and because my iPhone and Flash program were incompatible. Thus accessing Facebook on computer was full access and I could watch VDO.” Similar to informant L (Volunteer) she also mentioned, “My Flash program on iPhone was incompatible to watch VDO. Since I used only my smartphone to access Facebook, it resulted in my ignoring viewing all VDO’s but still checking information.”

Nevertheless, there were only three participants out of 20 who chose only computer to access Facebook. The participants detailed different reasons for their choice:

(See Table 7.)

Table 7. *A few reasons why informants used only computers to access Facebook during floods*

No.	Informant	Reasons of using Facebook on Computer
3	C	Because Internet in Thailand was slow and his smartphone was old Blackberry series, so he just did not like to access Facebook on his smartphone.
7	G	She did not have a smartphone.
8	H	Because using smartphone to access Facebook was not fully accessible like a computer. Moreover, he had to use computer at all times, as his company campaign “work from home” since flood. Then accessing Facebook on computer was much better and more convenient for him.

The rest of the participants who used both computer and smartphone explained something else about why they accessed Facebook via computer. Informant A (Victim) said, “It depended on my purposes and activities on Facebook which was more convenient to me.” Informant B (Victim) said, “I sometimes need to read and watch on a bigger screen so the computer was more appropriate.” Last but not least, informant O (Volunteer) said, “Because of making ‘Roo Su Flood’ community fan-page, using the computer was good for my job.”

Findings from the interviews showed that besides receiving official news channels from traditional media like TV, radio, and newspaper, using technology devices such as smartphone and computer also assisted unofficial channels like Facebook in becoming a “backchannel” communication tool during a disaster. The findings showed more positive results that using smartphone to access Facebook had good potential, which facilitated and enhanced their informal communications during 2011 floods disaster in Thailand especially when comparing to watching TV from mainstream channels.

### **Social Media in Citizen Engagement**

The researcher found that social media, namely Facebook, were important in Thai citizens at various levels in disaster management in the 2011 Thailand floods. Based on the literature and interviews, “collaboration” was most necessary in dealing with social media technologies and community users as volunteers. Without collaborative networks, Thailand floods could have gotten worse. The interviews allowed the researcher to understand how the social media Facebook was important and efficient to facilitate emergency response in disaster communication. Each participant was asked to discuss using Facebook for floods and whether communication was beneficial. The questions

allowed the participants to detail how did they think using Facebook for floods communication purposes during the flood situation was helpful. The next Research Question was whether using Facebook was beneficial to the participants during the flood and each participant explained the reason why/ or why not in detail.

The researcher found that there were three outstanding cases where three volunteer participants used Facebook as main communication channel in beneficially producing disaster responsiveness. Informant N (Volunteer) said:

Facebook was very helpful because news reported from television was quite delayed. Since I was kind of a leader of the “ArsaDusit” volunteer group, I could tell and see in my real experiences while I volunteering that the announcements from the government often times did not match with the floods situation. Therefore, using Facebook in sharing information was faster, real-time and better. As addition, Facebook could really fit and manage disaster in many ways.

Because in Bangkok, there was a large number of users that showed that Facebook was the most popular way Thai users connected to one another. Informant N (Volunteer) gave the example of how asking for donations via Facebook, asking for more volunteers, and asking for help on Facebook became a popular way for emergency response. In the opinion of informant N (Volunteer), who represented the volunteer’s view, it was effective to use Facebook to connect with flood victims: “...in many cases, Facebook could really help them at least mitigate with information during floods.” Facebook could also help victims in responding appropriately to the problems victims were facing. For him, he insisted that “Facebook was helpful and efficient in communication, especially its



help expanding floods information effectively. ...the feedback that I got from ArsaDusit community fan-page members on Facebook was positive and ended up that my fan-page had a couple thousand joined my group for volunteers and asking for help.”

Moreover, informant O (Volunteer) ran his blue whale VDO animation and “Roo Su Flood” community fan-page as citizen engagement (volunteerism effort) in the collaboration response. As informant O (Volunteer) stated that before the flood, he was a normal Facebook user like other Thai citizens who used Facebook. During the early time of the floods he used Facebook for inviting and gathering his friends to volunteer for flood relief on Facebook. Later he was overwhelmed by the overload of floods information, and because of that he wanted to manage that overwhelming flood information properly. As he had been a creative (freelance) artist, he decided to make VDO comic relief videos. He also invited his friends to work together as a volunteer team. He was inspired by tsunami and nuclear situation of Japan 2011 and how Japan created animation clips using metaphors to reflect the real situation for the Japanese people in order to get clearer pictures of the situation. Eventually, he created Blue whales VDO comic relief floods series and “Roo Su Flood” community fan-page on Facebook.

