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Social Media Use in Disaster Management: Perceptions of Emergency Management Directors at Kentucky Institutions of Higher Education

BY

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SOCIAL MEDIA USE IN DISASTER MANAGEMENT: PERCEPTIONS OF EMERGENCY
MANAGEMENT DIRECTORS AT KENTUCKY INSTITUTIONS OF HIGHER EDUCATION

BY

AHMED MOHAMMED ALSHAHRANI

Submitted to the Faculty of the Graduate School of
Eastern Kentucky University
in partial fulfillment of the requirements for the degree of

THE DOCTOR OF EDUCATION (ED.D.)
IN EDUCATIONAL LEADERSHIP AND POLICY STUDIES
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ABSTRACT

Since time immemorial, disasters have been part and parcel of the human experience; hence the ever-present need for disaster management. These disasters can take place everywhere and at any time, including institutions of higher education. The use of social media platforms as a tool for disaster management has gained traction in recent years due to its growing use across the world. The purpose of this study is to analyze the use of social media in disaster management specifically with respect to the perceptions on the existence of fake news and spam among directors in higher education Emergency Response/Emergency Management in the Commonwealth of Kentucky amid increasing threats caused by spam and fake news. The literature review covered a number of pertinent areas relevant to the topic including the dynamics of fake news and spam in United States' disaster management, the critical features of higher education Disaster Management in the United States, and the role of social media in supporting Disaster Management in higher education. The study adopted a primary research methodology, which involved collecting qualitative data from the emergency management directors at the Kentucky institutions of higher education. Data was collected in person and using Zoom interviews with each respondent, depending on the availability of the interviewee was coded, and analyzed using the thematic analysis technique. Findings from the study are expected to shed light on the perceptions on the existence of fake news and spam among higher education Emergency Management and this will serve as a foundational framework for the use of social media as an effective tool for disaster management in higher education given that it is easily accessible, convenient, relatively affordable, fast, and popular.

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CHAPTER 1: INTRODUCTION

1.1 Background

Disasters, from a public health perspective, refer to destructive occurrences that lead to the need for a broad spectrum of emergency activities to help the victims and ensure that they are rescued, taken care of as best as possible, and ultimately survive (Geale, 2012). Due to the extraordinary circumstances that often characterize such events, disasters require a coordinated and collaborative response to ensure that the essential relief arrives to the right people at the right place and on time. Disaster management is therefore the process of adequately responding to and controlling destructive events in a coordinated manner prior to, during, and after the actual disaster (Wellington & Ramesh, 2017).

The world has been susceptible to all manner of disasters since time immemorial, and this is still true in the modern era. Institutions of higher education are particularly susceptible to disasters due to the high student populations that characterize academic establishments (Watermeyer et al., 2021). Occurrences such as the shooting at Virginia Tech in 2007 and the 2005 Hurricane Katrina in Louisiana have all shed light on how vulnerable institutions of higher education are when disasters strike, natural or man-made disasters. Institutions of higher education are especially susceptible to man-made disasters such as the mass shooting that occurred in Virginia Tech. Higher education institutions are more susceptible to disasters because they allow access by mature people, who can easily perpetrate these crimes. Moreover, institutions of higher education, particularly those that are in communities characterized by high levels of poverty, low education levels, low median home values, or low labor force participation are susceptible to not only the occurrence of disasters but also a lack of preparedness and the resultant poor emergency response and management (Twigg & Bottomly, 2011). For example, the police demonstrated widespread unpreparedness to handle the shooter

during the Uvalde crisis. It was reported that the police drove past the shooter and took about an hour to get access to the classroom while the school's head teacher treated the situation as less of a shooting situation (Miah & Sheppard, 2022). Moreover, in the Sandy Hook Elementary School shooting, it took more than ten minutes for the Connecticut State Police to enter the school, indicating heightened unpreparedness to respond (Shultz et al., 2013). During the delays, fake news can rapidly spread and significantly affect the response processes.

To adequately protect students and staff, institutions of higher education require adequate campus resilience. Campus resilience refers to the ability of colleges and universities to prevent, protect against, mitigate, respond to, and recover from threats and hazards (Department of Homeland Security, 2015). By understanding how institutions of higher education interpret their degree of resilience and preparedness in terms of measures and resources in place, a plan can be formulated on how to guide these institutions towards being resilient.

One specific tool that can be incorporated into a disaster management plan to effectively enhance campus resilience and facilitate the overall disaster management efforts at institutions of higher education is social media. Due to the ubiquitous nature of social media in the modern world and just how cheap, convenient, far-reaching, and fast acting it can be during times of disaster, it is impossible to ignore social media as an integral part of a disaster management plan. Social media is an invaluable resource that provides real-time information to first responders, law enforcement, officials, news outlets, the general public, as well as the family and friends of the affected. People can upload footage of a disaster as soon as it is taking place and use social media platforms to notify other people around the world about the events as they happen and also use social media to galvanize people to search for loved ones, pool resources, and share these resources with the affected. A lot of times, the information spread through social media

is seen by people even faster than the news on traditional media outlets (Adjusters International, 2022).

Without a doubt, social media platforms are extremely useful when disasters take place, especially for creating awareness, spreading information, and community mobilization. The relatively new outlets of communication created by social media enable the dissemination of warnings to different parts of the population as soon as destructive events occur in a fast and efficient manner (Joseph et al., 2018). In instances where just one mode of communication is being utilized, chances of communication breakdowns are high. As such, social media platforms help to reinforce existing platforms to effectively spread information and mobilize support during disasters.

Using social media platforms to manage disasters is considered to be a method of passive dissemination of information as well as systematic use of social media as a tool for managing disasters. When employed as a systematic tool, social media is used as a channel for carrying out emergency communication, obtaining requests from affected people in need of aid, broadcasting warnings, and creating situational awareness by keeping track of people's activities and posts (Yan & Pedraza-Martinez, 2019).

However, although social media is a critical medium for managing disasters, there are several challenges linked to it that often limit its effectiveness in meeting the needs of disaster management such as problems with network downtimes as well as a susceptibility to falsehoods (Allcott & Gentzkow, 2017). These include the fact that there are hardly any social media guidelines when it comes to how these platforms should be used properly during disasters, a limited number of staff and resources allocated to these sites, a lack of trust in the validity and authenticity of the information from social media sources, and challenges related to information overload (Young et al., 2020). Moreover, although social media is an important tool for all of these disaster management uses, social networking platforms can likewise become mediums that are misused to spread

untrue rumors and disinformation which only serves to create chaos and confusion and results in the mismanagement of disasters (Palen & Hughes, 2018). These mainly come in the forms of threats posed by spam and fake news. Given these limitations, social media can be used to cause panic and expose victims' lives to dangers.

That being said, while social media platforms have been found to present policy makers and information technology disaster managers with a new set of challenges to grapple with, Mehta et al. (2017) argued that social media platforms are instrumental in handling threats caused by spam and fake news. Therefore, even with all the challenges inherent to social media, its existence has without a doubt had a powerful impact on the way the world prepares for, plans for, and recovers from disasters (Adjusters International, 2022). Fully accepting and implementing this technology will thus be instrumental in assisting those who are caught up in disasters in real-time in ways that were previously considered to be inconceivable, even just a decade ago.

1.2 Statement of the Problem

The higher education community has been grappling with an increasing number of crises including natural disasters, mass shootings, terrorist activities, and serial killers among others for several years (McCullar, 2011). When it comes to higher education, therefore, disaster management is critical in dealing with these crises especially given the sheer population of students and staff in any given institution of higher learning, which makes such establishments highly susceptible to disasters due to ease of access to the institutions and possible perpetration by an unscrupulous institutional community. When disasters occur, social media platforms play a crucial role of providing information that help to inform and guide the responders regarding the exact characteristics and state of the disaster (Tim et al., 2017). However, despite the undeniable importance of social media in disaster management for higher education, there are a number of challenges associated with its usage particularly with respect to the prevalence of spam and fake

news both of which threaten to thwart any good efforts that can be made to respond to, control, and manage a disaster when it occurs.

Therefore, although there are several benefits to using social media during a disaster (benefits that were practically non-existent just two decades ago during Hurricane Katrina), there are also risks. For instance, instead of receiving “verified” information from official sources, now anyone can report on anything at any time. This means that not all information is confirmed before it is released to the public, which results in the sharing of misinformation. It thus becomes difficult to trust information online when a disaster takes place, even when that information might be true. Scammers use social media for their own benefit during and after disasters, and have used social media to create fictitious relief funds in an attempt to steal cash and/or credit card numbers. Agents that spread fake news and spam take advantage of the disaster to spread unverified and false details about a disaster to scare the public and misguide the responders (Singh & Dwivedi, 2020). The agents may not be the actual perpetrators of the disaster, but they are interested in distracting and causing confusion during the response. Some of them are media sites that want to attract traffic to their sites, which they achieve through exaggeration of the news that they release.

Finally, and more pertinent to the current study, the perceptions of those directly involved in emergency/disaster management in higher education institutions is largely unknown. Preliminary research carried out by the researcher has failed to uncover any empirical evidence and studies that have been undertaken to investigate the perceptions of the directors of higher education institutions on the existence of fake news and spam during the use of social media in emergency/disaster management. This represents a significant research gap, given that the directors of higher education institutions have first-hand experience dealing with social media during disaster management and are thus in an excellent position to know whether fake news and spam is prevalent during their

social media-driven disaster management efforts. The study shall thus make an effort to close this knowledge gap by obtaining answers directly from these directors.

1.3 Purpose of the Study

The main purpose of the study is to uncover the perceptions of emergency management directors at Kentucky colleges and universities regarding the existence of spam and fake news in higher education emergency response and emergency management. The study shall specifically seek to understand how directors of higher education institutions view fake news and spam when it comes to the use of social media during emergency management in terms of its prevalence and the challenges they present. The study shall also seek to analyze the threat posed by spamming and fake news when using social media platforms as tools of disaster management and how this threat affects emergency responses for universities and colleges. Fake news and spam are a concern because they may misguide the response processes, create unnecessary anxiety, and even be used by unscrupulous online users to collect false relief funds. In addition, the research will help to identify potential solutions to the challenges posed by social media shortcomings for the benefit of disaster management in higher education. Thus, a major focus of the study was to evaluate the possible solutions that can be applied to ensure the effective usage of social media in supporting disaster management efforts. This study also makes an effort to identify ways through which social media can be more efficiently used to support disaster management efforts. A final goal of the study was to help in determining the prevalence of social media spamming and fake news during disaster situations.

1.4 Research Questions

In order to achieve the purpose of the study, the following questions were sought:

- i. What prevailing perceptions on the existence of fake news and spam exist among directors involved with higher education Emergency Response/Management in Kentucky?
- ii. What is the actual prevalence of social media spamming and fake news during disaster situations in higher education institutions?
- iii. What challenges do social media pose when it comes to higher education Emergency Response/Management in Kentucky?
- iv. What potential solutions to the challenges posed by social media shortcomings can be developed for the benefit of disaster management in higher education to ensure the effective usage of social media in supporting disaster management efforts?

1.5 Potential Significance

The study has great potential to help improve modern emergency response and management in the institutions of higher education, both in Kentucky and across the nation. As such, the study will be useful in helping institutions of higher education to develop an effective plan and policy through which they can incorporate the use of social media in their overall emergency management mechanisms.

In addition, the study will be useful in helping inform disaster management policy makers as they seek to develop policies related to social media. Very few disaster management policies have rigorously conceptualized social media in a way that is effective in addressing the challenges of social media with respect to spam and fake news, and therefore, this study will provide an academic basis to enrich these policies.

Finally, the study findings will be of benefit to scholars, academicians, and governments in understanding the role social media plays during disasters especially in higher education, and this may result in the inclusion of social media as a key component

in future legislation and academic texts as pertains to disaster response and management.

1.6 Limitations of the Study

Limited scholarly and peer-reviewed materials exist on the topic. Preliminary research has revealed that no studies have been carried out on social media use in Higher Education Emergency Management, both in Kentucky and around the country. Furthermore, the perceptions of the directors of higher education institutions on the existence of fake news and spam during the use of social media during disaster management are virtually non-existent. The topic is therefore entirely new and represents a significant new area of knowledge. This will serve as challenging when sourcing for materials and arriving at the necessary conclusions. The study sought to address this by applying the available material to higher education, thereby helping to generate new information that will be of benefit to the world.

Furthermore, the study methodology may be limited by potential biases. While qualitative research has been applauded for enhancing the quality of literature reviews due to increased transparency, Velez and Zlateva (2012) explain that the selection of the sources to be used are screened based on the inclusion/exclusion criteria, which is sometimes characterized by biases especially if a high number of researchers are involved. For this study, therefore, objective selection of sources will be a priority in order to eliminate chances of ending up with biases in the findings. Ensuring that the peer-reviewed sources are objectively selected will enhance the strength of the findings and enhance the generalizability of the study to varied contexts.

CHAPTER 2: LITERATURE REVIEW

2.1 Social Media in Disaster Management

Higher education institutions are increasingly using social media platforms to communicate with stakeholders during times of disasters (Ayebi-Arthur, 2017). The traditional mass media such as television, radio and print media are not very popular sources of news during disasters because they take time to collect, analyze, organize and distribute disaster-related news. Social media includes Internet-based applications that provide platforms for people to transmit messages by sharing resources and information (Joseph et al., 2018). According to Wendling and Jacobzone (2013), the new communication channels anchored on social media provide undeniable opportunities for people to broaden warnings to diverse segments of the population during times of emergency. Social media technologies have the potential to timely address communication breakdowns because they do not rely on just one platform, which allows users to reinforce the diffusion of warning messages. Despite this important role of social media in emergency response and management, Singh et al. (2020) noted that spam and fake news continue to greatly demean the integrity of social media platforms in the United States higher education particularly as tools of relaying reliable information that enables emergency responders and victims to link with each other.

The reasons for increased reliance on social media for emergency communication are popularity and low cost of operation (Jacob, 2016; Taylor, 2018; Luna & Pennock, 2018). The popularity and affordability features of social media platforms is supported by instantaneous messaging across multiple platforms, which makes it easy to share information with users who are only on one platform such as Twitter or Facebook/Instagram. Previous studies such as Uscinski et al. (2020) and Dang (2021) have provided evidence that social media platforms (YouTube, Facebook, Instagram, and Twitter) can potentially facilitate continuous open communication and improved

situational awareness. The platforms are applauded for allowing users to share simple and straight-to-the-point messages while simultaneously letting users improve the illustration of the situation by embedding audio-visual aids such as pictures, voice and videos in the message. Changes that have happened in the social media networks may potentially affect the continued spread of fake news and spam. For example, Elon Musk's purchase of Twitter may imply intensified fake news and spam because he intends to create free spaces that allow everyone to express their speech. Failure to put effective controls may imply lack of control for fake news and spam, which may eventually spread to adversely respond to disasters and emergencies in America's higher learning institutions.

Mehta et al. (2017) conceived the utilization of social media for emergency and disaster response and management on organizational level in two categories. The first category relates to the passive utilization of social media in disseminating information and receiving user feedback through incoming messages, polls, and wall polls. This category involves the stakeholders of higher education institutions receiving information for action when an emergency or disaster occurs. The second category involves the systematic application of social media as an emergency/disaster management tool. What this means is that the response teams and victims use social media to transmit emergency information and issue warnings, use social media to requests for assistance from the victims, monitor activities and postings by social media users to establish situational awareness, and use the images that users share in social media platforms to estimate damages. However, ethical utilization of social media is crucial to allow the platforms to effectively serve their passive and systematic purposes. However, the effectiveness of using social media platforms to respond to disasters and emergencies has been criticized particularly in consideration to the recent Robb Elementary School in Uvalde shooting in which the police took seventy-eight minutes to respond despite receiving calls and messages from the pupils (Hill, 2022). This can be translated as an ineffective use of available communication platforms.

2.2 The Dynamics of Fake News and Spam in United States' Disaster Management

Fake news is defined as any piece of misleading information presented as news whose perpetrators often aim to damage the reputation of a person or entity, or to make money through making an advertisement (Korta, 2018). Fake news is mostly fabricated stories with no facts or sources that can be verified and are mostly falsified events that did not either occur or are presented in the way in which they did not occur (Palshikar, 2021). Given their popularity and ease of access, social media platforms have remained the most popular channels for distributing fake news. During emergencies, perpetrators of fake news tend to optimize the accessibility of social media to distribute fake news to recipients who are always ready to open any link in a bid to access information regarding the flow of events.

Rajdev and Lee (2015) described tweets as being fake if they provided an incorrect location of the event, the time/data related to the event was incorrect, were associated with incorrect information related to the event, or contained a link to a misleading or fake image. Moore, Oklahoma, was struck by a Tornado on May 20, 2013, leading to the loss of twenty-four lives and a massive destruction of homes and businesses. A total of 158,000 Tweets were posted between May 19, 2013 and May 24, 2013 because the users had posted about the tornado before and after it hit Moore, Oklahoma. However, 9,284 tweets exhibited relevance to the tornado and were left for analysis by Rajdev and Lee (2015). The dataset from the Moore Tornado consisted of 350 non-legitimate tweets, of which 21 were fake tweets and 329 were spam tweets.

Fake tweets were also evident during Hurricane Sandy. The development of Hurricane Sandy lasted for ten days after its commencement on October 22, 2012. The hurricane caused 148 direct fatalities after it affected twenty-four states (east and west), leading to it being ranked one of the deadliest in the history of the United States. Rajdev and Lee (2015) collected 3,251,083 tweets posted between October 22, 2012, and

October 31, 2012. Irrelevant tweets were removed and 34,053 tweets relevant to the hurricane were preserved for analysis. The dataset from Hurricane Sandy contained 350 tweets, of which 69 were fake news and 281 were spam. An example of fake news during Hurricane Sandy was when a Twitter username @ComfortablySmug engaged in the spread of several rumors through social media, which included that the New York Stock Exchange Building had flooded. The user also tweeted that Con Edison was planning to shut off power in New York City at a time when there was a plan to seal off all bridges leading to and from Manhattan (Homeland Security, 2018). There was also sharing of altered pictures of sharks swimming in the streets, but closer scrutiny revealed that the pictures were scenes from “The Day After Tomorrow” movie.

Spam denotes the unsolicited messages sent in bulk via the Internet or any electronic messaging system. The most notable features of spam include ubiquitousness, unavoidability, and repetitiveness (Sherchan et al., 2017). Spam messages sent to receivers’ inboxes are mostly commercial in nature and intend to steal the attention of the reader by being disguised to communicate a specific event. However, spam messages contain links that may expose users to phishing websites that host malware. In their study, Rajdev and Lee (2015) described a spam tweet if it was linked to a spam page, pornographic content, and advertisements. During emergencies, spammers may use emergency events as titles to write spam content because of the belief that recipients will certainly open them as they search for information regarding the emergency event. Clicking on a link helps them to achieve their objective, which may be phishing or getting a financial gain from the click.

2.3 Critical Features of Higher Education Disaster Management in the United States

The core characteristic of higher education emergency response/management is timeliness for response teams to save lives of the victims (Homeland Security, 2018; Feng & Cui, 2021). Achieving timeliness requires information to arrive at the required

destinations timely and in formats that are readable to ensure that the messages are understandable and actionable by the intended recipients. However, Gow et al. (2009) traced the Virginia Tech shooting tragedy of April 2007 as one of the most notable examples of slowness by institutional officials to alert campus and community of an ongoing or impending emergency. During the shooting that would leave 33 students and 17 wounded, the emergency response teams took too long to provide the list of fatalities to comfort the aching hearts and worried minds (Collett, 2014). The families turned to Facebook such that by the time the institution released an official list of names of those who lost their lives and the injured; it was old news because the online community had successfully identified 32 of the deceased.

The recognition of the necessity of rapid response during emergencies forced higher education institutions in the United States to adopt rapidly advancing technologies of Web 2.0 mass messaging. The messaging technologies are meant to alert campus communities when a crisis is impending or ongoing, and simultaneously provide critical information for the safety of people within the campus (Connolly, 2013). Romano (2013) identified that these technologies include sending messages using text, emailing the stakeholders, and social media; the tools provide important platforms for disseminating information about emergencies on a large-scale and the most efficient manner available. However, Collett (2014) recognized that higher education stakeholders in the United States are still grappling with the question of how to train institution members to exhibit readiness for a violence or casualty incident. Workers and students have not been fully equipped on the immediate steps to take such as hiding or running when a disaster strikes. This is worsened by what Indah (2018) described as difficulties to convince human beings that they are at risk. Regardless of such critical gaps, students' response to liking and sharing has greatly helped higher education in the USA to accomplish getting the point across in real-time, an action that the government, mainstream media, and the emergency response teams have strived to achieve.

2.4 The Role of Social Media in Supporting Disaster Management in Higher Education

Since the emergence of computer technologies, internet-based communications such as social media platforms have become key in dissemination of information across the United States. Social media networks such as Twitter, Google+, Facebook, Instagram, and TikTok can be used to solve some of the problems that occur during disasters (Luna & Pennock, 2018). Most of the conventional communication tools and systems may stop working during disasters, leaving most of the social networking active especially those relying on rechargeable systems active (Semaan, 2019). For example, televisions may go off once a disaster disrupts power supply, but charged mobile phones and laptops may be accessible, hence, permitting access to the social media platforms. Several government officials in the modern America security context are turning to social media technologies to share information required to manage emergencies across the phases of crises. However, Korta (2018) cautions that integrating social media and its associated new technologies requires agencies responsible for responding to emergencies to be aware of fake news and spam, which may immensely undermine their response efforts.

Previous research has consistently revealed that there is an increase of mobile phone usage and email immediately after a disaster (Niles et al., 2019). According to Collett (2014), the use of social networking sites also increases and even surpasses the utilization of more conventional communication tools such as fixed phones. The commentary about social media usage during disasters revolves around the role the sites play to transmit information in the forms of news. As identified by Palen and Hughes (2018), social media networks may retain their functionality and continue disseminating information in real-time even after multiple devices such as television stations and landlines shut down due to power outages. What follows immediately after the disaster is a sharp increase in the amount and types of information shared about claims, preparedness tips, and how to prevent similar occurrences in the future. Thus, social media networks remain crucial tools in these endeavors because of their ease to use and

connectedness to the people. During the face of long-term outage, black start generators may provide an alternative to restart an electric system in a blackout because they can start without the grid and assist in restoring the systems (O'Brien et al., 2021). A black start generator restores an electric power transmission station from a total or partial shutdown to operation without necessarily having to be powered by an external source of electric power transmission network. However, black start generation may not be effective in areas that rely on a single fuel black start that does not have an adequate fuel storage capacity (Jang et al., 2021). Although Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) have developed extensive black start plans that they routinely exercise and build upon, the need for government involvement is necessary. The role of the government is to provide a reliable source of automatic power during disasters that ensures social media users get back online so that they can provide the required information to guide response.

Agencies tasked to respond to the emergencies may intend to utilize the power of social media for instant broadcasting and amplifying of emergency warnings to the members of the public. The role of social media in connecting families that were initially disconnected by the disaster has been evident in the United States (Reuter et al, 2018). This is further supported by the findings from the study by Sherchan et al. (2017) that revealed that social media sites help the victims to access aid, centers of help, and other resources available to alleviate the suffering of those affected.

Collett (2014) conducted a study to identify how university students can effectively use social media during emergency events. Using an online survey of 33 questions administered to a randomly selected sample of Eastern Kentucky University students, Collett (2014) found out that social media could be effectively used to support the efforts of responding to emergencies in a higher learning institution. Unlike in the traditional incident command where a public information officer had to approach the media to share updates before the media disseminated the information to its audience,

the roles have change in the era of social media with the audience becoming the messenger, a shift that has eliminated the sole reliability on the mass media for relaying information. From the study, Collett (2014) recognized the importance of harnessing social media's power of rapid communication by near-instantaneous information sharing power to save more lives, provide quick evacuation, shelter the victims in one place, and respond immediately when a disaster event occurs.

Regardless of the functionality of some online information in effectively creating an alert for emergency response, Sheldon (2017) argued that stakeholders might not perceive an event as an emergency even if an institution had communicated it as such. The reason for this could be having some degree of mistrust on the communication systems, especially social media to which an individual can get access and create a post to scare the targeted victims. Furthermore, Dang (2021) argues that if the communication is from a personal social media account, the response may be even lower because stakeholders may perceive it as fake news. This implies that increased incidences of fake news are undermining the utilization of social media for emergency response/management compared to the response that could have ensued if the communication came from the mainstream media.