Informant O (Volunteer) gave the reason why he had to use Facebook for disaster management and communication. He said, “There were many reasons, first of all because Facebook was popular among Thai citizens.” Second, he stated “As the news reported these days that Bangkok, Thailand was the number one city in the world that had the biggest Facebook users, even though the number of users was much more than London and New York.” (See Appendix D.) According to these two reasons, he believed that to use Facebook in solving problems should be a great idea. He knew that there were so

many Thai citizens who used Facebook and it impacted them as well. Since, in fact, the problem came from Facebook that Facebook users were panicked and overwhelmed by too much floods information. So Facebook should be the place where he could reduce the overwhelming information and reduce panic. As he stated, “For me, to solve the problem, the problem must be solved in the right way and tool. As the problem was taking place on Facebook, then Facebook turned out to be the best tool to solve and manage it as well.” In addition, he summed up that, “Because I got good feedback on the VDO comic series and community fan-page on Facebook during the flood, I believed that social media were really able to build (relief effort) and maintain community resiliency (community effort in dealing with floods) in disaster this time.”

Another case from informant S’s (Volunteer) interview, discussed how information on Facebook showed that people were sharing with one another. That information, coming from local people, was 90 percent trustworthy for volunteers like him. He was able to get a picture of the right situation according to the information on Facebook. As he said, “Facebook made it easier for me when I was on duty as a volunteer to relieve floods resiliency in many places. The reason was because of information provided on Facebook, I could produce a better response such as right problem solving, right time and right purposes. On top of that, because of the teamwork spirit and collaboration on Facebook, it was important in disaster this time.”

Beyond the outstanding cases of three volunteers, there were general details of social media in citizen engagement, which explained how Facebook was or was not a ground level communication for disaster management, from all participants in the interviews. There were 18 participants who were very satisfied and agreed that Facebook

was very helpful. A few participants felt that Facebook only helped a little bit in 2011 Thailand floods. For example, informant C (Victim) said, “Because what I needed did not relate to Facebook, that’s why I thought Facebook simply helped me with entertainment and checking whether my friends were safe from floods or not.” Informant T (Volunteer) said, “Because I only could comment and respond to victims in a small portion via Facebook, Facebook for me was helpless.” However, the overall details from the interview were: (See Table 8.)

Table 8. *Informants agree that using Facebook was helpful during the floods*

Level of helpfulness	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
A little bit Helpful																				X
Helpful		x		x	x	x	x		x	x		x				x	x	x		
Very Helpful	x							x			x		x	x	x				x	

Table 8 showed 11 out of 20 participants agreed that using Facebook was helpful. The rest of the participants, which were 7 out of 20, told that Facebook was very helpful during the floods. In addition, each participant explained why using Facebook during the floods was helpful and very helpful. The table showed the majority of reasons: (See Table 9.)

Table 9. *Reasons why Facebook was helpful*

Why Facebook was helpful	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Fast/ Real-Time Information	x	x			x	x	x	x	x		x	x		x	x	x		x	x	
Help in making decision	x													x					x	
Sharing information/ Search engine		x			x	x	x			x		x	x	x	x				x	
Help in prevention and				x		x					x		x		x				x	

protection/ aware of flood situation in time																				
Up-to-date all the time								X	X			X			X	X				
Communication								X				X			X	X		X	X	X
Center of gathering/connecting volunteers							X								X		X	X		X
Reach many people (users) together at one time								X	X	X		X			X	X	X		X	X
Easier for responding/helping						X		X				X	X	X	X	X			X	X

Table 9 concludes that 14 out of 20 participants agreed that Facebook was fast and provided real-time in information, which helped citizens’ response for disaster management. Only three participants agree that Facebook was helpful in making decision in responding during flood disaster.

Facebook was not just helpful in facilitating the user’s response in disaster but also beneficial to 19 out of 20 participants. There was only one, informant M (Volunteer), who said that “Facebook was not beneficial.” However, the participants agreed that Facebook was beneficial using during the 2011 Thailand floods:

(See Table 10.)

Table 10. *Informants agree that using Facebook was beneficial during the floods*

Level of beneficial	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Beneficial	x		x	x			x	x	x	x		x				x	x	x	x	x
Very beneficial		x			x	x					x			x	x					

The interviews showed that 13 participants thought that Facebook was beneficial to them during the flood. There were 6 out of 20 participants who felt that using Facebook in

2011 floods was very beneficial to them in disaster response. The researcher found that only one participant, informant M (Volunteer) said, “To me, Facebook was so-so beneficial to use during the flood.” Informant M (Volunteer) further explained:, “Although Facebook was actually helpful, in fact, Facebook was not beneficial to me as much. The reason was I only saw in a way that my performance as volunteer could inspire other people to feel like volunteers, too.”

Each participant gave reasons why he/she thought that using Facebook was beneficial to them during the disaster. The reasons why Facebook was beneficial are included in Table 11.

Table 11. *Reasons why Facebook was beneficial*

Why Facebook was beneficial	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Information tool					X	X	X	X	X	X	X	X		X		X	X		X	
Making decision	X									X									X	
Channel of solving problem	X	X					X			X				X		X		X	X	
Interactive/ collaborative channel for victims and volunteers		X					X				X			X		X		X	X	X
Entertainment			X		X				X											
Fast/convenient communication tool	X					X	X					X		X	X		X	X	X	
Free to air/ cannot block and censor information sharing											X									
Search engine						X				X		X		X	X	X				
Trust source						X				X				X			X			



## Experiences Using Facebook

The interviews surveyed 20 participants asking their opinion about whether each participant had good experiences using Facebook during the floods or if they had bad experiences using Facebook. The findings showed: (See Table 12.)

Table 12. *Informants' experiences using Facebook for disaster management*

Facebook experiences	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Good experiences	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Bad experiences			x	x		x	x			x					x	x	x		x	x

The findings showed that only informant C (Victim) and informant T (Volunteer) had no good experiences using Facebook during the floods. The reason that informant C (Victim) gave, “I felt the same when I used Facebook before or during disaster. So I did not see any difference using Facebook, everyday was the same.” In the same way, informant T (Volunteer) said, “I did not see any good experiences using Facebook during the floods, because it felt normal to me.” Half of the participants said that they had bad experiences using Facebook during the floods. In the other ways, Table 12 showed 18 out of 20 participants had good experiences using Facebook.

### ***Good experiences***

Most participants had similar opinions why they felt they had good experiences using Facebook during the flood. The reasons for good experiences when 18 participants used Facebook were: (See Table 13.)

Table 13. *Reasons for good experiences using Facebook during floods*

Reasons for good experiences	Informant																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Good information on Facebook	x				x	x			x	x					x	x			x	
Facebook was helpful for flood resilience	x	x					x	x	x			x	x	x	x		x	x	x	
Felt impressed with Facebook usage with potential in flood relief and beneficial in disaster management		x			x			x			x	x	x	x	x		x		x	
Facebook helped reducing stress and less panic, also mental therapy				x		x				x										
Facebook was fast and real-time								x			x			x		x				
Facebook could gather with many people in disaster							x	x	x						x					
Information was up-to-date in flood situation											x				x					
Facebook was convenient and saved time in communication															x					

Table 13 showed the first reason for positive experiences using Facebook during the floods was helpful for flood resilience. The second most common reason for positive experiences using Facebook was they were impressed with its potential to help with flood



relief and disaster management. Good information on Facebook was the third reason for positive experiences. These were the participants' top three reasons for good experiences using Facebook during the 2011 Thailand floods.

Informant O (Volunteer) had numerous positive experiences using Facebook during the floods. Informant I (Victim) and informant M (Volunteer) shared the same positive experience that they unexpectedly changed their thinking about. Before the flood, they only thought that Facebook was just a popular social networking site, with its purpose to help people keep in touch with friends. But then during the flood, Facebook played an important role beyond chatting with friends but disaster management. This was what the informants liked about Facebook.

The final example about good experiences when using Facebook during the floods was told by informant L (Volunteer). The participant said, "Facebook presented my face to the public. Since I volunteered by cooking foods and distributing foods for victims and soldiers during the floods, I posted my volunteer pictures on Facebook. One day the Thai local newspaper contacted and asked me if they could report about my volunteering stories. I was willing to and then I was in the newspaper. My bakery shop, "Pearl" was being promoted to the public at the same time. I didn't expect to be rewarded, but I got unexpected good results in return." Informant L (Volunteer) was proud of herself and she had good experiences using Facebook.

### *Negative experiences*

Next, the results demonstrate the negative experiences that 10 participants had during the flood. The reasons for negative experiences from 10 participants were:  
(See Table 14.)