Furthermore, message complexity may influence the potential of social media usage in emergency management. Citing the literature by Jacob (2016) and Norris (2017), Taylor (2018) recounted that the University of Texas at Austin (UT-Austin) witnessed the murder of two students while on campus between April 2016 and June 2017. Additionally, the report by the University of Texas Austin (2017) revealed that there were multiple incidents of sexual assault, public intoxication, vandalism, and trespassing that the police reported between January and June 2017. Increased number of incidents that require emergency response prompted UT-Austin to adopt an emergency response message system that sends all the institution's stakeholders a text message and email immediately when an emergency situation occurs on campus. Regardless of the timely response by the

university, Taylor (2018) lamented that empirical research has not been conducted to examine the effectiveness of emergency messages in terms of readability to allow the recipients to receive them in an understandable and actionable format.

An analysis of the readability of emergency response messaging using a sample of 20 messages revealed that the messages are composed above the 13th-grade reading levels, which makes it difficult for some of the UT-Austin stakeholders to read them due to low-level of language proficiency. Thus, failure to read and act on the messages renders most of the messages as spam in the stakeholders' inboxes. Low levels of reading comprehension may potentially affect the ability of students to respond to emergencies using social media as an information tool. The report by Clear Language Group (2016) recognized recent studies showing that reading and comprehension for an average American adult is just above 7th grade level. According to the National Assessment Governing Board (2016), the proportion of Americans who could read and comprehend at the 12-grade reading level in 2015 was only 37%. Additionally, it is worth noting that the ability to read and comprehend a message drop-in time of stress such as when an emergency strikes. Regardless of this information not directly related to the element of fake news and spam, the spreading of false information and unverified content leads to information complexity, which in turn undermines the ability of responders to manage emergencies effectively.

2.5 Social Media Spamming and Fake News in Times of Emergencies

Spreaders of fake news and spammers have predetermined motives that they want to achieve through their activities. The spread of fake news and spam is associated with consequences that affect the ability to achieve the best possible outcome from the emergency response/management efforts. This section analyzes the motives for and effects of social media spamming and fake news spread during the emergencies.

2.6 Motives for Social Media Spamming and Fake News in Times of Emergencies

The white paper by Homeland Security (2018) identified multiple motives that make people post false information in social media networks. These motives included the search for a particular result such as closing schools for a day, getting attention using dramatic posts, pushing a money-making scam or an agenda related to politics, and possibly repeating bad or outdated information. Fake news and spam come in forms of campaigns that work towards making social media users repost the information in large-scale for financial gain (Mukherjee et al, 2012). Occurrence of fake news and spam increases the complexity of reducing or eliminating the spread of false information by safety agencies and organizations at a time when public has increased demand for a response from the authorities.

Fake news spreaders and spammers intend to taint the public image of a given organization by sharing shocking content (Fraustino et al, 2017). The 6.0 magnitude Southeast Napa earthquake occurred on August 24, 2014, and affected the American Canyon and Napa, California (Johnson & Mahin, 2016). The earthquake shook many residents in the Bay Area, prompting immediate social media response. The main social media platform used to disseminate information about the earthquake was Twitter using the hashtags #NapaQuake and #NapaEQ (Havas et al., 2017). The increased popularity of the hashtags provided an impetus for spammers to use the hashtags as a way of getting a wider audience for information that was not related to the earthquake. The spammers falsely accused the United States military of misconduct using images of people being subjected to torture or horrible mangling of bodies. The spamming content shocked social media monitors who were not used to dealing with extreme disaster tweets. Although Twitter initially failed to take a systematic approach to remove the inappropriate tweets, social media monitors applied effective techniques to block the worst of the content that was being disseminated (Havas et al., 2017). Fake news that prevailed during the

earthquake had a significant negative impact on the flow of operations during the earthquake.

According to Lindsay (2011) malicious utilization of the popular and affordable social media networks has been noted in several emergency events. Malicious users have been identified as having the potential to forge emergency email and text messages with the aim of leading the victims to the threat or provide misleading information about an emergency. A malicious person such as a hacker may get access to the system and create a text message transmitted to all stakeholders (Conrado et al., 2016). As the recipients are scared, they may respond to the misleading message, thus, exposing themselves to danger.

During times of emergencies, social media users do believe that the contents posted on the platforms are related to the events. Having a good intention to maximize reach for the intended audience, Palen and Hughes (2018) argued that most users tend to share, comment, and react to the posts. However, Korta (2018) explained that the existence of malicious users with an understanding of the tendency to post misinformation such as spam and fake messages misuse social media platforms for selfish gains. Rajdev and Lee (2015) intended to resolve the problem of fake news and spam in social media utilization during the times of emergencies by conducting a case study of the 2013 Moore Tornado and Hurricane Sandy. The researchers collected tweets posted on Twitter during the 2013 Moore Tornado and Hurricane Sandy to allow them to analyze the properties of fake news and spam messages, which helped them to generate important information for proposing flat and hierarchical classification approaches and criteria for detecting and distinguishing fake news from spam.

2.7 Effects of Social Media Spamming and Fake News on Disaster Management

Given that social media's speed of spreading has rapidly increased, Mukerjee (2017) argued that the spread and ability to go viral of false information and rumors is

also high. In addition to this factor seriously impeding the ability of first responders to mitigate the effect of a disaster, it has also led to decreased trust in the government, media, and non-governmental organizations. The limited trust in the credibility of social media witnessed in 2017 was caused by increased incidences of spread of fake news and spam, which made people stop trusting in the information spread through social media platforms. In most cases, social media platforms are not monitored; this implies that anyone can post anything at any time unlike the traditional media such as newspaper and television where information must be verified by government authority before it is shared. However, recent analysis presented in reports such as Hunt et al. (2020) have shown that the trust in social media has improved, implying that more caution needs to be taken to minimize the effects of fake news and spam on disaster management efforts.

Regardless of the instrumentality of the online communication strategies, Imran et al. (2015) revealed that adoption of online strategies particularly social media is not seamless. Hazards are bound to occur when higher education institutions employ the web 2.0 emergency response technologies. For example, social media users suffer from information overload during a crisis, which eventually leads to further confusion of the best possible action. When confusion occurs, the victims and response teams may lose contact with each other, leading to further escalation of the emergency. In the advent of fake news and spam, Kaufhold et al. (2020) identified that information overload occurs, which leads to reduced visibility of accurate messages regarding an impending or ongoing disaster. Collett (2014) warned that the over-sharing information during disasters might desensitize content users because sharing too much critical information tends to hinder or completely jeopardize certain rescue operations or response efforts. Information overload may be worsened by spamming or when users start sharing fake news especially if they are extremely emotional.

Van Der Linden et al. (2020) identified that the outbreak of COVID-19 was rapidly accompanied by a large amount of fake and misleading information particularly on social

media. The COVID-19 pandemic created several emergency events that required immediate response to save lives that were on the verge of danger. Uddin et al. (2021) argued that the prolonged conditions of uncertainty and fear that the COVID-19 pandemic subjected students to in the United States' higher education provided fertile ground for generating and spreading fake news. Students and all citizens alike found themselves in the web of sharing and consuming misinformation related to crucial aspects such as the environment, health, society, and economy (Pennycook et al., 2020). A report by Poynter singled out the United States as one of the originators of fake news related to the COVID-19 pandemic (Dang, 2021). Islam et al. (2020) argued that the COVID-19 pandemic-related fake news not only augmented the levels of fear and anxiety among individuals, but also resulted in losses of human lives across the United States. BBC News (2020) revealed that about 800 people died and 5000 were hospitalized due to consuming misinformation related to COVID-19.

Fake news and spam in the advent of disasters cause fundamental distortion of people's risk perception. According to Dryhurst et al. (2020), the reduced risk perception of the COVID-19 pandemic is linked to limited adoption of COVID-19 health preventive behaviors such as wearing the mask while in public places. Another study conducted by Uscinski et al. (2020) showed that believing in conspiracies regarding the COVID-19 has a positive association with the propensity to reject expert authorities' information about safety and treatments. Furthermore, Americans who endorsed that conspiracy that COVID-19 was bioengineered demonstrated limited compliance with the public health guidelines and low likelihood of accepting the vaccine (Imhoff & Lamberty, 2020). Fake news greatly hampered the fight against Coronavirus especially in 2020 evidenced by popular polls showing that only 50% of Americans are willing to accept a potential vaccine that becomes available (Cornwall, 2020). Denying the vaccination could lead to undermining the potential for herd immunity against COVID-19, which could hamper the effectiveness of the fight against the disease. Most of this misinformation was rapidly

spread through social media platforms because they are highly connected and allow for instant sharing of information.

2.8 Countering Fake News and Spam in Using Social Media for Disaster Management

The proliferation of rumors, misinformation, and false information on social media before, during and after emergency events is not a rare occurrence (Rüping, 2017). Individuals who intend to cause confusion tend to spread fake news. These individuals aim to cause misinformation and spread rumors in an institution by creating fake accounts that impersonate official accounts of an institution. Dang (2021) accepted that it might not be possible to completely eliminate fake news and false information. However, first responder agencies are called upon to use various tactics and strategies to offset bad information from affecting the rescue missions. Homeland Security's (2018) white paper identified a number of best practices that agencies can use to counter misinformation, rumors, and false information.

First, the report by Homeland Security (2018) identified the need to establish partnerships with the traditional media operating locally before disasters such that they create a reliable means of disseminating accurate information when disasters strike. The traditional media seek to verify all news using reliable sources such as getting on the scene where the emergency has occurred before broadcasting it. Such a partnership could provide additional human resources for verifying the news such as journalists who are positioned in locations where the disaster events occur. Working with local television and radio news media to spread useful information and raise alerts regarding bad information has been emphasized by Lindsay (2011). Creating pre-established partnerships or relationships with mass media stations and reporters that can respond to a call to report happenings during a disaster or emergency can make a significant difference in addressing the problems associated with fake news and spam. Tran et al. (2020) provided a positive evaluation of the potential benefits of creating mutual relationships with FEMA, Red

Cross, and all agencies and organizations that are equipped with the necessary skills, personnel, and systems to differentiate fake news/spam from legitimate information. The partnership would execute their duties more effectively if they extend collaboration to local, state and federal agencies as well as to other jurisdictions such as local partners responsible for amplifying facts on behalf of other municipalities when need arises.

Second, a joint information system should be used to coordinate the efforts of public information from multiple jurisdictions and agencies. For example, the school system of Fairfax County, Virginia, exhibited widespread proactivity during a winter storm in 2014 as it attempted to address fake accounts that announced incorrect closures (Ferguson et al., 2020). Government and academic institutions within the county worked collaboratively to actively advise people of credible sources of information from which they could inform themselves.

Third, there is an urgent need to set up a central website that stakeholders in higher learning institutions can use to debunk false news and spam. A central website could provide a platform for the citizens to confirm the information that they see in social media before judging it as true or false (Homeland Security, 2018). However, such a website should be carefully protected to prevent hackers from accessing it and posting fake news that they intended to spread, thus, making the target audience trust in the fake news. As a technology best practice, setting up a central website acts as a one-stop shop that is always ready to go when disasters occur such that users and agencies can turn to it for broadcasting to avoid the consequences of relying on fake news and spam (Ferguson et al., 2017). While the Federal Emergency Management Agency (FEMA) has a central portal with an embedded list of social media accounts that provide accurate information during the emergency times to facilitate effective local government response.

Having recognized the impending danger of fake news and spam during disasters, the Science and Technology Directorate of the United States Department of Homeland

Security established a Virtual Social Media Working Group (VSMWG) in 2010 to guide the emergency preparedness and response community on safety and sustainability in the utilization of social media technologies during the times of emergencies (Moore, 2017). The VSMWG was renamed the Social Media Working Group for Emergency Services and Disaster Management (SMWGESDM) after the passage of Public Law 114-80. SMWGESDM has partnered with various first responders during an emergency to provide the required information to guide the emergency response process (DeMaise, 2017). Furthermore, the committee has exhibited effectiveness in filtering social media content to separate legitimate from illegitimate content that includes spam and fake news. Since its establishment, the SMWGESDM has partnered with twenty-four agencies, including the American Red Cross, United States Northern Command, and Humanity Road to disseminate useful guidelines for emergency preparedness and response. In addition to presenting in conferences and conducting high-profile workshops, SMWGESDM has made seven publications that provide details on how to use social media during disasters.

In addition to the strategies recommended by the Homeland Security (2018), previous research has identified empirically tested mechanisms that stakeholders in higher education can use to address the problems of fake news and spam. For example, Gorodnichev et al. (2019) identified that social media platforms have developed algorithms that can hide inappropriate content. Users can mark content as inappropriate if it does not meet community standards; this can prompt blocking of the content or deletion from the back end and possibly suspending accounts responsible for posting (Gaifulina & Chechulin, 2019). However, it is not clear if the control mechanisms may pick up and hide content that is relevant to the disaster albeit being disturbing. It is recommended that social media monitors should be improved to function effectively to eliminate chances of posting misleading content (Bellan & Strapparava, 2018). Functioning effectively in both automatic and human action mechanisms can greatly reduce the chances of fake news and spam spreading far and wide. Falsified information can be timely identified and its spread cut short before it reaches many social media users.

2.9 Summary

Utilization of social media platforms as tools of emergency response/management in the United States' higher education continue to remain commonplace due to the popularity, affordability, and instantaneous message transmission features of social media platforms. Fake news and spam continue to negatively affect the effectiveness of social media platforms in disseminating information necessary for emergency response/management. Malicious spreading of fake news occurs during an emergency or it may be spread as a way of diverting attention of social media users to achieve a specific target. Fake news and spam have been evident in several emergencies that previously occurred in higher education contexts in the United States. When fake news and spam occur during emergencies, they interfere with the flow of communication, which leads to confusion of efforts being undertaken by victims and the response team. Adopting best practices based on people and technologies should be prioritized to cushion the public from the perils of fake news and spam when managing disasters in higher education in Kentucky.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The methodology chapter presents and justifies the methods, techniques, and approaches that the researcher intends to adopt toward data collection, analysis, and presentation. The main sections of this chapter include the research philosophy, research approach, research strategy, population and sampling, instrumentation, data collection procedures, data analysis procedures, and ethical considerations.

3.2 Research Philosophy

A research philosophy usually underpins quality scientific studies. A research philosophy provides the pathway to approaches, designs, strategies, and data procedures (Bryman, 2021). Adams et al. (2014) define a research philosophy as a belief about the procedures and methods of research; a philosophy guides the entire research process (data gathering, collection, analysis, and interpretation of the findings). For social science studies, many research philosophies are available to choose from; these include interpretivism, positivism, pragmatism, and realism (Saunders et al., 2012). Each of the aforementioned research philosophies provides different guidelines regarding the strand of data to be collected and analyzed.

The interpretivist philosophy underpinned the current study. As per Powney and Watts (2018), interpretivism is based on the view that truth consists of multiple realities that individuals subjectively perceive. The current study chooses an interpretive paradigm because the researcher believes that existence of knowledge is established and understood through individuals' meanings generated from their world. This means that people's experiences in their world are what amounts to knowledge. Such meanings cannot be established using structured quantifiable methods (Bell et al., 2018), but interactive and flexible methods that allow research participants to express the meanings they hold towards the phenomena being investigated (Remler & Van Ryzin, 2014). The study endeavored to collect and analyze data that deal with the meanings that directors

and heads of emergency response teams in America's higher education institutions attach to their perceptions on the existence of fake news and spam with respect to social media usage in emergency and disaster management.

3.3 Research Approach

The research approaches suitable for social science studies are qualitative and quantitative approaches. The proposed study adopted a qualitative research approach. Based on the definition by Arifin (2018), the qualitative research approach involves the collection and analysis of non-numerical data. This is different from quantitative methods that seek to collect and analyze numerical data. Although quantitative data is considered more advantageous due to allowing researchers to collect large amounts of data from several respondents at the same time (Gray et al., 2012), Clark and Causer (2020) contend that the process of collecting quantitative data and the costs of printing and administering questionnaires are nonetheless high.

Bryman (2021) argues that social science studies benefit greatly when researchers use qualitative techniques given that they allow for the collection of in-depth data from the respondents. However, collecting qualitative data is resource-demanding considering that only a limited number of interviewees can be accessed in a given period of time. The in-depth nature of data collected using qualitative techniques compensate for the downturns regarding resources used to implement the study (Cypress, 2018). A qualitative approach is also consistent with the requirements of interpretivism, which seeks to generate knowledge from the subjective meanings that human beings create from their world.

The study adopted an exploratory research design. According to Jackson and Bazeley (2019), exploratory research designs are most suitable for phenomena or events for which relatively little is known. The aim of exploratory research is to discern meanings that people attach to the events or phenomena of relationships being studied. Creswell (2013) emphasizes the necessity of exploratory studies to describe a phenomenon and

establish basic relationships among variables before more extensive and time-consuming studies are conducted. The current study sought to investigate social media usage in disaster management with respect to the perceptions on the existence of fake news and spam in higher education emergency management in Kentucky among the directors of higher education institutions. Despite the sensitivity of the spam and fake news in the safety of higher education institutions, the aspect of social media use in disaster management remains scantily studied. Therefore, the current study focused on exploring the phenomenon using a qualitative research approach to gain first hand, detailed descriptive information on the topic.

3.4 Research Strategy

A primary study methodology was employed for the research. Furthermore, a qualitative study involving semi-structured interviews was used as the research strategy in the current study. Semi-structured interviews were chosen for the study as they allowed participants to fully express their responses to create meanings of phenomena, unlike structured interviews, which restrict researchers towards choosing or responding in a predetermined way. Adams (2015) explains that semi-structured interviews combine the elements of both structured and unstructured interviews. As such, the researcher was able to benefit from the strengths of each interview style. The questions asked were open-ended to allow the interviewees to have more freedom to provide more in-depth and detailed answers (Taber, 2018), and were based on the research questions already formulated in Chapter 1.

3.5 Population and Sampling

The target population for this study included the emergency response teams of higher education institutions in Kentucky. Bell et al. (2018) described a population as all objects, people, places, and events that a researcher intends to draw conclusions about. The current study sought to draw conclusions about the use of social media for disaster management and elucidate on the perceptions of the directors of higher education

institutions on the existence of fake news and spam in emergency response/emergency management in Kentucky. The population included both universities and colleges operating currently in Kentucky. However, it was not possible to involve the whole population in this study because it is too large. It was necessary to conduct focused semi-structured interviews with Emergency Management Directors of universities and colleges in Kentucky. Thus, it was necessary for the researcher to select a representative of individuals to interview.

A sample of 6 to 15 interviewees was selected through judgmental sampling based on the researcher's knowledge and research on who are the most suitable directors to choose from, and universities/colleges that the researcher found to have a more robust emergency management and social media management system in place when it comes to disaster management. Judgmental sampling was appropriate because it allows researchers to select participants based on their knowledge of and experience with the phenomenon being investigated (Saunders et al., 2012). The study aimed to uncover the realities of using social media to manage disasters and specifically focus on the perceptions of the directors of higher education institutions on the existence of fake news and spam with respect to the response to emergencies and disasters. Therefore, the best people to provide high quality and credible information regarding this phenomenon were the heads or directors of emergency departments.

Table 3.1 below presents a list of both public and private colleges and universities that were selected to participate in the study. Each higher education institution was earmarked to provide one interviewee. The interviewees chosen to participate in the study had to meet the criterion of being the head or manager or director of emergency response teams of the institutions. If any of the institutions did not have an established emergency response department, the topmost personnel in any section that oversees response to emergencies were then invited to participate in the interviews.

Table 3.1: The list of both public and private institution of higher learning engaged in the study

Serial number	Category of the institution	Location	Size of enrollment (in 2022)
1	Private university	Wilmore, Kentucky	1,639
2	Public university	Bowling Green, Kentucky	Over 17,500
3	Public university	Richmond, Kentucky	13, 984
4	Private college	Georgetown, Kentucky	1, 625
5	Private college	Danville, Kentucky	1, 400
6	Private university	Campbellsville, Kentucky	Over 12, 000
7	Public research university	Louisville, Kentucky	23, 043

Source: Author (2023)

3.6 Instrumentation

The research instrument that was employed during this study is a semi-structured interview. As mentioned earlier, interviews can be unstructured, semi-structured, and structured. Structured interviews are directive and standardized such that a participant is required to answer a specific set of options, while semi-structured interviews consist of a mix of structured and unstructured interview questions where the questions asked are not set in any particular order. Semi-structured interviews were suitable for this study because the researcher sought to collect in-depth data that accurately and vividly represent the interviewees' meanings of the world and how they understand the phenomenon under study (Adams, 2015). Since the structure is less rigid, the respondents had the freedom to talk in a more in-depth fashion and provide more descriptive and nuanced explanations without feeling the pressure to be too formal or restricted. The interview exercise thus involved engaging the participants in interactive sessions in which the participants are asked questions to provide answers. The answers from the

interviewing process were used to create a dataset for analysis and interpretation (Jackson, 2014; Haslam & McGarty, 2014). The dataset was subjected to a qualitative analysis (thematic analysis) to generate findings that were interpreted in light of the research questions/objectives with reference to the existing literature.

3.7 Data Collection Procedures

The data collection process involved either conducting the interviews in person or through Zoom meeting interviews with each respondent, depending on the availability of the interviewee. Zoom is a video call application, and it was selected for this study because it allows for convenience in data collection because participants respond to the interview questions from their places of convenience without having to meet in person. This allowed the researcher to collect data from emergency management directors in universities and colleges all across Kentucky at the click of a button through the convenience of technology, allowing for the saving of costs and time. Interviews were instrumental in collecting in-depth data based on the personal viewpoints of the respondents (the directors) towards social media usage in disaster management in Kentucky's higher education, particularly their perceptions on the existence of fake news and spam during responses to emergencies and disasters. Collecting in-depth data was also in tandem with the tenets of the interpretivist and exploratory research design that underpins the study.

The researcher identified heads or directors of emergency response teams from each college and university listed in Table 3.1. Participant identification can be carried out physically or online depending on availability of information. Contacts of emergency response personnel were accessed from institution websites. A physical visit to each institution whose contacts cannot be accessed online were made to get in touch with the heads or directors of emergency response teams. Once the contacts were collected, the researcher sent an email or made a phone call requesting the target participants to schedule for the study. A similar negotiation was executed physically for target

participants accessed via physical visits to the institutions in which they work. In both cases, it was necessary to have up-to-date contact details for each participant because the researcher needed them when arranging for timing and venues for interviews. During the contact period, the researcher agreed with each target participant on the modality, timing, and venue for conducting the interviews. The choice was based on participants' preference and convenience.

Face-to-face interviews involved the researcher physically traveling to the venue of the interviews at an agreed upon time to meet the participants. Video call/Zoom interviews required the researcher finding a noise-free place and making a call to the interviewees at a time that they had agreed to engage in the interviews. Data collection process for both face-to-face and phone/video call interviews followed the same procedures. After exchanging greetings and settling down, the researcher introduced the study and required them to fill an informed consent form. This was followed by the researcher posing the interview questions to each participant and requiring them to provide in-depth answers regarding their knowledge and understanding of each phenomenon. Data collected were recorded using an audio-recorder device and/or Zoom transcription. However, permission was sought from each interview before beginning to record their responses. The researcher made short notes to act as reminders and indicate the flow of interviews. Consistent with the emphasis by Cypress (2018) and Powney and Watts (2018), the researcher noted non-verbal cues/body language such as facial expressions and gestures that each interviewee displays because they provided a basis for data interpretation.

3.8 Data Analysis Procedures

The qualitative data collected using interviews was subjected to thematic analysis. Thematic analysis involved generating initial codes through reiterative reading and combining initial codes to form final codes that were discussed as the themes arising from the responses. Haslam and McGarty (2014) describe thematic analysis as a process in

which patterns of meaning within qualitative data are identified, analyzed, and interpreted. The thematic analysis technique followed a five-step process:

Stage 1: The researcher first transcribed the responses of the interviews conducted in person. For the responses of the Zoom meeting, the researcher retrieved the transcribed data from the Zoom platform. The researcher listened to each interviewee's audio-record and compared it with the Zoom transcript to ensure it is error-free. The transcript was transferred to Microsoft Word Processing software to allow for coding.

Stage 2: The second stage involved preparing and organizing data by printing out the transcripts and indicating the source using a pseudonym as well as other relevant information that provided a basis for analysis and interpretation, such as body language. Printing or displaying the dataset on a large screen is necessary to ease the coding process.

Stage 3: The researcher read the qualitative dataset reiteratively in order to understand the message that each section of the dataset is trying to communicate. After reading the dataset repeatedly and understanding it, the researcher clustered content with the same meaning using similar colors (Adams, 2015). Initial codes were created using a qualitative coding process. Coding occurs when chunks of data with similar meanings are placed together under a given keyword. The transcribed data was subjected to qualitative coding to generate several codes.

Stage 4: Codes were reviewed based on recurrence, language, opinions, and beliefs. Reviewing codes is an important process towards the creation of themes. Themes emerged from combining several codes that communicate the same meaning (Creswell, 2013). The researcher carefully reviewed each code and identified similarities with other codes; this permitted them to combine several codes to form themes that formed the basis for data analysis.