Table 14. *Reasons for negative experiences using Facebook during floods*

Reasons for bad experiences	Informant									
	C	D	F	G	J	O	P	Q	S	T
Stress and panic from bad news on Facebook		x						x		
Exaggerated information on Facebook			x	x			x			
Too much/ information overload about flood on Facebook			x		x		x	x		
Saw people contradicted one another about flood on Facebook						x		x		x
Overwhelmed by flood status	x									
Felt bad some users were misusing Facebook									x	

Table 14 shows the worst reasons for bad experiences using Facebook were too much information and information overload on Facebook during the 2011 floods. Four participants complained about too much information during the floods. Moreover, three participants felt some flood information on Facebook was exaggerated. Three additional participants were upset when they saw Facebook friends contradicted one another about flood information. Informant O (Volunteer) stated, “Because of my friends contradictions, they “unfriended” each other on Facebook. That what I was upset about.”

### ***Self-Vetting Response***

However, the findings regarding negative experiences such as stress and panic from bad news, exaggerated information and too much information overload about the flood on Facebook revealed more about information failure. The findings helped the researcher understand how participants could go wrong or lacking of Aud's (2012) work, which explained about self-vetting of information on social media in a time of emergency. The reasons for bad experiences in regards to information matter, Aud's work (2012) were applied to support explanation that it may cause from without self-vetting and critical thinking of information, the information could lead to bad results. Since Facebook is an open source that has soft censor of information, it was important to everyone with self-vetting of information when using social media (Aud, 2012).

### **Participant Recommendations for Using Facebook in Future Disaster Management**

Regarding the participants' experiences using Facebook during the floods, each participant was asked to suggest using Facebook for disaster management for citizens in the case of future disasters. Based on the informants' experiences using Facebook, informant A (Victim) and informant E (Victim) wanted Facebook to support having official disaster community fan-pages in particular for users in the case of a future disaster. Informant D (Victim) suggested, "Facebook should join and have PayPal system for citizens in order to donate money for disaster via Facebook. The reason is because PayPal system could make donating money easier, worldwide to many countries and more reliable when donating."

Another idea for disaster donation was suggested by informant F (victim). The participant considered the example of one company's donations in the 2011 floods, namely Oishi, a popular beverage company in Thailand. The company has created Oishi community fan-page for advertising their products. During the flooding Oishi created a positive opportunity in order to advertise and help flood disaster at the same. Oishi used its community fan-page on Facebook to get public attention; by clicking LIKE on the Oishi fan-page, the company donated money for disaster relief. Oishi counted one Thai Baht per LIKE. The participant loved the idea of what Oishi did during the floods. Informant F said, "For me and Oishi it was like we were in a win-win situation that benefitted each other." Therefore, informant F (Victim) recommended the Oishi concept of donating via Facebook for any organization in the case of a future disaster. Beyond donating suggestions via Facebook, informant G (Victim) and informant L, O and Q (Volunteers) suggested other ideas about sharing information on Facebook. They mentioned that "as they could see that during the floods, Facebook was able to share and affect people in many degrees especially spreading information." Four participants recommended that the next time using Facebook for any event, especially emergency situations, they would like to ask all the users to think carefully before sharing or posting anything to public sites. This is because using Facebook and information on Facebook has so much potential in communicating to many people.

Informant B, L (Victims) and informant L, M, P and S (Volunteers) mentioned that using Facebook was already beneficial; they all were satisfied using Facebook during the floods. Only two participants, informant R and T (Volunteers), had no suggestions. Three participants complained about Facebook's display such as "Timeline." They said

that “changing of Facebook resulted in complication and it took quite some time for some users to learn how to use it again. To change Facebook’s display, the participants wanted Facebook to consider more about it. This was because changing Facebook’s functions could lead to different results in disaster management.” Informant M (Volunteer) said that, “Whatever became effective features of Facebook in disaster management in this 2011 floods, I wanted Facebook to keep those good features for the future usage too.” Furthermore, informant P (Volunteer) asked citizens to pay attention to using social media more during a disaster or for any emergency situations, since using Facebook was helpful during the 2011 floods in Thailand.

On the other hand, informant H (Victim) suggested, “Facebook should improve its VDO feature on Facebook. Especially in a disaster, the VDO feature helped support solid information, which could potentially create trust in using Facebook.” In addition, informant N (Volunteer) asked if Facebook could improve a particular “disaster application” and alert disaster system on Facebook. He said “it will be very good if Facebook had a disaster application.” Finally, informant I (Victim) suggested, “If Facebook would like to improve any features, Facebook should think about improving a feature that supports compatibility with computers first. Because target users of smartphone were smaller than computers as children and old people might not have it.”