Stage 5: The final stage of qualitative data analysis involved the presentation of themes in a cohesive manner. Themes created in stage 4 were presented cohesively while giving attention to the interviewees' body language and the purpose of the study. The researcher chose and included content that provided the best storyline of the study. The discussion included direct excerpts from the interviews and referring to past research to identify and explain consistencies and inconsistencies.

The above five stages of qualitative data analysis helped to generate findings that were discussed and used to answer the research questions. The outcome of the data analysis process was the creation of a dataset that responds to the use of social media for disaster management, the prevalence of spam and fake news through social media during disasters and emergencies, the perceptions on the existence of fake news and spam, the threats posed by spam and fake news during disasters and emergencies, and ways of addressing the ramifications associated with spam and fake news to enhance the effectiveness of social media for disaster management.

3.9 Ethical Considerations

The study complied with the ethical requirements of research. Arifin (2018) emphasized the necessity of complying with the ethical considerations of research because it protects the participants and enhances the quality of research. The fundamental areas of ethical considerations in social science research include informed consent, confidentiality and anonymity, and data safety. Informed consent involves disclosing all the material facts about a study, including the aim and objectives of a study, risks and benefits associated with the participation, and the eventual use of the data (Tauri, 2018; Klykken, 2021). Each participant was informed of the aforementioned areas of disclosure before engaging them in the data collection process. An informed consent form was filled and signed to guarantee that each interviewee has understood all information about the study and was willing to participate.

Confidentiality was achieved by avoiding disclosing the details about the participants who took part in the interviews. Details that were kept confidential include names, addresses, and residences of the participants. Anonymity requires that readers of the information generated from the collected data do not identify who actually provided specific pieces of information. It is worth noting that the data presentation included excerpts from the interviews. Protecting the participants from being identified required the researcher to identify them using pseudonyms. The current study used code names to identify the participants without disclosing their true identities e.g. Participant A, Participant B, etc.

After data collection, the zoom recordings and transcripts were stored safely in safes under lock and key to prevent access and interference. Transcribed data were stored in computer files protected by strong passwords to avoid access and interference from third parties. Once data was fully analyzed and a report prepared, the researcher saved the files in a personal computer for three years before it was permanently deleted.

3.10 Summary

This chapter has justified the methodological choices for this study. The study is underpinned by an interpretivist paradigm and adopts a qualitative research approach. The study conducted semi-structured interviews to 7 heads and directors of emergency departments in higher education institutions (colleges and universities) chosen through judgmental sampling. Data collected was coded and analyzed using the five stages of the thematic analysis technique. The study complied with the ethical requirements of informed consent, anonymity and confidentiality, and data safety. The next chapter (chapter four) presents an analysis and discussion of the findings based on the data collected and analyzed using the research methodology outlined in this chapter.

CHAPTER 4: ANALYSIS, RESULT PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter details the data analysis procedure employed to analyze the qualitative data, and how the findings were interpreted and presented, discussed in line with the study aim and objectives. The chapter presents the thematic analysis and findings of the interviews conducted on how social media is used in disaster management by uncovering the perceptions of emergency management directors at Kentucky colleges and universities. This being entirely a qualitative study, thematic analysis approach was the most appropriate in this case.

4.2 Descriptive Analysis

Interviews were conducted on seven participants from different colleges and universities based in Kentucky. Visits to these Kentucky-based institutions were made to speak with the people responsible for handling and managing disasters and emergencies in order to reconstruct together with them how they experience the utilization and effects of social media technology on emergency management in these institutions. The goal was to gain a clear understanding of how higher education institutions are using social media during disaster management.

The study obtained information from top disaster and emergency management officials from the different institutions in Kentucky. The descriptive findings reveal that 72% of the interviewees were directors, while assistant vice president and managers were 14% each respectively. The result is summarized on the pie chart below:

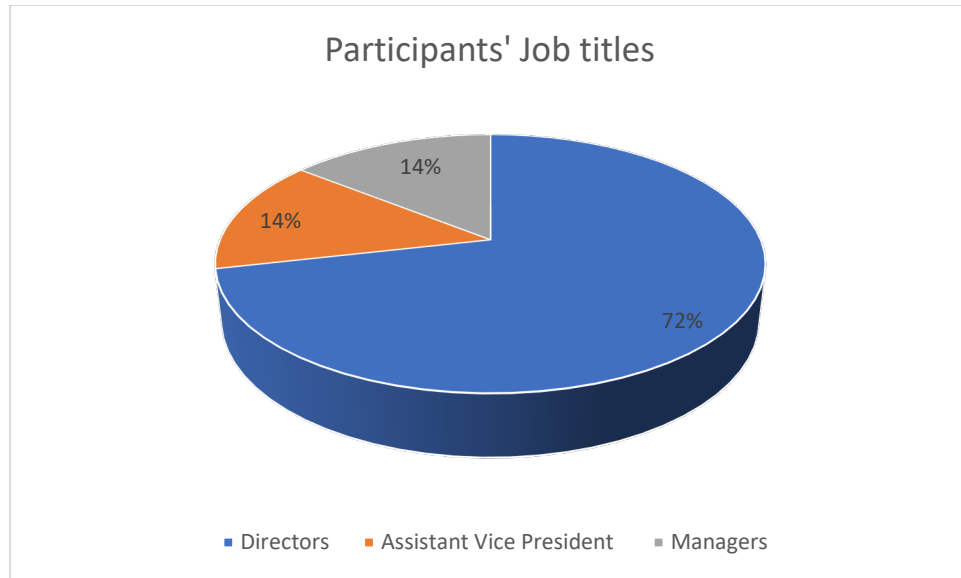


Figure 1: Participants' engagement by job titles

Similarly, the study involved both colleges and universities in Kentucky. As a result, the descriptive findings reveal that 71% of the participants were from universities while 29% were from colleges. Figure 2 below summarizes these findings:

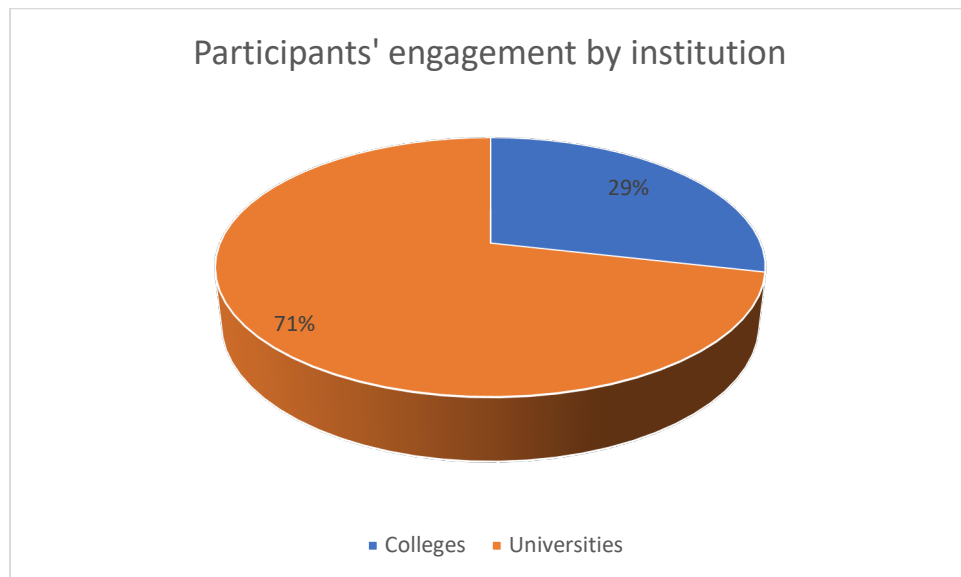


Figure 2: Participants' engagement by institution

4.3 Thematic Analysis

Given that qualitative data can be composed of words, observations, pictures, and even symbols, its analysis differs significantly from that of quantitative data. Making judgments based on such complicated data is difficult. Miles et al. (2018) expressed that qualitative data analysis involves the organization, examination, and interpretation of non-numerical, conceptual data, and user feedback. The best way to accomplish this is through implementation of thematic analysis. The objectives of the study are to be achieved through this procedure, which tries to find themes and patterns, offer solutions to research questions, and do so. It involves the procedures and methods for conducting data analysis as well as some understanding, support, and interpretation of the themes and patterns discovered in textual data.

Thematic analysis is the practice of finding patterns or themes in qualitative data (Clarke et al., 2015). It is a method of data analysis that entails going through the data set, looking for patterns, methodically coding, determining themes, and coming up with narratives. Terry et al. (2017) noted that given that it provides fundamental skills that are helpful for carrying out many other types of analysis, it is the first qualitative method that should be learned. An additional benefit is that it is a method rather than a methodology, which is especially advantageous from the perspective of understanding. This indicates that, in contrast to many qualitative techniques, it is not bound by a certain theoretical or epistemological stance. This gives it a lot of flexibility, which is a huge benefit given the variety of tasks in researching. There are numerous approaches to thematic analysis. However, because of this variability, there is also significant misunderstanding regarding the thematic analysis' nature, including how it differs from a qualitative content analysis.

In this study, the researcher adhered to the six-step paradigm proposed by Clarke & Braun (2021). This method, which is likely the most influential in the social sciences at least, provided a very clear and practical framework for conducting thematic analysis (Braun et al., 2017). The purpose of a thematic analysis is to find themes—that is, significant or intriguing patterns in the data—and then utilize those themes to discuss the

research or make a point. A strong thematic analysis explains and makes sense of the material, going well beyond just summarizing it. Figure 1 and 2 below present the six steps of qualitative analysis using thematic approach and the data coding and theme development respectively:



Figure 3: The six steps of qualitative analysis using thematic approach

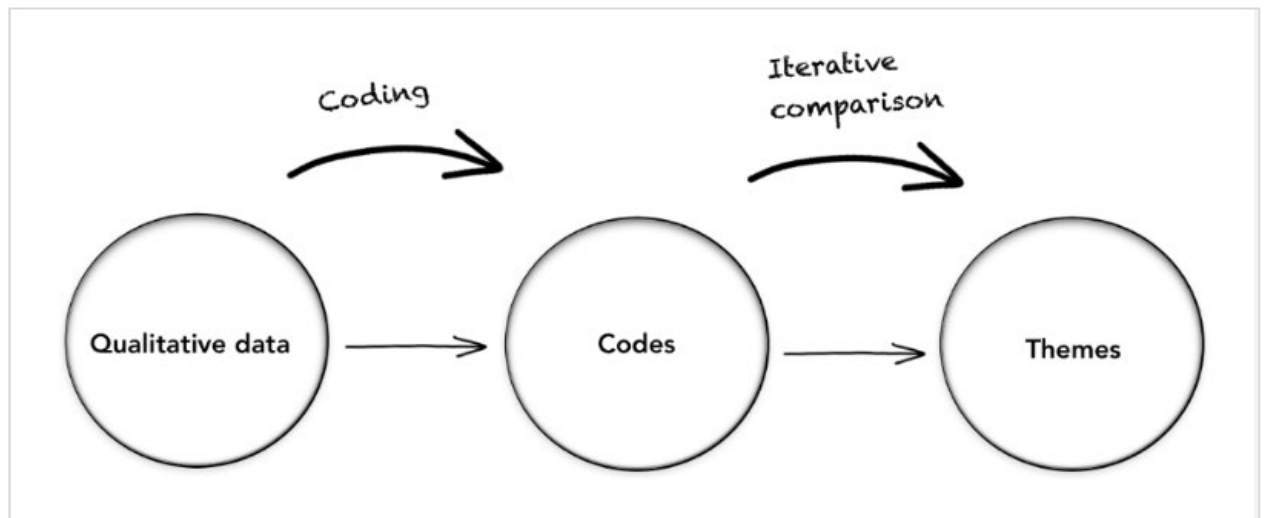


Figure 4: Data coding and theme development

4.4 Thematic Analysis Procedure

The six-phase guide Clarke & Braun (2021) offer is a very helpful foundation for carrying out this kind of examination. The decision to employ thematic analysis in this study to assess the information gained from the interviews was mostly influenced by the method's adaptability. As a result, the researcher was able to identify, evaluate, and summarize concepts (themes) in the interviews. A theme points out a level of relevance within the data set and emphasizes a significant element of the data in relation to the study's main topic. Thematic analysis, which can be used to interpret various data elements, organizes and provides extensive descriptions of the data set. The researcher needs to be knowledgeable about the topic to have insights and be able to do the code-reading technique, which is necessary to provide meaningful research results. The researcher had to take additional steps, such running a matrix coding query, to determine the importance of the results. This is the justification behind the researcher's adoption of the thematic analysis methodology proposed by Clarke & Braun (2021). Therefore, using the Clarke & Braun (2021) paradigm as a guide, the researcher conducted the following six crucial steps of thematic analysis.

Step 1: Be familiar with the Data

The first step in thematic analysis is to become fully immersed or absorbed in the data. This is done in order to thoroughly understand the content of the data set and search for information that might be relevant to the research objectives of the study (Clarke & Braun, 2021). In this study, the researcher accomplished this by reading and re-reading the interviews in order to comprehend the data. In other words, the researcher read through and reread each piece of interview data in addition to evaluating each of the draft interviews. While interpreting the data, initial observations were made that were later used as references in the study. At this point, the researcher had the ability to select the codes that would best capture the substance of the qualitative data. The focus and objectives of the topic were taken into consideration by the researcher. In this sense, the researcher found manual transcription to be a highly helpful task that substantially

aided in in-depth data analysis. This stage can take a long time and calls for some patience. However, it is crucial to afford equal treatment across the depth and breadth of the dataset and to resist the urge to read only some things or even to skip over this step entirely.

Therefore, the researcher began familiarizing himself with the data at this stage by first reading and rereading each draft of an interview. This enabled the researcher to gain knowledge of the main topics covered in each interview and make notes. This gave me the chance to imagine traits that may or may not have been noted in interview notes without being distracted by activities like taking notes. For example, the following assumptions were made from the interviews as a result of being familiar with the data:

Q1: The respondents acknowledged that there is at least some form of well-defined communication mechanisms through which information is shared across the organization.

Q2: The respondents revealed that social media is utilized as the disaster management strategy in institutions.

Q3: The respondents rated the effectiveness of social media a disaster management tool.

Q4: The respondents proposed the changes that would enhance the effectiveness of social media for disaster management in their institution.

Q5: The respondents recommended social media platforms as tools for disaster management in other universities.

Q6: The respondents' identified some of the challenges that characterize the use of social media in disaster management in general.

Q7: The respondents admitted that fake news and spam were prevalent when social media is being used during emergency management efforts in other universities.

Q8: The respondents rated their personal use of social media in managing disasters at their institution.

Q9: The respondents stated how their experience with social media in managing disasters was like in both a positive and negative manner.

Q10: The researcher inquired if respondents have experienced spam and fake news about the emergency when using social media.

Q11: The respondents rated their response to spam and fake news issue as they managed disasters.

Q12: The respondents stated the association between use of social media for disaster management and spam/fake news.

Q13: The respondents offered their opinions about how spam and fake news interferes with the quality of disaster management efforts.

Q14: The respondents gave reasons why social media should be still be used for disaster management based on the effect of fake news and spam.

Q15: The respondents acknowledged why social media is a necessary tool in managing disasters in Kentucky higher education institutions.

Q16: The respondents showed how their institutions attempt to address the effect of spam and fake news on disaster management efforts.

Q17: The respondents confirmed or refuted that their institution has a social media policy that is specifically applicable during emergency/disaster times.

Q18: The respondents suggested solutions to be implemented in order to minimize the impact of social media spam and fake news in disaster management efforts.

Q19: The respondents mentioned what their institutions are doing to eradicate social media spam and fake news during the emergency and disaster times, and if they believe it is efficient as well as why it was efficient.

Q20: The respondents discussed any other related area of interest based on the current study topic.

This is what is popularly referred to as the pre-coding procedure and practice.

Step 2: Creating the initial codes

In this stage, the researcher started to meaningfully and systematically arrange the data. This second phase starts after the researcher has read and become familiar with the data, having ideas on what is in the data and what is intriguing about it. It involved coding, which is the process of identifying data pieces that relate to the research issue (Braun & Clarke, 2021). Coding breaks down large amounts of data into manageable meaning units. Using coding, a researcher can focus on particular data qualities and make their analysis more straightforward. This stage entails the initial generation of codes from the data, a speculative activity that necessitates frequent re-examination of the data by the researcher. The researcher transitioned from unstructured data to the creation of ideas about what is happening in the data. Hence, the goal of the coding procedure was to provide concise, brief descriptive or interpretive labels for data points that might be relevant to the research issue.

There are various coding techniques, and the approach depended on the viewpoint and research topics. The thematic analysis adopted in this study was theoretical rather than inductive since the researcher was interested in answering particular research questions and focused on doing so when analyzing the data (Braun & Clarke, 2021). In

light of this, any data segment that related to the study topics or contained an intriguing element was coded. Here, the researcher employed open coding, which implies that they created and adjusted the codes as they went along in the coding process rather than using pre-set codes. When coding, the researcher picked out significant text passages and labels them to index them in relation to a theme or concept in the data (Robinson, 2022). Castleberry & Nolen (2018) showed that a good code would be one that accurately reflects the phenomenon's rich qualitative characteristics. According to Braun and Clarke (2021), the researcher should go through the entire data set methodically, paying close attention to every single data item. They should look for intriguing details that might serve as the foundation for themes found throughout the data set. Based on this argument, Table 1 below shows how the process of creating initial codes in the current study was conducted:

Table 4.2: Data Coding

Question	Data codes
Q1	Internal communication (C1), institution (C2), local authority communication (C3)
Q2	Strategic communication (C4)
Q3	Usefulness or success (C5)
Q4	Misuse (C6), trustworthy source (C7), age determine social media use (C8),
Q5	The size and geography (C9), information from the University should be considered factual (C10), takes away resources (C11) and more problematic for a small university (C12)
Q6	Handling the amount of information (C13), having the staff available to do that social media (C14)
Q7	Major issue with spam information coming in on the platform (C15)
Q8	Potential disaster situation (C16), miscommunication or misinformation (C17)

Q9	Experience (C18)
Q10	Misinformation or miscommunication (C19)
Q11	Everyone can have a voice (C20), easy of manipulation (C21), challenges of not having the resources (C22)
Q12	Idealistic version of what social media is (C23), signal of noise (C24)
Q13	Extremely problematic (C25), not helpful in communication (C26)
Q14	Value in situations (C27), information that would benefit the entire public (C28)
Q15	Beneficial in certain circumstances for large universities (C29), not helpful for small and mid-level universities (C30)
Q16	Information correctness (C31)
Q17	Social media policy (C32)
Q18	Collective solution (C33), competence credible (C34), background experience (C35)
Q19	Actual information provision (C36), credible source (C37)
Q20	Appreciation (C38), research is helpful to universities in Kentucky (C39), geographic location and proximity to the community (C40), planning (C41)

Note: C - code

This coding procedure produced a transparent trail of proof supporting the validity of the study. Here, the researcher can determine which codes are helpful for interpreting themes and which can be dropped through multiple repetitions of coding and increased familiarity.

Step 3: Finding Themes

The third step starts after all the data have been originally coded, compiled, and a list of the various codes found throughout the data set has been created (Clarke et al., 2015). This stage entails categorizing and compiling all of the possibly pertinent coded

data extracts into themes. Themes are developed through putting together parts or pieces of thoughts or experiences, which are frequently meaningless when seen separately (Kiger & Varpio, 2020). The importance of a theme in connection to the overarching research issue, as opposed to quantitative metrics, should be taken into consideration. Once recognized, themes seem to represent important ideas that connect a sizable amount of the data.

Instead of interpreting each data point individually within the dataset, themes lay emphasis on interpreting the aggregated meaning and meaningfulness inside the collection. The coded data is examined and analyzed to determine how various codes may be merged based on shared meanings to create themes or sub-themes (Clarke & Braun, 2021). This frequently entails combining several codes that share a common underlying notion or data aspect into a single code. On the other hand, one single code can prove to be symbolic of a larger story in the data and be promoted as a sub-theme or even a theme. The fact that themes do not lurk in the data, waiting to be discovered, must be emphasized once more. Instead, the researcher must actively interpret the connections between the many codes and consider how these connections might shape the story of a particular theme. The number of codes or data points that contribute to a given topic is not a factor in determining its salience or relevance. It's crucial that the arrangement of codes and data points conveys something significant that aids in resolving the study question(s) (Braun et al., 2017; Clarke et al., 2015; Clarke & Braun, 2021). By the end of this phase, the researcher was able to create a thematic map (such as a mind map) or table that groups codes and data items in accordance with the relevant topics. Thus, in the context of this study, the researcher compiled codes into initial potential themes. Table 2 below shows how codes are combined to formulate initial themes:

Table 4.3: Initial thematic table indicating four potential themes

Codes	Initial Themes
C1, C2, C3, C32	Social media Communication
C4, C5, C7, C8, C9, C10	Social media communication Insights
C6, C11, C12, C14, C15, C16, C17, C19, C20, C21, C22, C24, C25, C26, C30	Social media Challenges
C13, C18, C23, C27, C28, C29, C31, C33, C34, C35, C36, C37, C38, C39, C40, C41	Solutions to social media solutions

Step 4: Reviewing possible themes

In this step, the researcher had to recursively examine the potential themes in relation to the coded data points and the complete dataset (Braun et al., 2019). During this stage, it is not unusual to discover that some candidate themes do not serve well as meaningful interpretations of the data or do not provide information that answers the research question(s). Additionally, it can be discovered that some of the constituent codes and/or data items that support these themes are inconsistent and need to be revised. As a result of this, the researcher in the current study was guided by a sequence of core questions when re-examining the possible suggested themes. These questions included:

- i. Is this a theme or simply some code?
- ii. If it is a theme, how good is it (does it provide useful information regarding the data set and the research question)?

- iii. What is the theme's scope (what does it include and exclude)?
- iv. Is there sufficient (relevant) data to support this theme (How strong is the thesis)?
- v. Is the data too varied and broad in scope (is the theme coherent)?

Here, the researcher carried out an analysis including two levels of review. Level one entailed an examination of the connections between the codes and data items that underpin each theme. It was assumed that the candidate theme presents a convincing case and may add to the data's overall story if the items or codes make sense together and form a coherent pattern. At level two, the possible themes are examined in light of the study data. Here, the effectiveness of themes in interpreting the data in relation to the research question(s) is evaluated.

When tackling these important queries, Braun and Clarke suggest keeping in mind Patton's (1990) dual criteria for judging categories (internal homogeneity and external heterogeneity). The purpose of Patton's dual criteria is to detect internal homogeneity within themes at level one and exterior heterogeneity among topics at level two. These two layers of assessment essentially serve to show that the items and codes are suitable to inform a theme, and that the theme is suitable to influence the interpretation of the dataset (Clarke & Braun, 2021). This two-level review frequently results in the necessity to reorganize some themes by adding or removing codes, as well as by adding or removing themes. Table 3 below shows the finalized thematic framework that was produced after reviewing the candidate themes in line with the defined research questions in the current study:

Table 4.4: Finalized thematic table

Potential Theme	Finalized Theme

Social media Communication	Understanding of use of social media communication in disaster management in Kentucky
Social media communication Insights	The incidence of spam and false information on social media during disaster management in Kentucky
Social media Challenges	Issues in using social media for communication during disaster management in Kentucky
Solutions to social media issues	Possible remedies to issues of using social media communication during disaster management

The goal of this stage is to develop a new thematic table that highlights the crucial information in relation to the research question(s).

Step 5: Defining Themes

In this step, the researcher is required to offer a thorough examination of the theme framework. It is important to express each theme in relation to the dataset and the research question(s). According to Patton's (1990) twofold criterion, each theme should offer an inside reliable and logical explanation of the facts that cannot be told by the other themes. But each theme must be integrated into a coherent story that answers the research question(s) in a way that is both consistent with the dataset's content and illuminating. At this stage, the themes' names are also open to final change (if required).

In this case, the researcher carried out a thorough examination of the underlying data items necessary for defining themes. Each theme was probably supported by a large number of data points. The researcher needs to decide which data points to use as extracts when presenting the analyses' findings in writing. The selected excerpts should give a vivid and convincing overview of the arguments put forth by a particular theme.

For the purpose of illustrating the range of ways in which these data items communicate meaning as well as the coherence of the theme's component data items, multiple extracts from the whole pool of data items that constitute a theme should be employed. Additionally, each provided data extract went through a thorough examination that goes beyond just reporting what a participant stated. Each excerpt was analyzed in light of its underlying topic and the larger context of the research question(s), resulting in an analytical narrative that explains to the reader what is intriguing about this excerpt and why.