## **Chapter 5**

### **Discussion**

In this study, all participants used Facebook during the 2011 Thailand floods as a main communication tool for disaster management. All participants engaged in using Facebook according to their situation during the floods and to achieve their individual goals. The findings showed everyone used Facebook as a communication form for disaster management, and in which social media/ communication strategies were applied.

Every participant described some communicatory utility for seeking information on Facebook. Everyone focused on seeking information due to the fact that in the disaster flood information was the most important. For example, seeking information on Facebook helped them to understand the situation in order to adapt their behavior to stay safe from floods. Most participants mentioned flood information sharing was their way of using Facebook but only a few participants identified their reasons according to social network theory in cultural studies by Miller (2010). Participants' reasons described a key characteristic of social network theory, as sharing information on Facebook impacted the majority's behavior in spreading more information in reaching many users in the networks like a chain.

During disaster, citizens engaged on Facebook because collaboration became a major focus for most participants. Both participant groups, volunteers and victims, used Facebook in order to support collaboration for disaster management. Volunteers used Facebook to communicate by distributing and providing resources to communities such as creating flood community fan-pages and making VDO animation relief flood series. On the other hand flood victims used Facebook to communicate with friends and connect

with community networks in receiving information. For example, the participants joined flood community fan-pages on Facebook in order to receive flood information and interact with friends in the network. (See Table 2.)

In addition, the participants who interactively joined flood community fan pages may be described by Latane's dynamic social impact theory. Participants joined floods groups for reasons involved that matched four forms of self-organizing societies of Latane's theory model (1996). These reasons included consolidation, clustering, correlation and continuing diversity. (See Table 3.) However, even though both participant groups had different areas to implement Facebook but for collaboration, the participants shared the common goal of implementing Facebook for disaster management.

Moreover, in the Findings section the collaboration on Facebook showed as applied backchannel communication. According to collaboration in web 2.0 technology on Facebook, smartphone and computers were importantly leveraged communication and facilitated emergency response in the disaster. Regarding Facebook's collaboration between technology and communication, Facebook significantly developed a collaborative network for disaster management. As the result, technology became a main tool supporting backchannel communication during the disaster, otherwise only watching and receiving news on TV was slow and hard to rely on. The findings showed everyone used technology devices to access and use Facebook in order to receive flood information. (See Table 5.) Since accessing to Facebook via smartphone and computer, the participants could get information faster, easier and in a real-time situation. (See

Table 6.) However, not every participant used Facebook via both smartphone and computer but mostly participants used smartphones more than computers. (See Table 7.)

The participants also applied peer-to-peer communication in the disaster as backchannel communication. Many participants had positive experiences using Facebook with their peers during the disaster. Exchanging information with their friends on Facebook helped expand a wide scale of interactions for disaster management such as donation activity. Another example of peer-to-peer communication is how the participants explained that when receiving information from their friends on Facebook, the sources were more reliable and could be trusted.

Yet, many participants explained further about receiving information on Facebook that the information must be reliable, or it was not trusted. For example, a lot of participants decided to join “Roo Su Flood” community fan-page (See Table 2. & Appendix C.) because they considered that the information provided by the flood community fan-page was good, useful and more reliable than other sources, which they could trust in the flood situation. The example showed that the participants applied self-vetting of information on social media regarding Aud’s (2012) figures. (See Figure 1, 2 & 3.) In the same way, the contributor, informant O, also applied self-vetting of information in communication response during disaster. For example, before distributing any information to society such as VDO comic relief series on Facebook, informant O’s team vetted the important and accurate outgoing information. Otherwise people could be led to misunderstanding. Therefore, both receiving and distributing information on social media as well as self-vetting of information are important practices that should be applied, especially in flood disaster.



Last but not least, although all participants applied different social media/communication strategies, the findings showed that Facebook became an important communication channel for disaster management. Most participants agreed that using Facebook was helpful. (See Table 8 & 9.) At the same time, almost every participant agreed that Facebook was beneficial to use during the floods. (See Table 10 & 11.) Thus, using Facebook during the floods was both helpful and beneficial to the participants. Facebook served as a good and useful communication platform in managing the situation throughout the country during the 2011 Thailand floods.

In any case, the researcher found in this study that social media, and specifically Facebook, was importantly used among Thai citizens during the 2011 Thailand floods in disaster management. By comparing the use of Facebook and traditional media like TV, the announcements from TV were less helpful in producing the right problem-solving strategies in the floods disaster. By communicating on Facebook, people could competently produce a better response to the flood situation.

## **Chapter 6**

### **Conclusions**

#### **Limitations**

This case study research used qualitative method in order to reach a conclusion. The study used a small group of interviews to detail a disaster phenomenon during the 2011 Thailand floods. However, the case study method could not generalize the findings. The interviews were limited because the participants had such different careers, and most lived in Bangkok, not in every part of Thailand. A limitation of a small number of participants is the findings are less reliable. However, this case study was still useful as an exploratory tool for further in-depth research.

Another limitation in this study was the cultural setting. As this case study centered on Thailand, it may be hard to apply the findings to other countries. Therefore, information about this case study was also limited. For the most part, this case study was based on American research, not Thai.

#### **Conclusion**

As this thesis has demonstrated, Facebook has already been used in times of disaster during the 2011 Thailand floods. This study showed more positive results than negative impact in experiences using Facebook for disaster management. (See Tables 12, 13 & 14.) The research concluded that social media were potentially useful in disasters because Facebook could become a collaborative, interactive communication tool. Since the Internet was developed as a robust networking technology during times of disaster, the technology has become as ideal tool to use during disaster. Internet technology was designed to enable communication even when traditional lines of communication (e.g.,

television, radio, etc.) failed. However, social media such as Facebook will probably not replace other forms of media but rather be a supplement or additive to official communication. This is due to the fact that not everyone is using Facebook. So social media and other tools such as TV should be complementary and used as frontline communication, in an integrated way.

### **Recommendation for Future Practice**

Based on the findings, this research presented the role and impact of Facebook, which was used by Thai citizens for disaster management. This study tries to focus on how social media were effectively used during the 2011 Thailand floods. This study found that all participants applied information-seeking strategies in accessing Facebook to understand a situation, for behavior adaptation (to stay safe from flood), and to receive support from friends' networks. Therefore the findings support Clark's (2012) statement that social media offered some communication and solutions, when used in emergency situations. The findings also support research on the communicatory utility of interpersonal encounters in social media for seeking information. For example, Westbrook (2012) applied communicatory utility in the situation in northern Alabama, explaining that the situation motivated people to seek tornado news on social media as a crisis communication tool.

In this current study, the researcher found that social media were important in information seeking and had good potential as a crisis communication tool for disaster management. The researcher recommends that official disaster agencies further develop practices for using Facebook and other social media as communication tools to add real and lasting value to disaster management planners in more countries. Disasters will

always happen in this world at some time and in some place; people never know where or when.

Moreover, this study found that most participants used Facebook via technology such as smartphone and computer as a backchannel communication tool in the 2011 Thailand floods disaster. This case study showed that traditional media like television were less effective for these informants in communication during a disaster and for disaster management. Participants reported that information was hidden or slow to be published on government radio and television. Therefore Thai citizens turned to use Facebook on smartphone as backchannel communication tool, which focused on peer-to-peer communication. The findings of this study support Sutton, Palen and Shklovski's (2008) explanation that using social media on smartphones supported backchannel communication activity to enable people in enhancing their communication and dealing with disaster response. Smartphone technology has the potential to facilitate people to quickly access Facebook and get real-time information. More importantly, Facebook could connect people to reach many users through the networks, which supports a key point of social network study of Miller (2010) that distinguished social media from traditional media. As Miller (2010) described, social networks are where similar people in a society can influence and affect one another in many degrees of separation more than traditional media.

From the findings, the researcher found evidence of how people used Facebook and why it was important as backchannel communication for disaster management. The researcher would like to suggest that social networking technology should continue to be employed as an important communication tool for disaster management in the future. The

internet and technology have been developed and designed to be potentially useful in times of disaster.

### **Recommendation for Future Research**

The findings of this study showed more positive feedback of using social media as Facebook for disaster management in the 2011 Thailand floods case than negative feedback. The researcher saw evidence that during the Thai floods social media facilitated citizen engagement and collaboration very well. In particular, the researcher found that volunteers were the most outstanding reason why social media like Facebook became a collaborative network for disaster management. Regarding the findings, the researcher found that social media in citizen engagement supported Waugh and Strelb's (2006) statements that "collaborative networks a fundamental component of any emergency response" (p. 134) and "collaboration is an expectation in emergency management." (p. 137) The example of users community like informant N, O and S showed how they heavily used Facebook as a communication platform for managing and responding to disaster in many ways. The example of three informants represented support Aud's (2012) idea, which analyzed public safety projects through public engagement of floods in Texas. Aud (2012) identified that social media were important and empower communities in disaster in collaboration response for emergency events such as floods.