Data extracts were presented analytically, questioning what has been deemed to be significant about what participants said, and contextualizing this interpretation in respect to the body of literature that is currently available, or illustratively, giving a high-level summary of what participants said. When extracts are supplied in the findings section, they are often contextualized in relation to the literature if the researcher plans to write an analytical paper (Clarke & Braun, 2021; Terry et al., 2017). Although an illustrative write-up of the reflexive thematic analysis (RTA) results is entirely acceptable, the researcher was aware that the narrative of the write-up should express the complexity of the data while staying grounded in the scholarly field. RTA is an interpretive method of analysis; hence the total report should go beyond simply summarizing the data and instead make arguments based on theory about how the data responds to the research question(s) (Clarke et al., 2015). In order to accomplish this, a relatively simple test can identify a researcher's possible inclination towards a specific reporting convention. The reporting style is illustrative if an excerpt can be omitted without affecting the article's clarity. The reporting style is analytical if an excerpt was eliminated and the article still makes sense (Terry et al., 2017).

At this time, a last assessment of the theme names was also done. The task of naming themes could appear unimportant and, as a result, receive less attention than is actually necessary. However, choosing names for themes was a crucial effort in this study. This is because theme names serve as the reader's initial clue as to what the data has

been used to capture. As a result, the researcher created theme names that were clear, detailed, and memorable. Braun & Clarke (2021) urged imagination and the usage of creative names that could more quickly grab the reader's attention while simultaneously communicating an essential element of the theme. For this purpose, the research advises looking through data items for a brief extract that might be used to accentuate the theme name.

Step 6: Producing the report

Steps 5 and 6 are sometimes difficult to distinguish from one another. Contrary to typical quantitative research procedures, where the researcher would perform the study, then write up the analysis; qualitative research procedures involve the write-up as an integral part of the analytic process (Braun & Clarke, 2021). Here the researcher was involved in a recursive approach to report authoring. The report might alter and develop as codes and themes do throughout the study. Therefore, step six was viewed as the accomplishment and final review of the report that the researcher started writing before even beginning their thematic analysis.

Identifying the sequence in which the researcher presented the themes was a helpful challenge to address at this time. Themes should be connected logically and meaningfully to form a compelling story about the data. In other words, themes should be able to expand upon each other in a sequential way, while also maintaining internal consistency and being able to convey their own unique narratives when separated from other themes. The researcher's use of compulsory disaster management leadership at university in this study captures participants' opinions and experiences with social media communication in disaster management. Discussion of the participants' opinions and experiences with disaster management in higher education followed logically from there.

The Clarke & Braun (2021) thematic analysis model, offered the researcher an effective instructional outline of the steps for creating a detailed, believable, and complex thematic analysis. However, thematic analysis can be done both well and poorly, just like

any other type of analysis. Providing data extracts with little to no analysis (i.e., no interpretation of the data that explains how this is relevant to addressing the research question) or just paraphrasing or summarizing data are examples of common mistakes the researcher should consider in this study. Another common mistake is to use the data collecting questions as themes. Instead, themes should be found in the content of the participants' responses, not in the questions they were asked. Therefore, when creating and updating the analysis, the researcher was to be sure that any databased assertions are supported by the data and that they are consistent with the broader theoretical perspective (for example, whether employing a critical or experiential style of thematic analysis).

4.5 Result Presentation and Discussion

Respondents' Feedback Discussion was based on the general thematic evaluation practice utilized in this study, various potential themes such as social media communication; social media communication insights; social media challenges and solutions to social media challenges were established from the interview responses. It is from these potential themes that the final authentic themes were formulated from. The themes are discussed as follows based on what is learned from the participants' responses during the interviews.

4.5.1 Theme 1: Understanding of use of social media communication in disaster management in Kentucky

According to the responses, all institutions engaged in this research use social media. However, the degree of social media use in each institution varies. For instance, Participant 1 said that, "If it's an issue that's going to be more of a community related issue than the police are now in ball, they will use whatever platforms and avenues they believe are necessary to send it out." This response indicates that the institution does not use social media to communicate critical incidents such as disaster and emergencies in the institution. Instead, the responder stated that the institution adopts a texting and an

email service to communicate internally and convey information, which enables sending of information immediately to all the university employees and students. To involve other disaster management stakeholders such as the police and community, the texting and email service is implemented through strategic communication to ensure that the correct information is shared.

Participant 2 identified that, “Well, I think officially, we use a variety. The 2 that are our primary or really 3. Facebook. You know, is one Twitter is another, and then Instagram.” This shows that social media platforms are popularly used in disaster management at the institution. He mentioned that providing emergency and rescue assistance in the case of a disaster at the university property is the duty of Environmental Health & Safety/Emergency Management. According to him, the three platforms are very critical for conveying, disseminating and sharing information about emergencies within the institution.

Participant 3 stated that, “Sure, we use for emergency notifications and timely warnings, we use Facebook and Twitter and specifically we have Facebook and Twitter pages for the institution’s Emergency Management, Police Department and the university as a whole.” Based on this, it is evident that the institution uses Facebook and Twitter (the institution’s Facebook and twitter pages) to communicate and give emergency notification and timely warnings to the Emergency Management, Police Department and University as a whole. In this sense, social media is used for notification and timely warnings and it is integrated in the institution’s mass communication system where Rave is implemented to conduct emergency notifications and timely warnings. The university’s social media platforms alert methods are emails, text messages and voice calls generated to all employees and students of the institution. In addition, social media is viewed as an effective framework for sharing information to the public. Participant 4 acknowledged that,

“So, within my department on campus safety, we actually don’t use social media platforms. And the reason why that is because a lot of the misinformation. But

now, with that being said, we need to communicate effectively with our student body, so as a whole, the University, the College uses Facebook and Twitter both.”

In light of this, the response indicated that the Department of Campus Safety does not use social media platforms because of their exposure to a lot of misinformation. However, to create awareness on emergency or disaster effectively within the college and in the community as a whole, the college Facebook and Twitter pages are utilized. This is because these social media pages are some of the most common and efficient way of conveying such information. The participant added that the college does not use social media platforms to address issues during crisis. However, during such situations, a prefilled text message is used to push the communication to the social media where everyone has a notification alert on all social media. Participant 5 noted that, “... then the college separate from that also has Facebook accounts.” In this case, the participant applauded that the department of public safety does not have a social media platform and therefore does not use social media when it comes to disaster or emergency management. Also, the college has Facebook, Instagram and Twitter accounts which are managed by the personnel in the public safety department to ensure that proper information is conveyed to the public. During an emergency or disaster or any other event, the communication and public safety departments consult each other through a crisis management team in order to guide them on what should be shared or conveyed to the social media through the college social media accounts. Participant 6 confirmed that, “We have tik tok that we use for students, for you know. ... Twitter, Facebook, and Instagram would be the 3 Major ones.” This revealed that the participant acknowledged that the institution follows what students use on a daily basis and the three most platforms used are Instagram, Facebook and Twitter. Finally, participant 7 verified that, “Oh. Really, the main one we use is Facebook, and that's through the police Department now communications in marketing department. They may use Twitter or Instagram ...” According to the participant, in the context of emergency management, the institution utilizes Facebook which is linked to the police department. In his case, social media is used

for sharing information such as a link to emergency preparedness as well as police sending authenticated information and links on safety and security issues. The participant acknowledged that social media is an effective communication tool in terms of reaching to many people. Participant 2 further added that social media is diverse; its communication has a wider scope making it the most viable and valuable approach to convey information about a disaster or an emergency. For instance, in the case of Covid-19 social media played a vital role to ensure that the world was aware of the symptoms and signs of the disease as well as how to protect against it. Social media also helped the global community to understand where the disease was severe. This demonstrates the strength of social media as a communication tool during disaster or emergency management. Indeed, according to the responder, social media is influential as reflected through the excerpt below:

“I think social media is one of the bigger communication platforms across generationally. That's where crafting the messages appropriately, you know, and putting it out there is. Is it critical? But I do think that the work around it. But I think it's absolutely essential.”

Based on the responses and in-depth deliberation above, it is evident that social media is utilized in disaster management as a tool for disseminating information and instructions as well as issuing alerts and warnings in real time. It offers an additional avenue for emergency services to disseminate red alert and cautions. For instance, participant 3 noted the use of social media during disaster management because of its complementary role in the communication process. It enables the institution to convey a timely alert and warning system about an anticipated disaster or emergency or provide direction and guidelines on how to be safe during an emergency as well as reporting the state of the situation in case of an ongoing emergency at the institution. This is reflected in the following extract:

“Again, as I’ve said, it’s an additional communications channel. It’s an additional alert method. Because that is the tricky thing (difficult). There’s no single alert

method that will reach 100% of your population, which is why we use multiple modes (ways) to do it. So, it's one additional mode that you can use to provide the information. And maybe people will share it and recognize it as coming from a trusted source, so the upside (positive) side is it's one more channel that we can use to help people be aware of how they can protect themselves."

Hence in disaster management, social media is deployed to provide up-to-date news information such as contacts for emergencies; identifying injuries, victims and any casualties; establishing situational awareness; etc. The growing use of social media platforms in disaster management enables universities and colleges in Kentucky to share information about disasters in real time which in turn help emergency teams such as fire fighters to better comprehend the situation on the ground for effective and efficient response. Also, the official use of social media during a disaster help to inform the public (students' parents) about how to get help about the whereabouts of their sons and daughters as well as when they aim to arrive in the disaster-stricken institution. Thus, disaster and emergency managements in these institutions use social media for crowdsourcing facts, conveying the effects of the disaster as well as informing the students, faculty members, emergency responders and the general public about the situation and the progress in efforts of managing the disaster. In this way, it helps improve communications before, during and after a crisis within the institution. Indeed, social media is considered a communication tool in disaster management in Kentucky because it facilitates the following;

Information conveyance in real-time: Based on the responses of participants 1, 3, 5, 6 and 7, it is evident that social media is increasingly becoming a rich and effective source of information communication during a disaster. This is because social media has been able to break down the one-way communication of the traditional mass media such as radio and television. In other words, it allows for two-way communication where both sender and receiver can exchange information or messages in real-time. In a disaster situation, the crisis teams and school administration can be able to communicate first-

hand information about the situation to the parents or public who may in turn respond by asking about the situation and the safety of the students and requesting emergency contacts, etc. Similarly, the critical information about the disaster in a university or college can be rapidly disseminated to many people around the world thanks to the capability of these social media platforms.

Moreover, emergency responders can also utilize social media to boost crisis responses in terms of coordination, teamwork and collaboration. Participant 2 expressed that social media at the university is used as an echo to communication. This means individuals encounter a biased, specialized media experience on social media that excludes diverse voices and opposing ideas. As a result, the simple debate or discussion of a particular issue or viewpoint inside a group has the potential to radicalize everyone's positions. Each individual group member's perspective could even change to one that is more extreme than the one they had before deliberated. To counter this, the respondent states that the institution utilizes an emailing system for official communication to the faculty and students particularly for critical information. The institution also deploys web-based communication, which links to the three social media platforms. Indeed, the institution uses social media to reinforce its official policy and official messaging. This is based on the argument that:

“Well, typically, we use it as an echo to official communication. We usually put things out by email official email to faculty staff students if it's any critical messaging. But then we'll take those high points and we'll re. We'll post it on the web, and it will take links, and we'll put it down on social media. We're using it to reinforce our official policy and official messaging.”

In light of the responses, it is also evident that social media has emerged as a potent communication channel that has had greater influence in in both urban and rural settings. As a result, it has had a long-term impact on how communication is carried out during and after a crisis particularly in universities and colleges based in Kentucky and has

become an essential medium of communication for some schools. This is attributed to its impact of promoting a novel type of communication in which interactions are rapid and information is swiftly conveyed in real-time. One of the key reasons portrayed as to why social media use is an increasing trend in disaster management in these institutions is due to its ease of communication as well as its capability to offer two-way interaction or communication in which emergency responders can converse with one another, students, faculty members, parents, community, etc. to share verbal, written and audiovisual information even when they are thousands of miles apart for no or low cost.

Participant 2 deliberated on the effectiveness of social media in the context of disaster management stating that it works in two ways i.e., one is a push for the institution to spread important information, and two, it also serves as a gauge of any knowledge gaps that exist. This is because of varying opinions and varying questions that the institution must deal with appropriately. It helps to direct everybody to the central messaging though there is need for proper monitoring of the activities on the platforms. As a result, the participant confirmed that social media is an important tool for disaster management although there is need to be careful when using social media to convey important information about emergencies or disasters. This is manifested in Participant 2's response as follows:

“Well, I think if it's used as we have, I think it, it's two ways. You can sort of direct everybody to that central messaging. But I think you also must be prepared to monitor those things because people are going to ask questions back, right wrong, or different. And you got to be prepared to answer those questions, whether you do it directly to that person. With that I agree with you. It's important tool for disaster management, but it's harm. So, we have to be careful with it.”

Enable the development of situational awareness: Apart from being a means or channel for disseminating information to students, faculty members, parents, community and the general public; emergency responders, institutions' management and authorities can employ social media information surveil, check and identify the changing events

during a disaster. This is realized when individuals in the disaster-stricken institution offer real-time, geo referenced facts to backup and enhance the crisis information supplied by emergency response reporters and professionals. In disaster management, situational information production being either active or passive based on whether users comprehend how their social media information is perceived and utilized. With active information production, social media users in this case institution management actively report incidents to inform the students, faculty members and community as well as the authorities with the hope that emergency teams and responders can respond quickly to urgent incidents. For instance, in case of a fire disaster, the management can use social media to alert all fire fighter agencies within the location of the institution in order to quickly get adequate support and assistance to contain the fire in the institution.

On the other hand, passive information production describes the utilization of prevailing social media facts to ascertain situational awareness without users actively looking or demanding responses from the emergency responders in the institution. With the existing social media facts, individuals can follow when the disaster occurred, what was the cause and what is the progress in managing the emergency. As a result, it is possible to develop the situational awareness using the existing social media facts or data. In the context of a disaster occurring in an institutional setting, social media facts and information can help emergency responders, policy makers and the entire public to understand the overall picture of the emergency situation.

Backchannel communications: another lesson that can be learned from the interview responses is the fact that social media facilitates informal public peer-to-peer backchannel communication that runs concurrently with established channels. The backchannel communications reflect peoples' power in gathering and dissemination of information in emergency situations where established media outlets offer little information about the situational conditions or are slow to respond. For instance, social media platforms such as Twitter, Facebook and Instagram as communication mediums are not backchannel rather, they can facilitate user-to-user backchannel conversation. In

other words, social media breaks the geographical barrier to communication where detailed information about a disaster can be disseminated to everyone in different regions and location thus creating public awareness about the emergency situation.

Therefore, in emergency cases where there is information shortage, social media backchannel conversations capability backs the official communication channels function as crucial information conduits. In this way, social media platforms enable the users such as victims to create and share information that might otherwise be available from the official communication channels. As a result, social media platforms are part of the disaster management communication system at the university. This is because the university has a well-established framework of working social media in terms of ensuring what is being disseminated on these platforms is credible and reliable. Similarly, the university ensures that these platforms are well controlled and managed to eliminate more traffic that is unauthorized and non-authentic. At the institutions, this is accomplished through the use of a centralized messaging system. This means that the university utilizes its foundational platforms of communications such emailing, text messaging but also ensures that the same information is conveyed through its social media pages. This is based on excerpt below obtained from participant 2 responses:

“Well, I think they're part of the total package. I don't think they're that in themselves, but I think I think our system works well on it, and it is consistent.... I've been to work a lot of big universities. And obviously you have a lot more resources that we have, but they're doing really the same thing. They are centralizing the message. They have a central Comms group. You have to use social media. But it can't be your only communications tool. It has to be an adjunct to what you do. Because I think your official channel still have to come through your website, your what I call the foundational platforms of communications. But you also need to get it out in these other channels, because different generational groups, different others get their information different places.”

Decision making tool in emergency management: another lesson that is reflected through the interview responses is that social media has the potential to serve as a decision support system, allowing emergency responders to make more informed judgments. Making decision during a disaster is critical since it is a mechanism for making choices at each level of the problem-solving process. It is the ability to make excellent decisions amid various alternative options available during an emergency. This is a key ability during emergencies when it is important to make sound decisions quickly in order to minimize life and property losses. In other words, decisions are made with the goal of lessening the impact of a disaster while also preserving lives.

During a disaster, social media is inundated with photographs, information, videos and pleas for help or support. Many of the social media facts contain links to pertinent information from tragedy locations, and the data can be used to better understand the evolution and aftermath of the situation. Based on this, emergency responders and agencies can utilize social media platforms to help create preparedness, response, and recovery decisions and activities by delivering alerts and warnings and other information to the public while also supervising public participation. This is attributed to the role that social media platforms play in the emergency management process which allow users to create content about the disaster and share widely. Thus, social media use in crisis time is greatly dependent on extend of influence that these platforms have on user performance. This is in terms of content i.e., resources accessible to users such as digital content offered by individuals in a disaster situation such as photos, information and videos. Hence, besides conveying mere information, this content has social effect thereby promoting the inspiration to build social support among users. As a result, this demonstrates how social media content may provide locational data and situational updates to disaster management decision makers. Another element that influences decision making among emergency responders is the structure of social media facts which refers to the observable trends and patterns of social media users in the disaster-stricken location. In this way, social media platforms make it easier to detect user interactions and

relations. In the context of a disaster, social media platforms enable students, parents, faculty members, community and the public to interact by following emergency responders and policy-makers updates on the situation. This in turn help them make efficient decisions with regard to the disaster incident. In light of this, social media platforms help users to interact with emergency management decision making both directly by offering information about the decision problem and possible solutions as well as indirectly by shaping users' decision-making process based on situational updates and allowing for situational awareness.

Based on these lessons, it is true to say that social media platforms are exceptional mediums of communication and disaster management particularly during an emergency situation. This is because social media enable conversation with the general public, scrutinize the situation of the disaster, coordinate and collaborate with partners and mobilize resources to aid the response to the emergency. In institutions such as universities and colleges, social media platforms open up new channels of communication and a way to help individuals in need of assistance (such as survivors, etc.) and information (for emergency responders, volunteers and the general public) during a disaster. Social media can help institutional administration reach out to individuals and groups while also alerting responders to where and what type of relief is required. This aids in disaster support and relief coordination and facilitation as social media help disaster responders to locate volunteers, reconnect families, and communicate critical information. Similarly, social media use in emergency management is considered as awareness creation features that notify, inform, enlighten and keep people informed about the safety of individuals affected by the tragedy.

Generally, the findings shows that all participants who are mainly leaders of emergency management, disasters management as well as safety and security teams in their respective universities and colleges are aware of social media platforms and their use as communication tools in disaster management. Some of the commonly used social media platform according to the participants include Facebook, Twitter, Instagram,

Youtube, Tik-Tok, etc. as mention by various participants. For example, participant 2 stated that,

“I think officially, we use a variety. The 2 that are our primary or really 3. Facebook. You know, is one Twitter is another, and then Instagram. Because the younger folks using more Instagram, we try to tie into those 3. We monitor others, but for us to push messages. Those are really the 3 that we use.”

Similarly, participant 3 revealed that,

“we use for emergency notifications and timely warnings, we use Facebook and Twitter and specifically we have Facebook and Twitter pages for ECU Emergency Management, ECU Police Department and the University as a whole. And the use of those social media platforms is just one layer that is added to our mass communications system which we use Rave Mobile Safety to initiate mass communication and we use Rave to conduct emergency notifications and timely warnings.”

Moreover, participant 4 expressed that,

“But now, with that being said, we need to communicate effectively with our student body, so as a whole, the University, the College uses Facebook and Twitter both. We have Facebook pages. There's in a Facebook page for parents that they can join and use, and whatever there is an issue that addresses campus safety that gets passed down to me.”

Participant 5 also acknowledged the use of social media platforms saying that,

“I only use Facebook, and so I've been on Facebook for several years. And I have a personal account. My department doesn't have a Facebook account. So, everything that I am just me personally and then the college separate from that also has Facebook accounts.”

Participant 6 also acknowledged the use of social media platforms by stating that, “We have tik tok that we use for students ..., Twitter, Facebook, and Instagram would be the 3 Major once. Right now, that's we. We follow a lot in regards to what students use

on a student daily basis.” Finally, participant 7 recognized the institution’s use of social media by stating that, “So, but as far as emergency management we only use what’s through the police department, and that is Facebook.”

Therefore, social media facilitates rapid, interactive conversation and fosters dialog and information exchange between message creator and audience thereby promoting situational awareness and understanding. In light of these findings, it is important to be strategically prepared to take full advantage of social media benefits and lessen its risks when using it as a communication tool in disaster management. These findings show a significant contribution to the field of disaster management by clarifying views of the personnel in this field on the practicality and value of social media.

In light of the above evidence, it can be said that social media can be used in a variety of ways to manage emergencies and disasters. Its applicability is based on the basic pillars of emergency management practice which are preparedness, response, mitigation and recovery. Through the interview responses, three key areas where social media platforms have been utilized successfully or have particularly illustrated future promise. These are public information, situational understanding as well as society enablement and participation. The use of social media information in post-mortem analyses, institutional or emergency management teams understanding, monitoring, and evaluation, as well as in emergency management planning, looks to have growing promise in universities and colleges in Kentucky. Therefore, the three main areas where social media platforms have been successfully used or have notably demonstrated their potential moving forward are as follows;

Public information: emergency management teams and responders consider social media as an additional media channel to communicate with the public and disseminate information about a disaster incident. The interview responses have shown that emergency responders and teams recognize that social media posts, messages and information travel rapidly to a massive population of people thanks to the availability and accessibility of web-enabled devices. Moreover, the responses have indicated that

emergency communicators comprehend that not everyone is able to access social media or uses social media or want to use social media due a number of factors ranging from poor understanding of modern technology for aged people, lack of internet, downtime of the social media platforms, etc. Furthermore, from an alert and warning outlook, the study has found that social media platforms offer a substantial communication medium for reaching individuals from wherever they are. In light of this, social media are viewed as a beneficial supplement to more established channels rather than as a substitute for them. This is because the platforms offer considerable potential for promoting resilience and risk reduction goals by including the public in all aspects of preparation and supplying individuals with immediate, localized, and disaster-specific information update in a timely manner. Hence besides offering timely communications on the situation of a disaster, other practices of social media that ensure effective and timely conveyance of new developments of the situation are;

- i. Establishment of platform-specific and purposefully created, crisis-related social media posts aiming to show competence to the affected population, foster trust, clearly express risk, and encourage desired behavior.
- ii. Institutions' administrations and emergency responders disseminates preparedness and recovery information on social media in addition to real-time updates.
- iii. Posting of updates by institutions' authorities and emergency management organizations involved in the incident's handling.
- iv. Monitoring and keeping an eye on what is being said about the tragedy on social media, and taking fast action to correct rumors and false information.

Situational awareness: in disaster management, there is great need to continuously gather, evaluate, and share intelligence, knowledge, and information to enable people to understand the situation of the incident in order to make and pursue wise decision choices. According to this study findings, social media streams deliver a rich source of

multimedia content (messages, video, voice and images) which may be leveraged to continuously update and deepen the understanding of the disaster situation. The main practices associated with situational awareness in the context of an emergency include;

- i. Operationalizing social media information by identifying, validating and verifying of disaster-related information shared by social media users and subsequently adjusting intends, priorities and operative decision choices.
- ii. Encourage participation of the public to publish inquiries, submit requests and opinions that can aid in resolving the challenges arising from the emergency.
- iii. Engage virtual volunteers to help find, filter and augment pertinent online posted information as well as help the institution or emergency responder communicators to amplify the true information and messages regarding the emergency situation.
- iv. Engage in focused monitoring, whereby emergency management communicators examine social media posts in order to detect: substantial shifts in the sentiment and attitude of the people, the reach and efficiency of true information, warnings, and recommendations as well as understanding of new and developing threats and dangers that can jeopardize the security of volunteers, aid personnel, and other responders.

Monitoring, assessment, and preparation: through social media information, it is possible to establish situational awareness as well as crisis management and communication which provide the chance to gather and evaluate information in order to continuously enhance information conveyance and sharing as well as disaster response strategy preparation both online and physically. The institution's efforts to effectively and efficiently address the effects of spam and fake news during any disaster or emergency incident revolve around continuous monitoring and better management of the social media platforms to ensure legitimate information is conveyed to the institution's

community as well as the general public. This is attributed to the following excerpt obtained from the responder's feedback:

"We continually monitor various platforms. and particularly I go back to Covid with the parent portals, parent Facebook pages, whether they be the official page of housing or official page, the University.... So, I think that you just have to possibly be aware of what's out there. You got to weigh it. You got to look at the effect, and then the side appropriately. What to counter and what to address or not address."