Therefore the researcher would like to see additional research about Facebook for disaster management, and research should extend to other social network sites such as Twitter, and LinkedIn. Since Aud (2012) mentioned social media in general as open sources, social media could empower citizens during disasters in collaborative response.

Consequently, further study on different social network sites for disaster management could be helpful in comparing and contrasting disaster response efforts. Moreover, the researcher would expect to see future study on social media like Facebook incorporated with traditional media in collaboration response such as recovery, volunteerism and disaster relief efforts that could be improved or completed differently for disaster management. Perhaps, future researches may consider including discussion regarding prior researches and theories on offline group communications.

In short, the researcher recommends expanding this work. Additional studies about the role and impact of social media and disaster management would be helpful in providing more understanding of communication strategies in dealing with disaster response.

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**Appendix A**  
**Consent Form**

Agreement to participate in  
Social Media and Disaster Management during the 2011 Thailand Floods Case Study

Primary Investigator: Uayporn Pasvekin

This study is being conducted as a part of the researcher's thesis for master's degree at University of Hawaii at Manoa. The purpose of this study is to explore how social media such as the SNS Facebook were used and therefore affected communication by Thai citizens as part of a disaster management during the Thailand floods of 2011. You are being ask to participate because you are Thai who used social media for disaster management during the Thailand floods 2011.

Participation in the project will consist of an interview with the investigator. Interview questions will focus on your experience with using Facebook. All the data from the interview will be summarized into various categories including strategies and outcomes in order to interpretive conclusion how Facebook were used and affected disaster management in the Thailand floods of 2011. There is no personal identifying information included with the research results. Each interview will last no longer than one hour. About 20 interview participants will be approached, which divide into two groups: volunteers and flood victims groups. Ten people from each group will participate in this study. Interviews will be audio recorded for the purpose of transcription. Field notes may be used in some cases if interviewees decline to be recorded, and additional information is needed.

The investigator believes there is no risk to participating in this research project. Participating in this study may be of no direct benefit to you. However, the investigator believes that the results from this project will be useful recommendations for future disaster management in the digital age, as data from the interviews can be used and applied some of the social media communication strategies to other disaster zones.

All the research information and data will be confidential to the extent allowed by law. Agencies with research oversight, such as the UH Committee on Human Studies, have the authority to review research data. All data and information will be anonymous and confidential. All research records will be stored in a locked file in the primary investigator's office for the duration of the research project. Audio tapes will be destroyed immediately following transcription. All other research records will be destroyed after the project complete.

Participation in this research project is completely voluntary. You are free to withdraw from participation at any time during the duration of this research project with no penalty or loss of benefits to which you would otherwise be entitled.

If you have any questions regarding this research project, please do not hesitate to contact the researcher, Uayporn Pasvekin at (808) 393-1836, or [pasvekin@hawaii.edu](mailto:pasvekin@hawaii.edu)  
If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies at (808) 956-5007, or [uhirb@hawaii.edu](mailto:uhirb@hawaii.edu)

Agreement to Participate in  
Social Media and Disaster Management during the 2011 Thailand Floods Case Study

**Participant:**

\_\_\_\_\_ I agree to be recorded by audio recording.

\_\_\_\_\_ I refuse to be recorded by audio recording, but allow to use field notes.

I have read and understand the above information, and agree to participate in this research project.

\_\_\_\_\_  
Name (Printed)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Appendix B

### Open-ended Interview Questions

#### Disaster Management in the Digital Age: The Role and Impact of Social Media During The 2011 Thailand Floods

The interview questions are:

1. Background questions: Name and gender
2. How were you affected by the flooding in 2011?  
  
Why did you select Facebook during flood instead of another social media platform?  
  
How did you use Facebook for flood-related purposes during the flooding in 2011?  
  
With whom did you connect via Facebook? And why?
3. What was your main purpose for using Facebook during the flood?
4. Did you participate in any flood group-support pages on Facebook during the flood?  
  
If yes, in which flood group-support pages did you participate?
5. Why did/did not you choose to participate flood group-support page on Facebook?
6. Did you think using Facebook for flood communication purposes during flood situation was helpful? Why/or why not? [Prompt for an example]
7. During the flood, which kind of technologies did you use to access Facebook? Smartphone or Computer? Why? [Prompt for an example]
8. Was using Facebook beneficial to you during the flood? Why/or why not?  
  
[Prompt for an example]

9. Did you have any good experiences using Facebook during the flood? Why?

[Prompt for an example]

10. Did you have any bad experiences using Facebook during the flood? Why?

[Prompt for an example]

11. What suggestions do you have for using Facebook in the future for disaster management? [Prompt for an example]

12. Did your Facebook usage change after the floods? And why?

## Appendix C

### Tech In Asia (Online news site)

As the online report on November 21, 2011 from the *Asia Tech News for the World* website on “Social Media Innovation Flourished during Thailand Floods” by Byron Perry reported on social media as a tool for communication during Thailand floods disaster (Perry, 2011). The news reported:

Social media has boosted the popularity of some celebs and made new faces famous during the flooding. The most out-of-nowhere viral hit has been the Roo Su! Flood (“know and beat the flood”) video series on YouTube, made by two 26-year-old semi-employed filmmakers. The first video in the series aimed to simplify and bring home the billions of cubic-meters of water that were bearing down on Bangkok in late October by equating them to cute Blue Whales. The whales have since become a popular culture phenomenon in Thailand, showing up everywhere from women’s nail art to Facebook profile pictures, and the main video has been watched over a million times.



Facebook. (2011). *Logo 'Roo Su Flood'*. Retrieved on September 25, 2012. Adapted from <http://www.facebook.com/ROOSUFLOOD> by ‘Roo Su Flood’ community fan-page on Facebook

## Appendix D

### Finance Insider Asia (Online news site)

Finance Insider Asia, published news on “Bangkok, the city with biggest number of Facebook” based on Socialbakers analyzed social media, which Dion (2011) reported:

Bangkok has more users than any than other city in the world. ... Bangkok has approximately 8.68 million Facebook users. ... Bangkok is beating all the westerners such as London and New York, moreover the social network is getting viral in Asia with Kuala Lumpur (3.33 million users), Singapore (2.66 million users) and Mumbai (3.7 million users) ranking in the Top cities. For a city with an estimated population of 14-16 million people, the penetration rate of Facebook is amazing! Below is the ranking of the top 20 cities on Facebook:

Number	City	Country	Facebook User
1	Bangkok	Thailand	8,682,940
2	Jakarta	Indonesia	7,434,580
3	Istanbul	Turkey	7,066,700
4	London	United Kingdom	6,139,180
5	Bogota	Colombia	6,112,120
6	Sao Paulo	Brazil	5,718,220
7	Mexico city	Mexico	4,294,820
8	Santiago	Chile	4,129,700
9	Mumbai	India	3,700,460
10	Buenos Aires	Argentina	3,533,840
11	Rio de Janeiro	Brazil	2,487,300
12	New York	United States	3,420,380
13	Los Angeles (CA)	United States	3,405,600
14	Kuala Lumpur	Malaysia	3,328,240
15	Paris	France	3,062,020
16	Bangalore	India	2,931,460
17	Singapore	Singapore	2,662,680
18	Ankara	Turkey	2,551,160
19	Caracas	Venezuela	2,503,940
20	Lima	Peru	2,480,220



Dion, J. (2011). Bangkok, the city with biggest number of Facebook. In *Finance Insider Asia*. Retrieved from <http://www.financeinsiderasia.com/2012/05/bangkok-city-with-biggest-number-of.html#.UGJVnY4l58t>

## Appendix E

### (hFOSS)

Boon (2012), a chair of the Sahana Eden project management committee, explained hFOSS:

Humanitarian free and open source systems (hFOSS) exist for disaster management. These systems are built specifically to meet the needs of response and recovery efforts. Such systems are built and maintained by a global team of volunteers for the most part. hFOSS is used around the world, but not so much in the United States. hFOSS has a community working together developing systems to meet the needs of those suffering from natural-, manmade-, and terrorist-related disasters. These systems are free for organizations to use and implement any way they want. Since these systems are licensed under the GNU (stands for: GNU's not Unix) (<http://www.gnu.org>), they can be customized and modified by any group to use in any capacity. These systems are very dynamic and are growing at a feverish rate. Software developers from around the world, at universities, and in volunteerism efforts, are congregating and organizing in efforts to increase the availability of disaster management systems to those in need (p. 220).

Boon, F. (2012). Visuals, mapping, and disaster management systems. In *Social Media, Crisis Communication, and Emergency Management*. Boca Raton, FL: Taylor & Francis Group, LLC.