In the context of a disaster social media platforms enable effective communication, cooperation and collaboration between different emergency responders and the institutions' disaster management teams thereby facilitating the collective efforts in handling the emergency situation. This is due to the fact that effective cooperation during a disaster demands that the necessary relations, confidence and rapport between the various emergency response teams be made far in advance of the occurrence. Some of the practices undertaken under the monitoring, evaluation and planning are;

- i. Designing efficient collaboration and teamwork between institution's management, disaster and emergency management teams and other responders for proper dissemination of true information and putting their collective efforts and resources towards handling the incident.
- ii. Creating crisis maps and fostering real-time social media use to gather situational information from the public, especially during a crisis and its recovery.
- iii. Providing the public with a simple way to receive just information that is particularly meaningful to them.
- iv. Collaboration between emergency teams, disaster responders and institutions' management to create impromptu, immediate solutions to disaster-related issues as well as to share information and close knowledge gaps in disaster management

4.5.2 Theme 2: The incidence of spam and false information on social media during disaster management in Kentucky

According to the participants' responses, it was clear that all participants acknowledged the presence of spam and false information on social media during a disaster. In other words, gossips, disinformation and false information is evident on social media during and even after a disaster. This is demonstrated through the following participants' responses. Participant 1 stated that, "I think there is a major issue with spam information coming in on the platform that you're trying to communicate on. So again, it may not be disinformation, but it's a lot of other information coming in that's clogging it up to the network. So, to speak." Participant 2 said that, "You know we've had a few cases where people have gotten the facts wrong. It wasn't intentional, but they got the facts wrong and created some issues." Participant 3 articulated that, "Yeah, I think it can be, and sometimes fake news or someone's wild imagination comes out ...". Participant 4 disclosed that, "But I can say that any type of fake news or untrue stories get posted on to social media. They can cripple an organization to its core. It calls mass, chaos and panic." Participant 5 revealed that, "They come up to see if there's something out there that's being put out about the college that that might be fake news or untrue." Participant 6 uttered that, "I think misinformation is the appropriate thing to say in this like I said, you get somebody who might be a staff member who's not familiar with it that puts their own spin on it." Lastly, participant 7 expressed that, "Yeah that is a problem. That is a problem. We all get spanned."

Based on these responses, it is evident that spam, misinformation/disinformation, rumors or gossips or fake news are very common on social media particularly during a disaster incident. In light of this, the following lessons can be learned from these responses. First, while social media is an essential component in disaster response for conveying real-time developments on the emergency incident, it is also a common source of misleading information. In the context of a disaster, spam and fake news (also referred to as misinformation or disinformation) all highlight the fraudulent

character of information and defines the theme of the fabricated content. This erroneous information is frequently described as misinformation and frequently occurs in random forms with unclear motivations. On the other hand, disinformation occurs as a result of deliberate manipulation of factual information to achieve benefits or disadvantages before being disseminated. Similarly, fake news is utilized to spread misleading information and stories disguised as reputable sources. According to the participants in this study, misinformation, disinformation or fake news frequently causes the individuals to make incorrect decisions, prompts them to do the appropriate actions, and creates emotional and psychological changes. When an emergency situation arises, for instance, the public is more susceptible to the influence of emotions when misinformed, resulting in a widespread emotion cluster phenomena that can easily have a detrimental impact on the institution. This is because factual information and disinformation are frequently mixed together and difficult to distinguish, and the people's view of misinformation as factual information is the primary driver of misinformation sharing and dissemination on social media. Participant 2, 3, 5 and 6 expressed that both true information and misinformation concerning a disaster or emergency incident in institutions such as universities and colleges is rapidly spread in social media and given this involves the safety and security of people, this has the potential to breed uncertainty and misunderstanding. Similarly, participants 1 and 4 indicated that spam and fake news during a disaster are most likely to trigger students, staff, parents or people's anger, sympathy or other emotions. This is attributed to individuals drive for personal gains through the spread of fake news or misinformation. This demonstrate that while social media offers a convenient way to convey and share information about a disaster, its inability to propagate false information also contributes to mass dissemination of fake news concerning the disaster leading panic, misunderstanding, etc. among people. For instance, disaster related information can frequently be misrepresented on social media by inflating the number of victims, altering the actual updates of the situation, etc. a good example of this is presented by participant 4 who stated that,

“But I can say that any type of fake news or untrue stories get posted on to social media. They can cripple an organization to its core. It causes mass, chaos and panic. For example, just last night we received a call. Somebody here on the campus was in one of our dorms with the firearm. It was threatening to kill another student. Luckily, within just a matter of a couple of minutes we were on scene, and had determined that it was a drama theater student performing in a skit for class, and it wasn't a real event whatsoever. But in those initial first few minutes everybody from our local 9, 11 call center to our campus safety office, which is flooded with calls and that continued throughout the event, and even hours afterwards people across campus that were just getting wind of it.”

The participant further expressed that fake news interferes with the value of disaster management efforts stating that it is difficult to handle the integrity of an investigation or management of an emergency. This is evidenced through the following extract:

“It absolutely can. I think I would be naive if I were to say no. It's hard to properly manage and maintain the integrity of either an investigation that's taken place, or the management of a national disaster.... Whenever we're working through all these things, we need for the general public to be leaving us, and to have faith and confidence in the abilities that we have to effectively manage these types of things. And if we lose that, and we lose the public Trust in it. It just makes our job a whole lot harder”

Secondly, all participants acknowledged that in the context of a disaster in institutions, misinformation or fake news emerges from uncertainty when students, staff, parents and community struggle to find the truth they need to fully comprehend the emergency situation. Based on this, these groups of people affected by the incident feel uneasy and anxious leading to the development and spread of fake news and misinformation. This is attributed to the tension that people have concerning the incident which coerces them to seek for information from various sources such as

different social media platforms, peer circles or unofficial sources, etc. to try and verify the situation of the emergency as well as help control the social tension. Participant 3 revealed this

By saying that,

“Yeah, I think it can be, and sometimes fake news or someone’s wild imagination comes out and it wouldn’t be a crisis except someone got the idea in their head that because they saw something and they just connected it to Richmond and said, “Oh, this happened.” And I’m thinking about...a few years ago there was a young lady who lived in Richmond who disappeared. She lived in in Richmond and was at a club in Lexington. That was the last place she was seen...seen by surveillance camera leaving a bar with two men, and she wasn’t seen or heard from again. And so, there was a lot of speculation in the news, but it doesn’t take much for someone on social media to say, “Oh yeah, that girl disappeared from the university.” No, she had no affiliation (connection) with the university. She lived in the city of Richmond and this is not where she disappeared from...she disappeared from Lexington. But people sometimes draw (make) conclusions and I don’t know where they get that from. And to a point where someone was putting on social media “Oh yeah, someone was trying to kidnap a student. They create a story and they embellish it (add a lot of information, possible false) but the fact was that ...no one has been abducted from this particular institution. Something that is not a story suddenly becomes a story because somebody makes it up, their imagination runs wild.”

Participant 5 also acknowledged the existence of fake news and spam especially during disastrous situations and added that the communication department in collaboration with the public safety department within the college control and monitor communication in such cases to ensure that there is no any miscommunication or misinformation that can mislead people during the situation. The excerpt below illustrates this:

“I think that our communications Department. It is pretty skilled in being able to determine.... They come up to see if there's something out there that's being put out about the college that that might be fake news or untrue. So, they do monitor that frequently”.

Third, due to a massive surge in web-based content consumption primarily through social media, individuals tend to share content that are ambiguous or fake to influence recipients and their decisions for personal gains. This is illustrated by participant 2 stating that,

“But as far as somebody to the point, what I would look at is we have not had a big issue with that. You know it's again. It's now, I will say, going back to Covid. It was a they would. They would retweet things. You know the route, you know, on the Internet they would retreat the stuff about the vaccine and retreat some of that and we did have to counter some of that, and some of it we did, because it was all over the news. So, it was like we didn't. We didn't try to attack all of those things. Basically, our stance was when that would come up, as we would say. You know we feel as a university. The vaccines are our best hope of getting the university back open. You need to consult with your health, care, provider and make that decision.”

Moreover, the participants acknowledged that individuals approach social media with a pleasure-seeking attitude which lessens their propensity to check the accuracy of the information they receive. For example, participant 7 revealed this by saying that,

“For instance, we had a city disaster, a couple of Mondays ago and the rumors and the fake news was just terrible, and just made so much more work for everyone, and it created chaos when it did not have to be. You know it was going to be chaotic anyway, but they created such a problem with. They take one piece of information, and blast that, not checking the facts on it, or you know, or anything. It's a terrible problem. I don't know the answer to it.”

In support of this, participant 3 expressed that the relation of social media for disaster management and fake news is that it complicates the emergency management practice by allowing the streaming of false information about any disaster incident. The evidence of this is illustrated in the following excerpt:

“I think, for the most part, it complicates disaster management. in theory you can use it to provide information like the severe windstorms. ...to put out information like, “Hey FEMA (Federal Emergency Management Agency) is going to be in the neighborhood, you can come and request help from FEMA. So, for that it’s good. But the downside is that it can really let people run away with all kinds of fake information.... You can get some good information out of it but there’s an awful lot of bad information that gets shared that way. So, it’s a problem.”

The participant further added that spam and fake news significantly interferes with the quality of disaster management efforts especially to the public where things get out of control because of the different opinions and ideas posted on the reported incident as it was in the case of the terrorist threat at the institution. The responder acknowledges that having control of social media platforms through proper management and monitoring of the feeds help to counter the effect of fake news and promote the quality of emergency management efforts. This is shown through the response that:

“Yes, I do, and again there’s a caveat (another side of the story) to that. for us, we’re in a bit better shape because we have a defined population of university employees and students and we have their emails and their phone numbers. And we can send a directly target message to them. We can give them that information I think the spam and the fake news interferes with the quality of our disaster management efforts.”

Another lesson manifested through the participants’ responses is the concept of echo-chamber effect which occur as a result of repeated exposure to information that supports preexisting opinions makes material more credible and shareable on social

media. This is exacerbated by verification bias, which is the propensity for people to choose information that confirms their ideas while ignoring diverse viewpoints and outlooks. This is evident through the response of participant 4 who settled that,

“Well, that's a lot of question. I don't know if any one person or organization would ever be able to get by with eliminating all the spam. You know they always seem to be 1 one step ahead of us. But obviously. If you have a good rapport with your population, whether it's your student body or whatever this scenario is, if you have the ultimate trust and their relationship there to where they feel like they can trust you. and they believe in what you say to be fair and accurate, and they learn that through the experiences that they've had with you, and they've develop that trust in the for overtime would like to think that whatever your social media platform is, or whatever way you use to communicate with your Populist that they would put a lot of weight in that, and they would tend to believe that more coming from you versus some of these other spammers or misinformation.”

Finally, according to the participants' responses, misinformation or fake news has the power to influence the decisions of its recipients. It can alter a person's perspective and method of approaching a subject or a topic. For instance, participant 2 expressed that the adoption of the Covid-19 vaccines was the best hope of getting the university back open. This may be in response to the criticism that had globally spread that the Covid-19 vaccines were not safe for human consumption. This had changed the beliefs of people leading to rejection of the vaccines. Similarly, the solution implemented to lessen the impact of spam and fake news in disaster management efforts, the participants states that there is need to be in control of the information being conveyed on social media through proper monitoring and countering any malicious misinformation to guarantee the credibility and authenticity of the information communicated concerning the disastrous situation at hand. This also includes timely updates on the situation in order to ensure everyone is well-informed and equipped with the current information about the emergency. This is illustrated in the following response:

“You have to get out there ahead of it. You have to put your message out first. You have to draw people in to say This is where you know this is what is happening Stay tuned to this channel. We will be giving you updates, and then you have to do it. So, you have to get out ahead of it, and you have to be consistent with I'm. Here's what I'm going to give you some more information. It may be shortly. I may not know the exact time, or maybe we'll give you an update at noon, or we'll do this, but you have to be consistent in that messaging. So, people understand that you're gonna be coming back with more information. and that's the best way to counter it. And then, if somebody throws something out there that's great just, and you deal with those individually.”

Participant 5 accepted that spam and fake news interfere with the quality of disaster management stating that a lot of bomb threats have emerged through social media and as a result of the false information the emergency response teams. For example, in the incident of bombs, the police and bomb experts move swiftly to the location only to find that incident was not happening whereas the information on social media was indicating. This negatively affects the quality of the disaster management practice. He also stressed that social media is indeed a necessary tool for communication given that students and the college community popularly use social media platforms regularly hence information would reach faster through social media. However, there is a need to urge the college community to stick to the official and preferred methods of communication such as emailing, text messaging and alerts. This will ensure effective communication of appropriate information. To counter fake news and spam, Participant 5 showed that the college deploys a control and monitoring approach on social media to ensure that there is no misinformation or false information that can mislead people. The communication and public safety departments personnel teams are tasked with the responsibility to monitor what is going on social media and address the influence of spam and fake news especially during disaster management. He stated also showed that it was the responsibility of the communication department to manage and handle the social

media platforms. The department achieves this through consultation with various players such as the public safety department, the president's office in order to establish a crisis management team that effectively handles the situation both practically and online.

As a result, the participants recognized that if not well managed spam and fake news can greatly interfere with the quality of disaster management efforts as a result of miscommunication and misinformation which really affect the perception and understanding of the audience. This in turn negatively affects the efforts of the disaster management team in terms of managing the level of anxiety, worry, and uncertainty among the audience. In the context of institutions such as university or college, the participants noted that the prevalent of fake news and misinformation on social media during disaster management efforts creates fear and discomfort in terms anxiety and uncertainty among the university community and the general public. Therefore, the practice of emergency management is made more challenging by the ability of social media for disaster management to stream misleading information about any disaster situation.

4.5.3 Theme 3: Issues in using social media for communication during disaster management in Kentucky

Whereas participants in this study accepted that social media has restructured communication from the traditional one-way communication to a highly dynamic, global and participatory (two-way communication) on both personal and societal levels, they also consented that this novel communication when used in emergency or disaster management situations has a range of issues. This is because managing rapid communications on social media platforms is difficult and the hardest circumstances (such as emergencies and disasters) make it even harder. In light of this, the following are some of the main issues associated with employing social media for communication during disaster management.

One of the main issues brought forward through the participants' responses is the fact that using social media as a communication tool in emergency or disaster management tend to amplify the negative effect of the situation if poorly handled. For instance, various participants agreed that the reputation and credibility of the emergency responders or institution's efforts to convey true information about an emergency can be ruined through social media as a result of its ability to spread fake news, misinformation or criticism more quickly and extensively. This is illustrated by various excerpts from different interviewees. for example, participant 1 said that,

"It creates a lot of issues just because we don't have the staffing. We're concerned about the miscommunication it would be out there or misinformation will be out there due to other people feeling they need to respond, and possible talking about information they don't actually have which affects other people."

Participant 2 also articulated that,

"It's very prone to people being able to it insert themselves in the disaster, whether they have a reason to or not. It opens up the chain of speculation. You know, because you find out that you that people that are 500 miles away, or experts, and what's going on here because they talk to their kid, you know, and their kid knows everything. So, you know it, that it it's prone to misinformation. And I think it's also when people look at Twitter, or something."

Besides this, the participants further showed that using social media in emergency situation can make the emergency responders and institutions' management to be more vulnerable to criticism and pressure from the students, staff, parents and the public who anticipates rapid, honest responses or may vent their resentment or fury publicly. This is evident in the response by participant 2 who stated that,

"It opens up the chain of speculation. You know, because you find out that you that people that are 500 miles away, or experts, and what's going on here because they talk to their kid, you know, and their kid knows everything. So, you know it, that it it's prone to misinformation."

Similarly, participant 3 asserted that,

“One, that it is not real-time and not near real-time and secondly, everybody’s opinion about what might be going on clutters (makes unclear) the landscape a lot, so I think that’s the other challenge. The main challenge is that a lot of people will have a lot of things to say and a lot of it will be so wildly inaccurate that you read it and say “I don’t know where they came up with this.”

The participant added that the institution employed different approaches towards handling spam and fake news during the management of the crisis. For example, the university included specific language to keep the community and the public informed about the situation. This is based on his feedback:

“In this case we had to include very specific language (goes to Screen Share again) Keeping People Informed. The last bullet point “Please rely on official communications from the President’s office and the Division of Public Safety, as opposed to unsubstantiated (false or unproven) and sometimes irresponsible social media posts. We will continue to communicate in as timely and transparent fashion as possible, within the context of our ongoing investigation. The latest information is also posted at...we have a specific web page for public safety alerts and updates. And there’s a link to that under the Emergency Management web page and the police department’s web page. So not only would we sent notifications out but we would post it on our web pages, so we have to keep reminding people, don’t just share information you see on social media.”

The other challenge manifested is the fact that social media exaggerates some aspects of the disaster and this creates unnecessary panic among students, staff, community and the public as a whole. In other words, the spread of false information and fake news on social media is infamous for upsetting people. Even though some fake news may have emerged with the best intentions, many of those who generate it are inspired by a desire to either gain monetary or cause chaos and divisions in the society by inciting

fear and hatred. This is demonstrated through the response of participant 4 who noted that,

“Hmm. Well. So social media. If there's falsehoods they get posted on to social media about a certain event. We can really cause chaos. And you know honestly. If there's a lack there, a lack of an institution using social media. If they don't have an article to share. It opens up a vulnerability to where people can more or less right what they think is happening. And put out the information that may not be true or accurate, or at one time wasn't is now old, old news. So, if you're to use and engage in social media platforms, you need to make sure that it stays current and you do push up the information as time, way as possible.”

Another challenge of using social media platforms in disaster management is the failure of the internet, platform downtime and failure of other technological related infrastructure. According to the findings in this study, the failure causes every communication to go into dark leaving the affected individuals and the public as a whole in great worry, panic and distress. For instance, failure of the platforms may lead to inability of the affected individuals to converse between themselves on the current situation of the disaster. It also causes increased concern and panic among parents and guardians. Participant 5 revealed this stating that,

“I agree. And you as you were talking. I was thinking, too, about you know, not only the power, but then also you can have Internet connection issues. You know, we have the bombing in Nashville at and T. You know it pretty much wiped out this whole region as far as Internet connectivity, and so that they created, you know, quite a problem there.”

In addition to network or infrastructural failure, vulnerable population (such as elderly and people from poor socioeconomic backgrounds) in remote locations may not have access to smartphones, portable digital devices or internet connection necessary to get social media messages and timely updates on a disaster situation. As a result of this,

depending on social media as a communication tool in disaster management may prevent some people from getting vital information about the situation of the emergency.

Similarly, the participants presented that the informational flooding on social media platforms often cause important disaster-related communication to get lost among the millions of posts or tweets sent out every second. As a result, this makes it difficult for those following the events of a disaster situation to be up-to-date with the new developments of the situation. For instance, participant 2 noted that, “Well, some people get that first message, and they don't look, you know, so they don't see that. Follow up.”

According to the participants, social media use in disaster management promotes rumors and fake information given that people expect true information rapidly which all exacerbates the distribution of false disaster-related information. According to the responses majority of the interviewees expressed that many people do not trust information posted on social media because of the credibility issues associated with such information. It is also attributed to the volumes of false information posted on these platforms. For instance, participant 1 expressed that,

“I can tell you, even on platforms. Other media platforms for taking videos and presenting those. There was misinformation within that some people live stream, some of the activities on campus and some record it. And then, days and weeks later, after the events was over, they proposed that, and it said on the actual videos that it was live streaming when it was odd, so that was problematic, because people did not think we were being honest with them; that the event was over because they could see it. It said, live streaming on YouTube, on someone they did not know, so they did not trust the official communication hub of the University. Which I mean they at least called. But they were like, really, it's not your ongoing. It says on this platform it is. And we're like No, I'm 2 buildings away, and it's over 2 days ago. And we've even had calls weeks after near those videos.”

The participants also expressed that challenge of the institution having control of its own content on social media but unable to control users' interpretations, comments

and sharing of the content on these online platforms. In other words, the participants revealed that even though the institution has the privileged voice during a disaster, social media users also have a voice in the situation. This is evidenced in the response given by participant 1 who admitted that,

“Well, I think one of the great things about social media is that everyone can have a voice. The problem is, I think, that's you know, idealistic version of what social media is. But in practice the problem has been that you have so much more your signal of noise. Ratio is really challenging. So, people, the actual information are heard, as well as all these other people that present all this other information. So, I think it's extremely challenging. And I think, on our part, this small university. I think that is mainly why we've chosen not to use it just because it's too easy been manipulated by people who don't have actual information. The porting they have actual information. And then people don't know who to believe so.”

In other words, in disaster management, emergency responders and the affected institution not only have less control over social media communications but as well the information disseminated may be interpreted incorrectly and people or other witnesses to the incident may content the story and have a different viewpoint. Additionally, the rapidity with which information is exchanged, communicated, and propagated on social media has a double-edged effect. This is because it enables unfavorable commentary to multiply exponentially in a way that emergency responders and the institution cannot control. This causes the content on social media to have a mix-up leading to lack of reliability. Whereas social media facilitate rapid dissemination and management of an emergency in a proactive manner, a disaster communicated through social media can potentially intensify more rapidly. For example, in his response, participant 3 said,

“He had no affiliation with the school. The investigation led to where this person was. He wasn't posing a threat, but very easily, it can escalate (get worse) and get completely out of control. And during this event, we were giving twice a day updates. We were sending two emails every day, telling everyone what the

situation was, where in the investigation, how we were keeping people safe, what decisions we were making and imploring (begging) people, please do not believe what you read. Pay attention to the vetted information channels that are coming from the university.”

From the interview responses, the following four fundamental problems are what clearly lead to fake news, incorrect information, or false information on social media during an emergency management.

Inaccurate information: Occur as a result of lack of true information owing to speculations which are difficult to substantiate and verify. For example, participant 2 said that, “It opens up the chain of speculation.... There's all kinds of speculation about mortality rates...” This indicate that shortage of true information about the emergency situation leads to facts being paraphrased in a way that creates a false impression. This can be purposely deceptive or accidentally misleading owing to a mistake or because it has no relation to the context. This is illustrated by participant 1 who noted that, “We're concerned about the miscommunication it would be out there. or misinformation will be out there due to other people feeling they need to respond, and possible talking about information they don't actually have which affects other people.” In a crisis situation, inaccurate information causes confusion, panic, anxiety, distress among other emotions among the people affected. This is evidenced through the response of participant 3 who acknowledged that, “That's what we use. So locally we were able to get a hold of that to get ahead of that rather, and clear up any confusion. Whenever there's an emergency like that that happens. Its pure chaos...” It may help to uphold current injustices, disparities, and exploitation while strengthening authority over the circumstance.

Inadequate Information: The slowness of official communication mediums to convey true information about the situation on time provoke the rapid rise of rumors during a disaster situation. Informational inadequacy in the context of a disaster occurs as a result of various factors e.g., lacking authorization to convey the information or an

intentional withholding of information because one believes it must be fully complete before dissemination. Participant 1 illustrated this by saying that,

“And I can think of 3 right off, and all 3 were on the UK for a reason over the last 4 years 2 or 3 round, active shooter. One was a bomb threat, and that none of them had, you know, none of them were legitimate. I mean we caught all 3 within an hour, you know, because Jacques operates, and with our law enforcement. But and they all had different. You know one more. Some gallant impresses girlfriends how he thought that would do that. I don't know another one was, and you know, really an honor student who got caught up. And so, if it was going on, you know where we thought. We may have found an explosive on campus left over from construction, not in the peariest Turn out it wasn't, but in the in the midst of all that she puts out of. You know, on social media that you know. She guessed the next bomb would be at our parking structure you know: and it was just her, you know, some way putting this out on social media, and I'm like my God, you know. So, she's arrested, you know, and that's what I've seen. You know in that. I mean it's those were legitimate, false, you know, claims.”

Therefore, in the context of a disaster, adequate or sufficient information is crucial to lessen the pressure on people thereby lowering their fear and anxiety that arise from an emergency situation. The availability of adequate data help influences the decision option pursued by the institution's emergency response teams as well as the affected people.

Opportunistic Misinformation: develops when unscrupulous individuals trying to advance their own self-interest attempt to exploit the disaster incidence. In the context of disaster management this type of misrepresentation was driven by malicious incentivized where some people attempt to explore the emergency situation to incite individuals. For example, malicious disinformation on an emergency can be used to incite students to strike in a university or college. It can also be used to incite parents to transfer their children from a given university or college. For instance, even if there is no proof to back up this assertion, emergency managers and emergency management teams can

comprehend a first propaganda wave that places blame for a disaster's bad response. This is portrayed through the responses of different interviewees. For instance, participant 2 admitted that,

“You have to monitor closely and then you look at what's coming in, you know, if and if it's not accurate information. Is it malicious, or is it? Is it something that's going to affect your trajectory? And what you're trying to do. Because I said it, it gets back to sometimes.” Similarly, participant 5 expressed that, “As far as you know, the malicious things that are out there on social media, and that's one reason that I don't utilize it.” Opportunistic information can put individuals affected in danger and harm the efforts of the institution and emergency responders, making difficult to manage the events of a disaster. Therefore, it's especially crucial to confirm the accuracy of information posted online during catastrophes.

Obsolete Information: according to the interview responses, this emerges when unproven outdated information is utilized to manipulate the emergency situation. This is due to the widespread usage of unreliable or out-of-date information on social media during emergencies. People may become disinterested and lose faith in the institution's communication channels or the first emergency responders' formal communication channels if they receive outdated information about the disaster incident. In this study, the effect of outdated information is depicted in various participants' information. For example, participant 1 stated that, “It said, live streaming on YouTube, on someone they did not know, so they did not trust the official communication hub of the university.” Participant 3 expressed that,

“And maybe people will share it and recognize it as coming from a trusted source, so the upside (positive) side is it's one more channel that we can use to help people be aware of how they can protect themselves.”

Participant 4 also acknowledged that,

“But obviously if you have a good rapport with your population, whether it's your student body or whatever this scenario is, if you have the ultimate trust and their relationship there to where they feel like they can trust you and they believe in what you say to be fair and accurate, and they learn that through the experiences that they've had with you, and they've developed that trust in the for over time.”

Additionally, re-posting might cause obsolete information about a disaster incidence to surface, and automated publication dates are updated. Based on the aforementioned responses, the findings reveal that outdated and incorrect information has been spread via social media platforms during a disaster situation.

Overall, the findings reveal that social platforms as a communication tool in disaster management has both benefits and weaknesses. The advantages include speed of communication and information dissemination, easy access, interactivity of these platforms and the scope of reach. On the other hand, the main weaknesses of social media as a communication tool in disaster management include potential rapid spread of more fake news and information, inability to regulate user communications and comments on social media, restricted exposure to some target demographics due to rapid posting on the platforms making information updates on disaster-related incident to get lost or failure of the internet or other technological infrastructure leading to delayed relay of critical disaster information as well as lack of trustworthiness of social media information or communication with regard to an emergency incident.

4.5.4 Theme 4: Possible remedies to issues of using social media communication during disaster management

According to the participants' responses, social media platforms are increasingly implemented in emergency management to convey and share critical information during emergencies. However, the findings in theme 4 above shows the challenges of using social media in emergency management. The main concerns are the mix-up of true and false information and the credibility of information conveyed on social media. While fake news

and false information cannot be totally eradicated online, the participants revealed the strategies and practices employed by their respective institutions to counter and compensate for inaccurate information. The main approaches pointed out during the interviews are;

Establishment of strategic communication departments to handle social media communications

In the modern era of the internet-based communication, conveying disaster information can be challenging particularly for institutions such as universities and colleges. However, emergencies are incident that occur and no one has control over them but being prepared to effectively respond to such emergencies is imperative to the safety of the institution (students, staff and community) as well as the safety of the property. As a result, institutions' management or administrations have to be weary of this and be prepared to by creating a disaster communication plan, assembling an emergency response team as well as determine the official communication channels which might range from traditional local news to social media and mobile notifications. According to the interview findings, formation of strategic communication departments, teams or personnel is one of the key solutions suggested by various participants as an effective remedy to issues associated with social media communication during an emergency management. For instance, participant 1 stated that,

“Yes, my understanding is when issues come up, and this is just. I think, across multiple platforms and multiple situations, not just disaster relief. But when there's information that comes in our strategic communications department will determine if that information is correct and oftentimes, they will call me or someone else in the know about in a disaster, or what's going on and then they communicate back out that information is not accurate, and this is the actual situation as best they can. So, I think we do that on multiple levels.”

Second, participant 3 said that,

“The main thing for us is that we work with Communications and Brand Management. It’s an institutional department. They do all the branding, press releases, social media monitoring. We have a very symbiotic relationship (two things, organizations, people, animals, etc. work together to make each better). We will feed them the true, relevant, actionable information. They are always on the watch for what could get people hurt...what could hurt the reputation of the institution, so recognize that we have to walk hand-in-hand. We’re here to help them get out the message on how people need to be safe...what they need to do.”

Similarly, participant 5 expressed that,

“Our communications Department, you know, handles all of that. And so, they would be the ones that would do that again through the crisis management team and getting, you know, advice from different areas of the college, the president's office and the beans and everything.”

This suggests that most institutions ought to make sure they understand how social media fits into strategic communications. With its capability of people connectivity, interaction and sharing of information during a disaster, social media has proved to be an influential emergency communication channel that enable people to stay informed and updated on the situation. Therefore, creating a strategic communication department equipped with highly competent personnel specialized in different areas of communication particularly social media will ensure accurate and effective communication of true information to the public, timely conveyance of updates on the situation of the crisis, confirming and disapproving fake news and false information as well as taking proper action in response to remarks and issues. The formation of a strategic communication departments also ensures proper postvention which is the process of conveying situation updates as new developments emerges from the emergency incident to being finished and confirmation that an event has been well managed.

According to the interview responses effective management of social media communication to handle concerns of fake news, false information or misinformation during a disaster can be realized through the following practices

Create an active social media presence: This means that during a crisis, the institutions can establish social media pages dedicated to giving true information, sharing updates and advising the effected people as well as the public on what is the progress of situation. With this online presence the institution strategic communication departments ensures that it has created the incident's newsroom platform that make it easy and convenient to share informational updates in a timely fashion. This dedicated online presence also enables the public to trust the institution's updates concerning the emergency situation thereby eliminating any misunderstanding or uncertainty that can foster the rise of fake news, false information and disinformation. In the context of a disaster, the finding shows that a strategic communication team always keeps an eye on what is trending on social media platforms and promptly respond to any misleading news and information. For example, participant 6 acknowledged that,

"Well, they really don't address that it's, you know we haven't put anything out to say. Don't. Listen to this. So, listen to that. I wish I wish they would. But they it's not addressed as you're yet. I mean, in terms of that. It's I think it's kind of hard, just because when things are happening. They're happening like so quickly and so fast, and because their number One goal is to only put out, you know, verifiable information. It's hard to you know, be in the middle of something and then verifying this information, putting that out, and then, you know, going back to you know Facebook Page, or, you know, going back to it a dispatch Call about this, ..."

This revealed that social media presence is a real game changer for disaster communication in real time and to a wide population by offering the opportunity to share longer more detailed timely updates with regard to an emergency. In this way, everyone is well aware of the situation and can make wise decision in response to provide help or ask for help whenever necessary. Thus, during a disaster, having a dedicated online

presence ensure the credibility of the conveyed information and eliminates the possibility of fakes news or false information.

Utilize social media as part of the emergency strategy: the interviews acknowledged that integrating social media the emergency plan is critical to notifying other emergency responders and the public as a whole on the procedure to be undertaken to handle the emergency situation. It also enables the provision of the kind of support and assistance needed in terms of resources and relief needed for the victims of the disaster. The best approach portrayed through the interview responses is the connectivity of institutions' social media pages to police or emergency responders alert systems. This is acknowledged by majority of the interviewees. For example, participant 1 said that,

“Our local police are involved in that text and email communication as well as a seminary that is just across the street from us. So those institutions are automatically included with certain key personnel that they have at that point. If it's an issue that's going to be more of a community related issue than the police are now in ball, they will use whatever platforms and avenues they believe are necessary to send it out because I'm only responsible for cannabis. We communicate out to the police, and Number one is necessary.”

Similarly, participant 2 expressed that,

“They are centralizing the message. They have a central Comms group. You know that that really acts as a as a jig, you know, because again, we have our Po for the University, and we have our Po for the police department and they have to be insane. Obviously, if it's something to do with the police. The police are going to take the lead on messaging it, and our Po for the University or Comms group is going to just take it and re-broadcast what comes out? And we've done a lot of work on that of late, because trying to look at those emergency warnings that that are that are so time sensitive where it's a threat, an active threat. Those are

automatic from the police department. We don't we don't message those it's the dispatch.”

Participants 3 also noted that,

“We do have RSS feeds to the University’s main page, the police department, web page and the emergency management web page. We have Alert computer pop-ups that would pop up on computers connected to the network provided they have the software on them and along with that, we also have a limited number of alert beacons, which are little devices that are on walls in certain high population density places for place notification...so Alerts pop-up on computers and beacons is simultaneous. And then Facebook and Twitter. And then the potential pitfall of Facebook and Twitter...again, it’s one of several modes of communication, so we’re just throwing as wide a net as we can.”

Participant 5 indicated that, “You know those sources of information that they're gathering, and I think that they're probably relying a lot on getting information from us, and those primary sources, you know, local police fire and EMS during an emergency.” Finally, participant 7 asserted that, “So, but as far as emergency management we only use what's through the police department, and that is Facebook.” All these response shows the need to incorporate social media in disaster plan for better management of the situation and to ensure true information is conveyed to all concerned. In the context of a university or college, this can be extended to parents, staff and even student to ensure that they receive true information about an emergency and situation at hand.

Establish a dependable crisis communication team to disseminate information via social media: indeed, the participants have acknowledged the need to push credible and dependable information during a disaster in order to eliminate anxiety, worry and distress among the affected population and the general public. For instance, participant 2 expressed that,

“I mean, we do have one, but that we official university communications on social media goes through certain channels. It may be within the department, it may be

within the Communication group but somebody is in charge of betting that, making sure the messaging is appropriate when it goes out.”

Some interviewee expressed that in instances where the institution do not have a strategic communication system for conveying disaster information, having a small group of individuals who can assist in disseminating messages and information through multiple channels including social media is vital to address any arising concerns. These people have a crucial duty to provide the social media users and followers who are following the disaster's happenings with the most up-to-date information possible. For instance, participant 5 stated that, “I would have the expertise to implement anything more than our communication folks already do so. And you know. I guess, for a person that's been around for a long time.”

Another aspect that is evident through the interview responses is the important role that the crisis communication team play in responding to any and all comments on social media as a way of countering false information and fake news. For instance, participant 7 articulated that,

“Well, they really don't address that it's you know we haven't put anything out to say. Don't. Listen to this. So listen to that. I wish I wish they would. But they it's not addressed as you're yet. I mean, in terms of that. It's I think it's kind of hard, just because when things are happening. They're happening like so quickly and so fast, and because their number One goal is to only put out, you know, verifiable information.”

This is the best way to react to negative comments or correct misrepresentation and misinformation. It is also a way of getting ahead of incident and engaging the public.

Be innovative in how information is disseminated: due to the vulnerability of social media communication to false information, fake news and disinformation, it is advocated that the communication team be creative in how they disseminate, push and convey information and timely updates about an incident on social media platforms. Irrespective of the severity or complexity of the situation, creating a little fun on social

media when sharing information about an incident help to reduce anxiety, worry and distress among people. For example, participant 2 stated that, “Right now, and again we depend on Communications and Brand Management to watchdog social media, try to answer questions with factual information when they can...and when they can’t, to point people to the official information pages that we have.” However, it is imperative to remember that severe crisis situations necessitate constant, grave, and humane messages and information. Furthermore, by utilizing the power of current updates, live video, and even highlights on social media, people are kept properly informed. This is demonstrated by participant 2 who commented that,

“But if it's crisis, they will retweet what we put out. So we're not sending separate messaging. We try to be unified with it. So, regardless of where they go. They're going to get the same you know the same information, and I think that is what Bills credibility that it, and it's also going to be timely.”

In light of these practices, social media is depicted as a crucial communication tool that when used wisely and properly, social media can significantly improve an institution's ability to respond to crises.

Therefore, the establishment of a strategic communication departments necessitates the setting up of a well-established communication team to ensure the dissemination of authentic information, provide timely updates, respond to queries and concerns with regards to the disaster incident. In other word, this team is mandated with confirming and communicating the facts about the incident.

Formulate a crisis communication plan

According to the interviews, a crisis communication plan or strategy specifies the main themes and channels employed to reach out, convey and share information about an emergency. This is aimed at ensuring that the key facts, information and messages about the emergency are clear, consistent, accurate and empathetic and addresses the main queries and concerns of the people. In this way, the communication team creates awareness on the situation and conveys the progress of the processes, procedures and

practices put in place to efficiently handle and manage the situation in terms of lessening property losses, life losses and casualties. The use of social media as a channel for conveying crisis information is appropriate for the type and severity of the disaster since it is an effective and efficient way of reaching all affected and informing the public about the incident. The need for a communication plan is manifested through the response of participant 1 who stated that,

“So, if my institution used social media. I would talk to the supervisors in charge of strategic communications and we would come up with a plan together some other stakeholders across the university to figure out how do we do this? And if we did use it. I think we'd have to have people that were competence credible in social media and have that background experience, and we'd have to man that we'd have to have a person on it. I do multiple people on that to communicate out the actual message to come.”

Similarly, participant 3 exposed that,

“An example of this is... (Refers to Ahmed as a doctoral student) so on the third Wednesday of every month at 12:20, you get an emergency notification system test. And that's me testing the system on a monthly basis because it's technology-based and the only way I know if one of my multiple methods of communication isn't working is that I test it every month. But in order to test it we might as well use it as an opportunity to teach people a little about emergency management.”

Moreover, participant 6 articulated that,

“So, for us it's just in the moment we're running with it, and if we have to address it, we can if we have contingency plans of putting out notices that this is like, I said earlier, this is misinformation. Do not and take this information to her. Please refer to this media outlet or medium. As to what we would send out the information to.”

Based on these responses, it is true to say that having a crisis communication plan on social media help to act quickly in terms of creating awareness, informing the public

and requesting for emergency respond support or assistance. This also help to eliminate misunderstanding, misrepresentation, speculations, false information and misinformation thereby ensuring that the public trust the channels of communication used to convey information about the crisis. A crisis communication plan also fosters informational or communication transparency which help the institutions to communicate and share true information that is credible and dependable besides guaranteeing that the institutions is responsible for the safety and security of the people affected. Therefore, it's critical that during a disaster, universities and colleges in Kentucky communicates openly about the situation to stop individuals from guessing and spreading rumors about what happened. In light of this, forming a crisis communication plan enables the following to be accomplished in the context of institutions such as university or college.

Rapid delivery of information: It's critical to swiftly communicate accurate information in emergency situations. This is supported by various responses from the interviews. First, participant 1 noted that,

“I can see value in situations where there is information that would benefit the entire public, and if you’re in a major city and you need to communicate something out very quickly to a lot of people to enhance safety. I think at that point in time may be useful in that moment.”

Equally, participant 2 added that, “They put the text. They put the twitter they put, you know, all these different avenues. They get it out as quickly as possible, so it doesn't matter if I’m on Twitter, and it pops into my feed.” Furthermore, participant 3 expressed that,

“Depending on your algorithms social media is using, you might see it quickly, or you might see it a couple of hours from now. So, we don’t consider the use of social media to be a specific, positive notification system. It does put information out there, but not as directly...in real time or near real time as the email, the text and the voice calls do to employees and to students.”

In another response participant 5 said that, “So, you know the pandemic, really. It tested our ability to get out information quickly and accurately to the campus community.” These responses indicate that social media enable the crisis communication team to quickly communicate updates, announcements and safety precautions to the affected people and the public as a whole in a very swift way.

Actively listening and addressing social media informational concerns: with a communication plan on social media participants expressed that it is possible to effectively listen and address concerns being raised by the public concerning the situation of the emergency. This helps in countering fake news and false information besides lowering the level of anxiety, worry and distress among the affected as well as the general public. For instance, participant 4 said that,

“So, something that we've started recently? I just assumed this from March first something that we created social media profiles that are not our true identity, so that we're able to monitor not really so much engage, but to monitor and be able to hear and listen, and see what's being said and whatever there's a series of misinformation that's going around.”

This enables the crisis communication team to keep an eye on chats, assess new problems, and quickly respond to inquiries.

Direct involvement and participation: according to the interview responses, involving the public through communication during an emergency on social media help to gather resourceful information with regard to the emergency situation, inform and create awareness about the situation, attract other emergency responders to offer support and assistance required, etc. for instance, participant 2 stated that,

“You know that are out there some parent groups. And so, we working with parents because we engage a lot of parents’ sail bus with that help us with that monitoring because it was critical. If you see something out there that you don't think is right, or you think needs to be addressed, get that to our attention so you can engage people to help you.”

Similarly, the interviews revealed that social media offers a two-way highly interactive communication channel that allow direct engagement and participation of the public. This makes it possible for the crisis communication team to team to respond to inquiries and deliver precise information quickly. In times of crisis, such open communication creates openness, increases trust, and improves public perception towards the college or university.

Increasing reach and marshalling support: according to interview participants, the most convenient and effective way to convey information that reaches many people is the use of social media platforms. This is shown in the response by participant 3 who said that, “People are just about addicted to their social media feeds. And so if you want to reach them, you want to try and get on that.” This suggests that social media's ability to spread information rapidly and ensure a wider audience is due to its viral nature. This capacity is crucial in a crisis situation for rallying assistance such as soliciting rescue assistance, finding volunteers, pooling resources, and fundraising, among other things. In addition, social media efforts towards supporting the institution and people affected by the crisis can take off quickly by utilizing the strength of group action.

Formulation and implementation of social media policy

Another practice that can help the institution to address the effect of social media spam and fake news concerning disaster management efforts is to have a social media policy which governs what is disseminated on these platforms and how to affective differentiate between true information and false information. For this reason, different participants in this study had varied opinions on the availability of well-established social media policy framework in their respective institutions that was specifically applicable during emergency/disaster times. Therefore, the participants’ responses with regard to availability of a social media policy in their respective institutions were as follow. Participant 1 said that,

“I think we don't have one, because we know we don't use it and all the official communications with social media goes through our strategic communications

department. So, they may have a departmental policy, but that's since it doesn't impact anyone else, because we don't send out social media from a different place. I have not seen it."

Subsequently, participant 2 acknowledged that, "We don't have a policy per say other than we do. I mean, we do have one, but that we official university communications on social media goes through certain channels." Participant 3 admitted that "But the true Crisis Communications Plan is still in draft mode and probably will be finished up in the next week or two. And we're thinking it will be finalized over the summer." Participant 4 agreed that,

"Yeah. So, the rave, alert system that is our go to for all things like that. We use the right alert system. If there is a train, d the relevant, whether it's has met that's involved or not, I know."

Similarly, participant 5 expressed that, "I don't know that we have a written policy about social media. Again. Our communications department, you know, handles all of that." Participant 6 confirmed that, "Yes, we do. In our crisis communication plan. We have one person that's designated to oversee social media information and that person is, is constantly involved in the information a collection and distribution phases of our crisis communication plan." Finally, participant 7 affirmed that, "No, we do not have anything and we do not have anything in place."

For those participants who indicated that they do not have a social media policy in their institution attributed it to the fact that the institution did not use social media as the main communication channel in crisis situations. On the other hand, for those participants who confirmed the existence of a social media policy in the organization revealed that in emergency situation, social media is a two-way communication medium and needed guidelines of monitoring and responding to what other people say about the incident on social media platforms. With this policy, these institutions are able to respond to questions, comments or any feedback from the public and acknowledge their worry and emotions as a result of the incident. As a result, institutions with established social media

policy are able to effectively handle and manage a crisis appropriately, lessen the emergence of fake news, false information and misinterpretation. In this way, such institutions are able to first, build strong relationship with the public through proper handling of concerns, gather feedback, address queries and engage in constructively healthy dialogue concerning the crisis situation. Additionally, it exposes widespread fallacies and misunderstandings, enabling the crisis communication team to dispel them through messaging. By efficiently responding to the questions and concerns posted by social media users, an institution might become more approachable and credible in the eyes of the general public. Second, enable the dissemination of dependable crisis information in real-time. This is when the policy governs the way messages, images, voice and videos are sent out to targeted populations rapidly.

Monitoring and creating awareness on any false information on social media during a crisis

According to the responses, the other solution suggested in the interview process is that the crisis communication teams or emergency responders employ social media surveillance and monitoring to detect any malicious misinformation, false information and fake news that may be posted on social media platforms with regard the disaster incident. This was demonstrated by various excerpts from different participants during the interviewing process. For instance, participant 1 said that,

“There was no way we could effectively manage and respond to social media, although we were monitoring it. Our strategic communications also are monitoring that it is overwhelming due to the small staff. So, I think that's the biggest challenge. And then, once the information is out there that people are talking about is trying to make sure that the correct information is out there. And so. unfortunately. everyone on the social media is not there for the right reasons. They don't want to make want to share correct information. They want to spread this information so they can watch the chaos when things unfold, and have a part in that which is not helpful to any institution in trying to manage disaster. So that's

the challenge I see just off the bat that you have to deal with. So, if you don't have the staffing to deal with it. and someone to actually monitor that and respond in real time would seem unwise to me to make their primary means of communication.”

Equally, participant 2 expressed that,

“Well, you know we have used again monitoring because it can be a 2 way, because you can send your messaging, but you can also get a pulse for what's going on out there, because people can't help themselves, but put it in the words. So, you know, I think our folks that monitor those channels Give us a lot of very good information back.”

Likewise, participant 4 uttered that, “The main thing for us is that we work with Communications and Brand Management. It’s an institutional department. They do all the branding, press releases, social media monitoring.” Similarly, participant 5 articulated that,

“It seems to be filled with a lot of falsehoods. We do monitor that, though, because there are some things that it gets put out there on Nyki that would cover cable safety issues. A lot of it's false. But we do monitor that too. But on all to communicate effectively with our student body.”

Participant 6 voiced that, “I think it's something we have to monitor and react to.”

Finally, participant 7 said that, “Our it department tries to monitor the fishing...” in light of this response, it is indeed evident that monitoring is one of the primary responsibilities of the strategic communication department or the crisis communication teams, and selecting the appropriate crisis communication strategy is even more important during a disaster. Crisis communication teams use social media to interact with the public and listen to their concerns. This is made possible by monitoring activities that identify discussion hotspots where intervention is necessary. In reality, monitoring the rising social media discussion revealing the emerging concerns with regard to a disaster is extremely helpful to for the emergency responder and the communication team to

effectively address the fears. The monitoring practice also help to both avoid the internet-based heated discussion that can lead to hatred and chaos by keeping an eye out for indicators of such instances as well as to better build a strategic crisis plan through analyzing the comments and opinions posted on social media to better comprehend public sentiment. Monitoring can thus assist the crisis communication team in better understanding how the general public is feeling during a crisis by observing how they are responding on social media. This is accomplished through checking what is being posted about the institution, its emergency response team and the crisis communication plan utilized to deliver information. This makes mass social media surveillance possible. Additionally, emergency management teams and the crisis communication team employ the monitoring process to detect fake news, false information, rumors or misinformation on social media in order to prevent the dissemination of misleading information about the crisis. With the use of this monitoring procedure, the emergency communication team and crisis responders can stop fake news from harming the institution's reputation. In fact, maintaining a positive online reputation is the monitoring's ultimate goal with participants acknowledging that institutions adopting social media have increased their visibility and opened themselves up to criticism. For example, participant 2 revealed that, "People sometimes speculate about something. or they'll make a comment." In addition, participant 4 explained that,

"It is something that can take day, just because there's so big, they're out of state some cases around the country. So, the prosecution and the ability to determine the origins of that post. is rather hard to do. But what this is it, you know there's multiple comments being made on these posts like you know. Why, Aren't, they do anything. You know, this organization is horrible, or why can't they help me? And a lot of the things that they were saying? Just weren't true at all. It's somebody who took a little piece of information. and you know, made up in their mind they kind of filled in all the blanks with whatever they wanted to."

In line with this, the response reveal that undeniably, the monitoring process is essential during the entire crisis; before to look for new problems, during to manage speculations or false information and to contain people's emotional responses to the catastrophe as well as after to look for statements that could harm the reputation of the institution.

The magnitude of the event and the number of institution employees that manage the social media channels determine what happens in the operational mode. One person is in charge of the social media platforms during a small-scale event in the institution since it is possible to control the traffic and react to new feeds, questions and opinions. It is challenging to manage a significant event like disaster management on social media because different people have different perspectives, attitudes, perceptions, and motivations, which can lead to the spread of misleading information. This information dissemination on social media leads to misinformation and miscommunication, which can cause confusion and uncertainty. The organization has a control center integrated within its main office, where it manages the coordination of responses to more serious emergencies' events like fires, strikes, etc.

To aid in the coordination of the emergency response and other emergency support institutions during extreme occurrences, the institution activates its strategic communication control center. A crisis communication unit in most institutions includes a department for social media that is not used to share information about disaster or emergency events at the institution but it is used for intelligence collection. This department is in charge of informing the public and the media about events that are taking place at the institution. High-skilled human resources are required to manage the institution's social media communication channels. However, the responder stated that these resources are not available for these institutions' traditional emergency management operations. Due to the small number of officers who are experienced in using social media platforms to communicate with the public and the media, there is only a small surge capacity available when using these platforms during disaster management.

The institutions are attempting to create and evaluate methods to develop volunteer supported capacities in order to enhance the capacity for large-scale events through social media platforms. The institutions aim to develop a pool of volunteers who either travel to the headquarters to assist with the social media activities or run the social media channels from their base of operations. This aims to help control and manage these platforms during disaster or emergency occurrence within the institution. The institutions are dedicated to effectively handling spam and fake news through appropriate monitoring and controlling of the traffic on social media and ensuring that the right information is conveyed to the public.

Setting up alert and alarm system

Besides providing a means to comprehend the public emotions and to eliminate any online based forms of chaos, social media monitoring also helps to establish early warnings and alerts that could to more catastrophic events such as hatred speech and reputation destruction. Based on this, the participants acknowledged the importance of establishing an alert and warning system that enable the detection and prevention of crisis events that could damage an institution's reputation. For example, participant 4 expressed that,

“But what this is it, you know there's multiple comments being made on these posts like you know. Why, Aren't, they do anything. You know, this organization is horrible, or why can't they help me? And a lot of the things that they were saying? Just weren't true at all. It's somebody who took a little piece of information. and you know, made up in their mind they kind of filled in all the blanks with whatever they wanted to.”

This excerpt present how some social media posts and comments can incite the public create a highly heated debate that end up in chaos mostly on social media. However, by configuring alerts and notifications, the crisis communication team may keep on top of the pertinent debates, trends, and problems that influence the institution's attempts to efficiently manage the disaster. But not every alert or notification is the

same. To guarantee the receipt of timely, reliable, and usable information that can assist the emergency response team in preventing or lessening a crisis, it is necessary to adhere to specific best practices. For example, participants 4 acknowledged the use of an alert system by stating that,

“But in times of crises we don't necessarily have the means to facilitate a social media platform, push the rave alert system. In the times of crisis, we have pre-filled text messages. and it's a simple click of a button. There're a few blank portions within that that we can tailor it to fill out the specifics like a certain location, to avoid, or a certain location where the natural disaster or the emergency is taking place at. but by and large text message is something that is most effective for us. And I think one of the reasons one of the thought processes behind. That is a text message comes through as an automatic push not notification to your phone. Not that everybody has notifications turned on for all their social media apps and the platforms that they use. So, text message for us in terms of crisis is the way to go for us.”

The participant recognized that social media was a very important and influential adjunctive approach to communication alerts that helped inform the entire public what is happening within the institution. However, what is communicated needs to be monitored and controlled to ensure that only authentic information is disseminated in the most effective way with regular follow-up updates concerning the disaster or emergency incident occurring within the university. This is shown in the following excerpt:

“Well, I think you have to, because you know, you can be out there. But social media is a is a very important adjunctive method of communications. As I said before. knowing what fate uses out there being able to pull that data off: of the social media sources helps you prepare to counter it if it's, if it's worth even comment. But it also gives you that regular feedback on what people, not the real world or thinking. Am I communicating effectively? So, I think social media is

critical. and it's got to be used dioeciously on both the intake and output. But I do think it's very important.”

Social media is employed for emergency notifications and timely warning given that it is considered the best way to give information and warnings as well as guidelines and directions to the institution’s community. Thus, to ensure credibility of the information disseminated, the Communications and Brand Management team take charge of overseeing the feeds and traffic of comments, questions and any other information that might have a negative influence or perception towards the institution’s efforts in disaster management. This based on the following response from participant 3,

“It’s one of the platforms we use for emergency notifications and timely warnings. Both of which, we view as...it’s the way we provide public information and warning. It’s the way we give information, and we give directions to the community. So, we use it mostly for that...that’s the intended reason. And then we do have our Communications and Brand Management team, and that’s a separate office from us. We work with them, and they keep an eye on social media to see if here are questions coming in, or if they’re spotting information that they think might be problematic to us, in which case, they would bring it to us and let us know... “

In addition, participant 5 expressed that the institution has designed personnel who regularly monitor what is being said on social media platforms especially in case of an emergence at the college. This helps greatly to deal with false information about the emergency. The emailing system have good spam filters to ensure no fake emails are distributed to the community. The institutions also conduct regular training to sensitize and create awareness about cyber-attacks and miscommunication. He stated that:

“Folks: you know we have. We have good spam filters on our on our email system, and we do get training. We take an annual training every year about spam and fishing and all kinds of attacks on our computer system.”

Training and awareness creation on about spam, fishing and all kinds of attacks

Equipping the crisis communication teams and responder with the knowledge to understand all kinds of fake news, disinformation is critical to addressing the social media informational issues. For instance, Participant 3 noted that within the institution, social media is used for teaching purposes to enlighten the community about how to be safe in case of a disaster or providing emergency notifications and timely warnings and guiding people on what they should do to remain safe. Therefore, since social media in the university is conducted in a controlled and monitored manner, it has eliminated most of the fake news and spams from penetrating into legitimate communication about the emergency incident. This is shown through the following:

“So, we do that on a regular basis. We do also use social media though to help teach people what they can do to be safe. So, we use it as a teaching tool. So, we use it to provide not only information but warning to help prime the community (give them some information) So, we do use it on a regular basis and I think it is helpful to put information in people’s hands because it’s one more place that, if somebody doesn’t know what to do to protect themselves, it’s not that we haven’t tried to provide the information in a lot of different ways...a lot of different avenues.”

In addition, participant 3 expressed that the most viable solutions that can be implemented to minimize the impact of spam fake news in disaster management efforts, Participant 3 stated that the best solution would be to sensitize the public to be careful and critical thinkers about what they see or encounter on social media. In other words, the individual has the responsibility to internalize the credibility of the information encountered on social media before commenting or posting it. This is evidenced through the following excerpts:

“My wish is that all of my fellow citizens would carefully think...critically think...with everything they see, with everything they’re scrolling through before they choose to share a post Unfortunately, I think the reality is gossip flies,

whereas truth lags behind. That's the reality of it but I really wish people would be a little wiser, and maybe in time, as times change, people would get better at figuring out what's worth sharing and what doesn't seem right so I'm not going to share that.

I agree, it really does come down to responsibility. So, I wish people would be more responsible with what they do."

Participant 6 emphasized that the best solution to minimize the effect of fake news in disaster management is the procedure to monitor and react to false statements and feeds being put on social media. The responder stressed that the institution uses the notice communication practice about false information in case of disaster management. This is manifested in his response in which he said that,

"Okay? Well, they really don't address that it's. you know we haven't put anything out to say. Don't. Listen to this. So, listen to that. I wish I wish they would. But they it's not addressed as you're yet. I mean, in terms of that. It's I think it's kind of hard, just because when things are happening. They're happening like so quickly and so fast, and because their number One goal is to only put out, you know, verifiable information. It's hard to. you know, be in the middle of something. and then verifying this information, putting that out, and then, you know, going back to you know Facebook Page."

In general, this evaluation shows that social media communication is increasing acknowledge, accepted and implemented in crisis situation due to its rapid dissemination to a wider target population in a cost-effective way with geographical restrictions. With social media friends, families, peers, colleagues, workmates, etc. can notify each other about an incident that either directly affect them or indirectly affect them. In other words, social media communication use in crisis situation is here to stay and proper monitoring and management is necessary to avoid misinformation and fakes news that can jeopardize the efforts of managing the emergency situation. In addition to this,

institutions of higher learning in Kentucky can employ social media platforms for crowdsourcing in order to obtain fresh viewpoints and crisis management strategies, presenting information and suggestions from online users. The use of social media platforms, monitoring and engaging the public and other emergency responders can assist institutions in improving their crisis management procedures and practices. Because of this, crisis management teams and responders should have systems in place to include social media into their emergency plans so they can take advantage of these technologies during all phases of crisis management.

For example, social media platforms can be used from the pre-crisis stage onward to disseminate awareness creation content and messages that will help the public be informed about the crisis situation. However, the popularity of social media has a significant impact on how quickly knowledge spreads. Social media could be utilized to discover rising concerns and worries as well as spot crisis early warning signs during the pre-crisis phase. In fact, by regularly and consistently monitoring social media platforms with the use of analytical tools, organizations may follow online issues and quickly spot impending catastrophes. The crisis communication and responder teams should review the growing issues to determine which one should be addressed and how to stop it from emerging. Social media platforms can also be useful in this situation as well for identifying the most pressing concerns by analyzing posts and online opinions. Social media platforms could be utilized for crisis preparedness and staff training to simulate real-world crises and gauge team effectiveness as well as the reaction of the general public and other stakeholders. This shows the need for preparation to be essential for the emergency responders if they are to be ready to respond when a crisis first arises and is likely to get worse.

Moreover, the findings have shown that crisis communication teams and emergency responder are beginning to use social media in the crisis response to streamline problem-solving and decision-making processes by collecting crucial data from online sources and combining it to provide a full picture of the crisis scenario. Additionally,

social media platforms are utilized to track the crisis' online development as well as the perceptions of the general public, those directly affected, and other stakeholders. Therefore, it is crucial that crisis management teams incorporate social media engagement and public relations, as these two areas must collaborate in order to select the best interaction approach, which must be the same for both conventional and online communication channels. In the aftermath of a crisis, it's critical to assess how the institution's emergency response team and communicators handled the institution's online reputation, by analyzing how the public reacted to the institution's response and, in particular, by soliciting feedback from participants on how the crisis was handled. In order to begin the process of learning, the crisis management team should assess the extent to which social media helped to mitigate the crisis' consequences. Based on the crisis management plan's standard operating procedures, the use of social media platforms may provide a lesson to be incorporated into the crisis strategy for future management of disasters. Social media does definitely appear to be a crucial instrument for maintaining communication with the general public and assuring them that the institution's operations are back to normal. In the context of this study, social media platforms have established themselves as essential instruments for crisis management. But they should not be viewed as a magic cure given that there are still issues and difficulties with using social media for crisis communication and crisis management.

Based on participants' responses, it is evident that social media is unquestionably being used more frequently in strategic communication practices. For instance, universities and colleges are encouraged to step up their means of communication to educate, enlighten and inform students and staff when reporting disaster or safety and security scenarios, such as campus crises or severe weather notifications. To put it another way, a university in crisis may profit from using social media to quickly spread crucial crisis information to essential audiences. The evidence that follows thus discusses the role of social media in crisis response, explains narrative discourse as the content of online crisis messages, and speculates on the impact of narrative discourse included in university social media

announcements on how the public perceives a university in crisis and how they rate organizational emergency management.

Growing evidence from the interviews on disaster communication contends that the people rely on social media for fast information and real-time updates during catastrophes and emergencies. According to some participants' responses, social media sites have a greater potential for swiftly communicating specific information. That is, fast and efficient communication is essential for emergency communications, and social media is a feasible choice for this type of disaster communication between institutions, organizations and people. One of the main outlets for the public during a disaster is typically emergency information coming from the institution. Unfortunately, institutions cannot ensure that its official statement will be reported on in disaster news coverage. For instance, respondents revealed that social media is more inclined to report on a disaster using non-official sources or user-generated content than institutions' official declarations, particularly during the initial stages of the disaster. Additionally, it is powerless to regulate disaster information generated by private citizens who express their opinions to wider audiences. This is illustrated by Participant 1 who stated that;

“There was no way we could effectively manage and respond to social media, although we were monitoring it. Our strategic communications also are monitoring that it is overwhelming due to the small staff. So, I think that's the biggest challenge. “

Interview information from the institutions' members who are using or considering how to use social media services is therefore the most important data in this study. Before information was gathered through interviews at various institutions, it was known that crisis management teams used social media, but it was unknown how this technology was truly incorporated into the organizational structure. The only way to determine how social media was utilized in emergency management was to observe the channels on social media and use the data that was available from disaster management

teams, such as policy and plan documents. The social media accounts of the institutions involved in the study provided proof that these platforms are utilized for two-way contact and, in certain cases, as an intelligence tool for gathering information immediately from an event.

The interviewing process helped learn more about how social media is generally used during disaster management at the higher education institutions located in Kentucky, to comprehend the position the informant holds within the organization, and to comprehend the interviewee's involvement with social media and how they are using social media services to perform disaster/emergency management tasks that are associated with the role of disaster/emergency teams. The respondents also determined the types of social media services used by the institution and whether there is a variation in usage between the operational phase and the non-operational phase. The respondents also revealed whether there was adequate workforce utilizing, handling and managing the social media platforms in accordance with how the institutions would be working during the disaster/emergency management. The respondents also discussed how they understood the purpose of using social media and whether such a purpose was institutionalized in their approach to disaster/emergency management practices within the institution.

Moreover, the respondents spoke about how social media is used to notify or inform the audience (students, employees and parents) in the event of a tragedy or emergency. This made it easier to comprehend how information is shared with the general population using social media. This included a greater understanding of the authenticity of information's distribution source, which the social media was providing. This contributed to illuminating how social media interacts with institutional information systems like dispatching and warning systems. When disseminating information via social media, it is also crucial to consider the objective of the institution in doing so. The respondents admitted that, depending on different goals, institutions use multiple social media channels in diverse ways. However, they did not state whether there was a single,

overarching strategy for handling social media inside the institution. Understanding the audience's familiarity and how the organizations engage with various constituencies, including the institution community, general public and the media, is important. Similarly, through the interview process, participants exposed how the institution communicates with its audience on social media; if it uses the platform as a one-way channel for communication or as a two-way platform that involves the audience in the conversation. Overall, the responses led to a better comprehension of the institution's perceived advantages and disadvantages in using social media, as well as the use of social media in emergency management in general.

The respondents' feedback also uncovered how social media is used to collect data from social media channels and use this data to improve situational awareness about disaster or emergency occurrences within the institution as well as to the general public (parents and families). This is illustrated by the response from Participant 1 who said,

“I can see value in situations where there is information that would benefit the entire public, and if You're in a major city, and you need to communicate something out very quickly to a lot of people to enhance safety.”

This made it possible to comprehend how information is gathered and whether institutions use social media for intelligence objectives. The interview also made it easier to understand how institutions verifies and makes use of information it gathers or disseminates via social media

4.6 Discussion Conclusion

As a result of the process of data coding and theme development as well as the participants feedback discussed above, the researcher was able to establish the following as the main themes emerging from both processes. The themes include: understanding of use of social media communication in disaster management; the incidence of spam and false information on social media during disaster management; issues in using social media for communication during disaster management and the possible remedies to

issues of using social media communication during disaster management. The themes are comprehensively discussed in the conclusion section that follows.

CHAPTER 5: CONCLUSION AND IMPLICATION

5.1 Introduction

This is the final chapter of the study, which helps to verify if the study has accomplished its aim and goals by effectively addressing its research objectives. As a result, this chapter aims to address the study's aim and objectives by effectively addressing the research question based on the data collected through the seven interviews and analyzed thematically to develop themes that help address the research questions and effectively meet the study objectives. Therefore, the chapter delves into the discussion of the developed themes in an effort to accomplish the study aims.

5.2 Theme 1: Understanding of use of social media communication in disaster management

According to the respondents, it is the duty of safety and security teams and emergency or disaster management teams to safeguard people, property, and the environment within institutions. As a result, resolutions are taken in accordance with the information that emergency managers get from the incident location and disseminated to the public. In order to have situational awareness during disasters so that decisions can be made, first responders and emergency managers must communicate effectively. According to the majority of the responders, institutions of higher learning in Kentucky have defined official communication channels of communication, which are mainly emailing and text messaging using the rave notification systems. However, due to the fact that the majority of the users prefer using social media platforms, these institutions have adopted and implemented social media as alternative ways to convey information to the students, faculty, parents and the general public. In the context of emergency or disaster management, social media is widely employed by institutions of higher learning in Kentucky as a supplementary communication channel. This is because using social media, people can create, share, and exchange information in real time using computer-mediated conversations. Social media is made up of numerous applications but the most

common one in the context of disaster or emergency management according to the feedback from the responses are Facebook, Twitter and Instagram. The applicability of these three social media platforms is attributed to their popularity, ease of use and convenience among people of diverse demographic characteristics even though every application offers special features and functionalities.

In the context of this study, the discussion of the responders has revealed that emergency or disaster management teams rely on social media as a crucial tool during emergencies. For example, Participant 5 noted that social media communication enabled the emergency response teams such as police and bomb experts to move swiftly to the location only to find that the incident was not happening where the information on social media was indicating. This shows that social media enables users to learn about family members, notify others that they are safe, ask for assistance from first responders, and exchange information about the event during an emergency or disaster. Similarly, the feedback from interviews revealed that text messaging, emailing, and emergency call centers frequently are unable to handle the high call numbers associated with disasters. As a result, the institutions look for alternative channels to ask for assistance, like Facebook or Twitter as well as provide timely updates on the state of the emergency or disaster. For example, Participant 6 reported that the institution used social media during the tornado to coordinate rescue efforts for persons stranded by flooding. A further illustration is the bomb threat, which Participant 2 stated that social media was crucial in locating and monitoring the suspects. According to the interviews, social media updates would not be as effective in coordinating the effects of catastrophe preparedness or reaction. This is because it would stir misinformation and false news in the process of emergency planning and preparedness. Social media posts, however, would be more successful in disasters caused by riots or other criminal activity within the institution. Facebook, Twitter and Instagram gave the institution an alternative way to express its needs, request for support in the context of a disaster. In the past, there was no need for

emergency management to use social media, but as a result of the public's reliance on them during disasters, they have become more important.

The continued popularity of social media in crisis scenarios in institutions has led the emergency management teams within such institutions to utilize it as a channel for communicating with the general population. The use of social media by the general population in prior disasters compelled emergency management professionals within institutions to assess the value of social media inside their operations. The feedback from the responders shows that emergency management in institutions are increasingly using social media into their disaster operations as a supplement approach to providing information about the situation at hand. However, the extent to which the emergency management agency uses a resource is determined by the jurisdiction's competences, staffing and policy. Emergency response teams in institutions have had trouble implementing social media, which has prevented them from fully utilizing its advantages. Thus, despite the acceptance, popularity, and continued use of social media by the general public, emergency teams in institutions in Kentucky have been slow to adopt it into their operations because they are hesitant to do so unless there is a benefit for them to do so.

From the evidence presented through the interviews, despite the fact that people have continued to use social media in crisis circumstances, the emergency management team in institutions of higher education is only slowly embracing it. People anticipate emergency management teams in institutions to have an active social media presence because social media usage by the general public continues throughout disasters. According to the interviews, the use of social media by emergency management has various advantages. One of the main benefits of social media in disaster management is its ability to reach out to a large population through the use of social media. This ensures that all the institution community and public as a whole are well informed of the emergency occurrence and its current state. Another benefit of social media communication is in situations where the response team reports lifesaving issues arising

such as required blood donation. With social media this word spreads rapidly to the general public who respond by being willing to provide blood donation to the needy survivors after a disaster. The life safety of the students, the institution community and the general public depend on timely and crucial disaster-specific information, such as current response operations emergency managers and teams in institutions of higher learning in Kentucky have the possibility to quickly disseminate important information thanks to social media. However, acquiring and sustaining situational awareness is a value that social media has yet to fully realize for emergency management.

Moreover, the feedback from the responders revealed that social media can be employed as an intelligence collection tool during an emergency. In other words, emergency managers and teams have access to social media platforms that enable them to look for and gather information from members of the institution or public, in particular from those whose lives are immediately affected by a disaster. Assessing the crisis scenario and the demands of the institution's community and public is made easier with the use of real-time information while the occurrence is still in progress. The feedback from the respondents showed that it was important to comprehend how social media use, when combined with other well-established planning procedures, may be helpful in disaster response. Social media information helped with victim evaluation and informed the public and emergency personnel of what had occurred. Social media could also alert first responders and emergency teams on newly identified hazards and disaster-related condition changes. The effectiveness of the emergency response would change if situational awareness were used. While enhanced situational awareness improves not only the quality of the information but also its analysis and sharing with those in positions of authority to make prompt decisions, which are crucial for leadership of institutions to maintain the community's health and safety during a disaster. Thus, a critical component of a successful reaction to a catastrophic disaster is the use of situational awareness for decision-making.

The study findings reveal that a successful crisis response benefits not just the first responders but also the institution's community and the public as a whole when decision-makers employ situational awareness data. Social media made content previously unavailable to emergency management, including geographic data, images and videos, descriptions of the events, and calls for assistance. Additionally, emergency management teams now have another tool at their disposal for verifying disaster-specific information thanks to crowdsourcing and information and communication technologies, including social media. The capacity to use the information to make forecasts about resources, reaction plans, and disaster-related cascading effects is another advantage of using social media for decision-making. Monitoring social media could provide emergency management more information to set new goals and objectives or alter current ones. Emergency management could receive information from social media intelligence collection that expedites the disaster's swift conclusion. In this context, social media is about more than just being aware of recent events and their effects on the populace. Instead, the focus is on using the information accessible on social media to aid in making decisions to coordinate a successful disaster response. Social media use facilitated the sense-making process, which is crucial for emergency management, first responders, and the institution as a whole. The interviewees strongly disagree with the idea of integrating social media into their present situational awareness tactics, despite recent research that showed how effective social media is for situational awareness during catastrophes.

5.3 Theme 2: The incidence of spam and false information on social media during disaster management

According to the study findings, teams in charge of emergency management have strong opinions and feelings about social media and its use in current situational awareness techniques. It is because of these thoughts and viewpoints that the emergency management teams in institutions have been sluggish to adopt social media as a communication tool. For instance, Participant 1 said that, "I think there is a major issue with spam information coming in on the platform that you're trying to communicate on."

According to the interview responses, emergency teams believe that there is little to no possibility to dispel online misinformation when there is a tragedy. Because of this, emergency management teams do not trust information shared on social media by users other than authorized departments within the institution. Fake news can be found on social media, but it's often unintentional. Fake news and inaccurate information on social media are frequently a result of the institution's incapacity to satisfy the public's need for knowledge. Social media misinformation can make a crisis's effects on the general population and disaster response worse. When there is a tragedy and little information is accessible, rumors spread quickly because of the inaccurate information that is spread. However, emergency management teams in institutions still view social media as a vital tool for one-way communication during emergencies despite their worries about rumors on the platform. For example, Participant 1 stated that,

“I can see value in situations where there is information that would benefit the entire public, and if you're in a major city and you need to communicate something out very quickly to a lot of people to enhance safety. I think at that point in time may be useful in that moment.”

According to the findings, how to stop the transmission of misleading information is one of the main problems that institutions' disaster, safety and security departments are currently facing, especially as public pressure on these departments escalates. This is in the light of the fact that all participants noted that in the context of emergencies and disasters, it is commended to provide the best, accurate and reliable information and the challenge of fake news that social media possess make them extremely problematic. Social media can spread information more quickly and to a larger audience. However, it also implies that there is a greater likelihood that rumors, false information, and misinformation will circulate and become viral. The declining public trust in social media is one reason that might make it more difficult for first responders to prevent and reduce the spread of rumors, inaccurate information, and misinformation. Through the interview responses, the study identified four fundamental factors that most frequently lead to

misinformation, rumors, and misleading information on social media. The four causes included: inaccurate information i.e., intentional vs. accidental; inadequate information; deliberate misinformation and obsolete information. In the context of disaster management, Participants 1, 3, 5 and 7 revealed that inaccurate information that is intentional or accidental occurs in situations where it is hard to verify the reality of the emergency. Additionally, those who want to spread uncertainty may spread false facts and misinformation through social media. For example, participant 3 said that, "I think the spam and the fake news interferes with the quality of our disaster management efforts." Inaccurate information can also be harmful, as evidenced by the online conspiracy theorists that harassed Las Vegas mass shooting survivors in 2017. Secondly, the findings showed that inadequate information promotes rumors to spread quickly especially when details about the circumstances around an emergency occurrence are delayed, to be communicated. The respondents added that inadequate information can be the result of a number of factors, including not having clearance to release the data, lacking a designated official for that information, or believing that information must be complete to release and thus purposefully withholding it. Confusion persists when official channels do not offer information updates in the appropriate social media, do not release information quickly enough, or when the public is unaware of or does not believe the official source for that information. Thirdly, the interviewees expressed that when unscrupulous people attempt to profit off of a certain event or situation, purposeful disinformation happens. The two most common types of deliberate misinformation are malevolent and politically motivated or revenue generating and financially motivated. Misinformation that generates revenue aims to divert social media users' attention away from a particularly significant event and toward something else. The user may be taken to a sales pitch or other ad after being tricked into visiting a website that spammers or phishers have imitated. Political motivation is a common feature of malicious disinformation, which makes it increasingly harder to spot and combat.

According to all interviewees (participants 1-7) comments, the quantity, time, and placement of this particular type of social media posts point to a malicious intent to hurt and obstruct the normal flow of accurate information during a particular occurrence or incident. For example, Participant 3 noted that, "Again, as I've said, it's an additional communications channel. It's an additional alert method. Because that is the tricky thing (difficult)." Lastly, the talk of obsolete information stating that the social media climate of today places a strong emphasis on breaking news first. Both new and seasoned internet users alike will search the web when crisis rumors start to circulate, frequently publishing screenshots of the initial results from their search without first checking the validity or timeliness of the information they are sharing. This occurs most frequently when people quickly share photos of past disasters as proof of a disaster, which is frequently taken as true because the saying pictures or it didn't happen has infiltrated social media users' thoughts. Additionally, reposting old articles that describe an incident from the past can cause them to rise again, and the publication dates are automatically updated. This is revealed in the comments of participant 3 who said that,

"People are just about addicted to their social media feeds. And so if you want to reach them, you want to try and get on that. And that in itself can be very tricky because the landscape (overall picture) of social media changes...new stuff becomes popular, old stuff, not so much."

According to the participants' comments, the study generally found that rumors, deception, and inaccurate information are frequently disseminated on social media before, during, and after catastrophes and calamities. For instance, participant 4 expressed that,

"It absolutely can. I think I would be naive if I were to say no. it's. It's hard to properly manage and maintain the integrity of either an investigation that's taken place, or the management of a national disaster."

Based on this, first responders in the institutions can utilize a variety of tactics and strategies to counteract inaccurate information, even though it cannot be totally removed. One of the strategies employed is employing a social media monitoring approach to track what is going on social media and responding to any potential misleading information. The other strategy is employing the notice communication approach which aims to correct the false information disseminated on social media concerning the disaster management situation in the institution. Effective management of fake news is important in the context of institutions because such misinformation may lead to information damages that could have detrimental short- or long-term effects.

5.4 Theme 3: Issues in using social media for communication during disaster management

The responders expressed that there are several problems that prohibited emergency managers and teams from utilizing social media right away. The two most important ones are staffing constraints and a lack of social media knowledge, which raises credibility and information overload difficulties. For instance, participant 2 stated that,

“One of the downfalls of it to really 2 things. One is, if the limit to what you can communicate. But I think it's also the vulnerability of misinformation that you said at the beginning of people being able to insert themselves into that price. And just because you know, their third cousins, a police officer in some state, they think they know law enforcement. So they're going to opine on everything. So those are all those are issues you got to work on.”

The participants argued that emergency management teams believed that generational differences contributed to the lack of knowledge and experience with social media. This is because most emergency managers were in the latter stages of their careers. The respondents expressed that when there is a lack of knowledge regarding social media, there is a chance of addressing the catastrophe incorrectly or, worse, damaging the institution's reputation and image. Emergency management teams are

concerned about the issue of credibility since incomplete or incorrect information may cause more harm than good. Participant 5 revealed that, “I don't know if I would try to utilize social media more in emergency management than I have in the past. You know I do have concerns about it, and I don't use it to verify anything, either.” This explains why a majority of the responders did not recommend the use of social media as a necessary tool for communication during disaster management. In the context of this study, it is true to say that social media is utilized to complement the official communication channel that most institutions use (i.e., emailing and text messaging notifications) because of worries about the veracity of social media content.

The researcher further uncovered that a majority of the interviewee recommend that formal standards and procedures are required when it comes to the usage of social media since informal policies and practices can lead to a lack of trust that can worsen the effects of disasters. In line with this, the researcher uncovered that most institutions had an established channel of communication during disaster management that was officially defined. For instance, Participant 1 stated that, “we work with strategic communications. So if we had a disaster. I would be communicating with them and I’m talking with them about strategies, and what information we actually want to go out.” According to the responses, most institutions employ the emailing and text messaging approach implemented with the rave system of communication notifications. The evidence from the responses revealed that there are certain institutions where the communication policy forbids employees from accessing social media, while in others it specifies when employees can access social media and what is appropriate content to share with the public. For instance participant 5 said that, “Of course, we have our own personal university as its own notification system that goes through the email and text messaging systems that we have for our students’ faculty and staff.” The majority of the policies passed by jurisdictions allow emergency management teams in institutions to gather information from social media for situational awareness, particularly during emergencies. When responding to a large-scale disaster event, not all institutions have the personnel

or the time to examine the data, which are necessary for the ability to confirm the information on social media. The information accessible on social media during a terrible tragedy would be rather substantial. The amount of data would be too much to handle when time is of the importance, even if the institution had sufficient employees to manage social media. But because the public is so adamant about using social media, there is now a demand that emergency response teams in organizations do the same.

5.5 Theme 4: Possible remedies to issues of using social media during disaster management

Based on the interviews, the use of social media platforms for communication in disaster management has grown in popularity. For emergency management specialists to track and evaluate a disaster's effects, social media platforms have evolved into crucial instruments. For instance, participant 6 stated that,

“We have a group that puts out information and that you know our communication marketing group puts it out, and that's as far as, and the police put information out, and that's a little delayed on at times, and that's all we don't have anything in place.”

The respondents expressed that social media can help responders and other stakeholders communicate and coordinate, as well as give real-time information, feedback, and situational awareness from affected populations. The findings uncovered that people frequently use social media platforms like Facebook and Twitter on a daily basis, especially during disasters. As a result, participant 3 agreed that, “Yes. Yeah. And we all do. I mean it's part of life as we know it right now. It is to connect.” The importance of actively engaging stakeholders and the public on social media platforms must be acknowledged by emergency management departments in institutions of higher learning especially during disaster management. This is due to the fact that pinpointing the best methods for utilizing social media during an emergency is essential to effectively addressing the fundamental problems with using social media as a

communication tool during disaster management. Similar to this, using social media responsibly and effectively during a crisis necessitates adhering to a few best practices to guarantee the veracity, legitimacy, and applicability of the information and messages.

Through the interviews, there are two main categories that may be used to categorize how social media is used during emergencies and disasters on a corporate level. First, by way of incoming messages, wall posts, and feeds, social media can be used rather passively to disseminate information and gather user response. A second strategy entails using social media as a tool for emergency management in a systematic way. In the context of this study, systematic use may involve: employing the social media to communicate in emergencies and send out alerts; obtaining victim requests for help through social media; keeping track of user behavior and postings to develop situational awareness as well as creating damage estimates, among other things, from uploaded photographs. Thus, utilizing social media may present chances to increase an institution's capacity for resilience. Social media can be used by emergency management teams to inform the public at large or a particular group and to support victims emotionally. For example, participant 6 stated that,

“It would be prioritization getting the message out in the sense of Oh, this takes priority over other instances of information. I don't know an exact example, but we would understand that we would communicate in several ways through social media, through our mercy networks and emails. And even we'll put up a ribbon page on our header of our website: We would say information can be found at this source.”

First, sharing information is crucial for responding to emergency circumstances. Providing information to the general public, as well as specific groups or people, is referred to as information supply. Accurate information is necessary for the institution's community to both properly prepare for emergencies and recover from catastrophic disasters. Participant 6 expressed that, “So, yeah. But as far as you know an official

attempt of designated people going through and dispelling information, there's we don't have that right now. So again, manpower.”

Provision of immediate information is crucial in emergency situations since judgments are made when brand-new circumstances arise. Using social media in disaster risk management can do more than just increase public awareness of risk and crises and improve preparedness. From the study, it is evident that in the context of disaster and crisis management, the various social media platforms complement the official communication channels that institutions employ. The use of social networking sites can improve communication between volunteers and emergency services. By providing photographs or videos of how a crisis is developing in real time, the content sharing media can aid in conducting situational awareness. Communication between various stakeholders in crisis management situations can be facilitated by collaborative knowledge sharing mediums. The social media platforms finally synthesize various social media content to aid emergency management and volunteers in doing their duties more effectively.

Secondly, the use of social media in disaster risk management can be used for more than only enhancing readiness and increasing public awareness of emergencies and crises. As a tool for observation, watching, situation awareness, and early warning systems using data mining and crowdsourcing techniques to support media monitoring for correct information dissemination and proper response. For instance, participant 4 said that, “I don't think it would be the primary source of communication for many of us. I think a lot of us are a little bit old, old fashioned still, and maybe not with the times we use.”

Thirdly, social media can be utilized as a tool by disseminating knowledge, giving directions, and issuing instant alerts and warnings. According to the findings, social media is an additional route for sending alerts and warnings from emergency services within the institution where the disaster has occurred. This is true for weather-related catastrophes

like storms or tornadoes. Social media platforms like blogs can be utilized to give guidance by posting details like emergency phone numbers, the locations of institutions in need of blood donations, evacuation routes, etc. participant 2 expressed that,

“But now social media is such a powerful tool that's a tool that that most people are using, and I think that so we have to. We have to be consistent, and what we send, and I think, but I think we use it again to reinforce those things.”

Fourthly, after a crisis has occurred as much as during it, social media can be utilized to mobilize response teams. Additionally, social media can be used to express a desire to assist in an emergency. Additionally, it can enhance the disaster response by enlisting the response unit to disseminate information from the emergency site. As such, participant 4 said that,

“Well, obviously, we would like to have included on any social media post that we're covering in type of event. We would like to include as much detail and content as possible, as far as what the situation is, what we expect the situation to look like in the near future, and what type of actions and precautions that whoever follows us needs to take or make or be prepared to make.”

Fifth, social media can be utilized to locate casualties and survivors. In addition to using mobile devices to record accidents accurately and make help requests, social media may be used to check on the safety of family members and acquaintances. Utilizing social media for crisis communication can assist in managing reputational repercussions, balancing erroneous news coverage, and countering rumors. Participant 3 expressed that,

“We will feed them the true, relevant, actionable information. They are always on the watch for what could get people hurt...what could hurt the reputation of the institution, so recognize that we have to walk hand-in-hand. We're here to help them get out the message on how people need to be safe...what they need to do. They're here to help us, to let us know when rumors are getting out of control.

We know it's a symbiotic relationship so we really depend on Communications and Brand Management to watchdog that social media and look for potential problems and that "We better deal with this."

Social media can be used to raise money and support by promoting donations in the event of catastrophic disasters or by easing the distribution of aid. People who want to provide emergency assistance, such as a safe place for catastrophe victims to stay, frequently do not know who to contact. However, through social media, the institution can direct such people on how to go about it.

After a catastrophe, social media can help with the processes of learning from it and serve as important resources for crisis researchers. For social scientists to analyze in order to gain a deeper understanding of risks and crises, social media content during a disaster or emergency can be a wealth of information. Building trust with social media is a valuable tactic during disaster management. Social media usage may increase accountability and public trust in institutions' ability to handle and manage emergencies. This is attributed to their ability to eliminate misinformation on social media. For example, participant 4 claimed that, "We have marketing and senior managers there that can help us to be more effective communicators. But if you don't have that, and you lose that public trust. It really makes your job a whole lot harder."

Social media can be utilized in two different ways to improve recovery management: by providing resources for anxiety management as well as information on remedy and restoration. Social media can be used to disseminate information regarding recovery, restoration, etc. in the phases after a disaster. Social media can be used to convey the rebuilding of infrastructure as well as to pinpoint the places that require restoration the most. In the healing period following a catastrophe, social media can help pinpoint key areas where stress management is most needed and provide means for doing so via interactive platforms. All these practices ensure that social media involvement in disaster management is credible, reliable and authentic thereby

promoting understanding of the disaster situation as well as the accuracy of the up-to-date information provided in a timely manner.

5.6 Summary of the Key Findings

Four topics emerged as the study's main findings, describing emergency management's perceptions on social media and its value as a tool for gaining situational awareness in times of crisis. These four themes were used to create an analysis of the research results on the information emergency management teams in institutions need to know about disasters in order to make wise judgments and whether social media is a technology that could give them the information they need to know about disasters. The study has also shown the difficulties or challenges facing the use of social media as a communication tool during disaster management. The two main challenges are the authenticity of the information conveyed as well as the correctness of the information conveyed concerning the disaster. Finally, the findings have presented social media best practices that can be implemented to lessen the challenges of social media as a communication tool in disaster management.

5.7 Research Limitations

There were two potential issues that could have affected how reliable the study was. As a qualitative exploratory study, the outcomes and themes were thus restricted to the study's sample and are not generalizable. The purpose of this qualitative study is to develop a deeper understanding of the social media issues faced by emergency management officials, rather than generalize across larger populations.

The second drawback was the varying levels of expertise and knowledge of social media by the emergency management officials in the study. As they hold senior level policy positions, they do not necessarily have the day-to-day knowledge, experience, and familiarity with social media. Their responses to the interview questions will be affected by that background knowledge.

5.8 Future Research

These results are anticipated to be useful for future research investigations to deepen and widen such discoveries, as well as for optimizing crisis response and recovery actions for the utilization of resources. It is apparent that this research has made major contributions to both the academic field of creating a systematic basis for studies connected to crises and emergencies as well as the practical side of helping the community or limiting injuries to victims.

From this vantage point, it is obvious that social media may play a significant—but possibly misleading—role during crisis warnings. One-way social media platforms help individuals by making it easy for them to coordinate and respond promptly in disaster management. Additionally, it allows users to conduct on-the-spot information searches. When it comes to comprehending a crisis or catastrophe as it is developing from the point of view of individuals in real time, social media may occasionally be a valuable resource for emergency responders and others. On the other hand, there are a few drawbacks to this. Firstly, there are no assurances that any information discovered will be true. Second, the social media machine's juggernaut nature, which is unstoppable once it gets going, can easily and quickly cause a public reaction to take on a life of its own, feeding back via ubiquitous mobile devices and potentially causing chaos on the ground through algorithmically and socially boosted misinformation.

REFERENCES

- Adams, J., Khan, H. T., & Raeside, R. (2014). *Research Methods for Business and Social Science Students*. SAGE Publications India.
- Adams, W. C. (2015). Conducting semi-structured interviews. *Handbook of practical program evaluation*, 4, 492-505.
- Adjusters International. (2022). *The Importance of Social Media Before, During and After a Disaster*. Retrieved from <https://www.adjustersinternational.com/newsroom/the-importance-of-social-media-before-during-and-after-a-disaster>
- Allcott, H & Gentzkow, M. (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*, 31(2), 211–236
- Arifin, S.R.M. (2018). Ethical considerations in qualitative study. *International Journal of Care Scholars*, 1(2), 30-33.
- Ayebi-Arthur, K. (2017). E-learning, resilience and change in higher education: Helping a university cope after a natural disaster. *E-learning and Digital Media*, 14(5), 259-274
- BBC News (2020). *Ofcom: Covid-19 5G Theories are “Most Common” Misinformation*. Retrieved from <https://www.bbc.co.uk/news/technology-52370616>
- Bell, E., Bryman, A. & Harley, B. (2018). *Business Research Methods*. Oxford university press.
- Bellan, P., & Strapparava, C. (2018). Detecting inappropriate comments to news. In *International Conference of the Italian Association for Artificial Intelligence* (pp. 403-414). Springer, Cham.
- Bruce, R. L. (2011). *Social Media and Disasters: Current Uses, Future Options, and Policy Considerations*. OECD.
- Bryman, A. (2016). *Social Research Methods*. Oxford: Oxford University Press
- Clark, J. & Causer, G. (2020). Introduction: Research strategies and decisions. In *Handbook for research students in the social sciences* (pp. 163-176). Routledge.

- Clear Language Group. (2016). *Readability: What is readability?* Retrieved from Clear Language Group. Available online at:
<http://www.clearlanguagegroup.com/readability/>
- Collett, A. B. (2014). *Like and Share: The Effectiveness of Social Media on University Student Response Behavior during Emergency Events* (Doctoral dissertation, Eastern Kentucky University).
- Connolly, M. (2013). Community alert: Using text messaging and social media to improve emergency planning. *Community College Journal*, 84(2), 38-42.
- Conrado, S. P., Neville, K., Woodworth, S., & O’Riordan, S. (2016). Managing social media uncertainty to support the decision making process during emergencies. *Journal of Decision Systems*, 25(sup1), 171-181.
- Cornwall, W. (2020). Officials gird for a war on vaccine misinformation. *Science Review*, 369(6499), 14-15.
<https://www.science.org/doi/full/10.1126/science.369.6499.14>
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. London: Sage.
- Cypress, B. (2018). Qualitative research methods: A phenomenological focus. *Dimensions of Critical Care Nursing*, 37(6), 302-309
- Dang, H. L. (2021). Social Media, Fake News, and the COVID-19 Pandemic: Sketching the Case of Southeast Asia. *Austrian Journal of South-East Asian Studies*, 14(1), 37-58.
- DeMaise, C. M. (2017). *Homeland security: there's an app for that*. Naval Postgraduate School Monterey United States.
- Department of Homeland Security. (2015). *Compendium of HSAAC Recommendations*. Retrieved from
https://www.dhs.gov/sites/default/files/publications/Compendium%20of%20HS AAC%20Recommendations_1.pdf.

- Dryhurst, S., Schneider, C. R., Kerr, J., Freeman, A. L., Recchia, G., Van Der Bles, A. M. (2020). Risk Perceptions of Covid-19 around the world. *Journal of Risk Research*, 1–13. <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.566790/full#B20>
- Easterby-Smith, M, Thorpe R., & Jackson, P. (2015). *Management Research*, 4th edition. London: Sage.
- Feng, Y., & Cui, S. (2021). A review of emergency response in disasters: Present and future perspectives. *Natural Hazards*, 105(1), 1109-1138
- Ferguson, R. W., Kiernan, S., Spannhake, E. W., & Schwartz, B. (2020). Evaluating perceived emergency preparedness and household preparedness behaviors: results from a CASPER Survey in Fairfax, Virginia. *Disaster medicine and public health preparedness*, 14(2), 222-228
- Fowler, F. J. (2014). *Survey Research Methods*, Vol. 1. London: Sage Publications.
- Fraustino, J. D., Liu, B. F., & Jin, Y. (2017). Social Media Use During Disasters 1: A Research Synthesis and Road Map. *Social media and crisis communication*, 283-295
- Gaifulina, D., & Chechulin, A. (2019). Development of the Complex Algorithm for Web Pages Classification to Detection Inappropriate Information on the Internet. In *International Symposium on Intelligent and Distributed Computing* (pp. 278-284). Springer, Cham.
- Geale, S. (2012). The ethics of disaster management. *Disaster Prevention and Management*, 21(4), 445-462. <https://doi.org/10.1108/09653561211256152>
- Gorodnichev, M. G., Vanushina, A. V., Moseva, M. S., & Trubnikova, N. V. (2019). Machine learning in the tasks of identifying unwanted content. In *2019 Wave Electronics and its Application in Information and Telecommunication Systems (WECONF)* (pp. 1-6). IEEE.
- Haslam, S. A., & McGarty, C. (2014). *Research methods and statistics in psychology*. London: Sage.

- Havas, C., Resch, B., Francalanci, C., Pernici, B., Scalia, G., Fernandez-Marquez, J. L., & Rüping, S. (2017). E2mc: Improving emergency management service practice through social media and crowdsourcing analysis in near real time. *Sensors*, 17(12), 2766
- Hill, N. E. (2022). Creating a Sense of Belonging in the Context of Racial Discrimination and Racial Trauma. *Adversity and Resilience Science*, 1-5
- Homeland Security (2018). *Countering False Information on Social Media in Disasters and Emergencies: Social Media Working Group for Emergency Services and Disaster Management*. Department of Homeland Security.
- Hunt, K., Agarwal, P., Al Aziz, R., & Zhuang, J. (2020). Fighting fake news during disasters. *OR/MS Today*, 47(1), 34-39
- Imhoff, R., & Lamberty, P. (2020). A bioweapon or a hoax? The link between distinct conspiracy beliefs about the Coronavirus disease (COVID-19) outbreak and pandemic behavior. *Social Psychological and Personality Science*, 11(8), 1110-1118
- Imran, M., Castillo, C., Diaz, F., & Vieweg, S. (2015). Processing social media messages in mass emergency: A survey. *ACM Computing Surveys*, 47(4), 1-37
<http://dx.doi.org/10.1145/2771588>
- Indah, R. (2018). Probing problems: Dilemmas of conducting an ethnographic study in a disaster-affected area. *International journal of disaster risk reduction*, 31, 799-805
- Islam, A. N., Laato, S., Talukder, S., & Sutinen, E. (2020). Misinformation sharing and social media fatigue during COVID-19: An affordance and cognitive load perspective. *Technological Forecasting and Social Change*,
[10.1016/j.techfore.2020.120201](https://doi.org/10.1016/j.techfore.2020.120201)
- Jackson, K. & Bazeley, P. (2019). *Qualitative data analysis with NVivo*. Sage.
- Jackson, S. (2014). *Research methods: a modular approach*. London: Cengage Learning.

- Jacobo, J. (2016). *UT Austin murder: How the investigation into the death of student Haruka Weiser unfolded*. Available online at: <http://abcnews.go.com/US/ut-austin-murder-investigation-deathstudent-haruka-weiser/story?id=38262608>
- Jang, W., Huang, H., Davis, K. R., & Overbye, T. J. (2021). Considerations in the Automatic Development of Electric Grid Restoration Plans. In *2020 52nd North American Power Symposium (NAPS)* (pp. 1-6). IEEE.
- Johnson, L. A., & Mahin, S. A. (2016). The Mw 6.0 South Napa Earthquake of August 24, 2014. *Pacific Earthquake Engineering Research Center*, 23-25. Sacramento, CA.
- Joseph, J. K., Dev, K. A., Pradeepkumar, A. P., & Mohan, M. (2018). Big data analytics and social media in disaster management. In *Integrating disaster science and management* (pp. 287-294). Elsevier.
- Kaufhold, M. A., Rupp, N., Reuter, C., & Habdank, M. (2020). Mitigating information overload in social media during conflicts and crises: design and evaluation of a cross-platform alerting system. *Behavior & Information Technology*, 39(3), 319-342
- Klykken, F. H. (2021). Implementing continuous consent in qualitative research. *Qualitative Research*. doi:14687941211014366.
- Korta, S. M. (2018). *Fake news, conspiracy theories, and lies: an information-laundering model for homeland security*. Naval Postgraduate School.
- Lindsay, B. R. (2011). *Social media and disasters: Current uses, future options, and policy considerations*. N.P
- Lois, B. & Sam, L. (2017). "U.S. Gun Violence Spawns a New Epidemic: Conspiracy Theorists Harassing Victims." *The Guardian*, November 28, 2017: <<https://www.theguardian.com/us-news/2017/nov/28/us-guns-mass-shootings-hoax-conspiracy-theories>>.
- Luna, S., & Pennock, M. J. (2018). Social media applications and emergency management: A literature review and research agenda. *International journal of disaster risk reduction*, 28, 565-577

- McCullar, S.L (2011). *Crisis management post Hurricane Katrina: a qualitative study of a higher education institution's administrators' response to crisis management*. LSU Doctoral Dissertations, 3678. Available online at:
https://digitalcommons.lsu.edu/gradschool_dissertations/3678
- Mehta, A. M., Bruns, A., & Newton, J. (2017). Trust, but verify: social media models for disaster management. *Disasters*, 41(3), 549-565
- Miah, M., & Sheppard, B. (2022). Uproar grows demanding accountability over Uvalde school shooting. *Green Left Weekly*, 1355, 15-15
- Moore, K. A. (2017). *The Tweet Before the Storm: Assessing Risk Communicator Social Media Engagement During the Prodromal Phase-A Work in Progress*. In ISCRAM.
- Mukerjee, M., (2017). How Fake News Goes Viral – Here’s the Math.” *Scientific American*. Available online at: <https://www.scientificamerican.com/article/how-fake-news-goes-viral-mdash-heres-the-math/>.
- Mukherjee, A., Liu, B., & Glance, N. (2012). Spotting fake reviewer groups in consumer reviews. In *Proceedings of the 21st international conference on World Wide Web* (pp. 191-200)
- National Assessment Governing Board. (2016). *The nation’s report card*. Available online at: <https://www.nationsreportcard.gov/>
- Niles, M. T., Emery, B. F., Reagan, A. J., Dodds, P. S., & Danforth, C. M. (2019). Social media usage patterns during natural hazards. *PloS one*, 14(2).
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0210484>
- Norris, C. (2017, May 1). *One dead, three wounded after stabbing at UT Austin*. Available online at: <http://www.pbs.org/newshour/rundown/one-dead-three-wounded-stabbing-ut-austin/>
- O'Brien, J. G., Cassiadoro, M., Becejac, T., Sheble, G. B., Follum, J. D., Agrawal, U., & Dagle, J. E. (2021). *Electric Grid Blackstart: Trends, Challenges, and Opportunities* (No. PNNL-29118). Pacific Northwest National Lab. (PNNL), Richland, WA (United States).

- Palen, L., & Hughes, A. L. (2018). Social media in disaster communication. *Handbook of disaster research*, 497-518
- Palshikar, G. K. (2021). Fake News and Social Processes: A Short Review. *Data Science for Fake News*, 245-256
- Pennycook, G., McPhetres, J., Zhang, Y., Lu, J. G., & Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy-nudge intervention. *Psychological Science*, 31(7), 770-780
- Powney, J., & Watts, M. (2018). *Interviewing in educational research*. Routledge.
- Rajdev, M., & Lee, K. (2015). Fake and spam messages: Detecting misinformation during natural disasters on social media. In *2015 IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT)* (Vol. 1, pp. 17-20). IEEE.
- Remler, D. K., & Van Ryzin, G. G. (2014). *Research methods in practice: Strategies for description and causation*. London: Sage Publications.
- Reuter, C., Hughes, A. L., & Kaufhold, M. A. (2018). Social media in crisis management: An evaluation and analysis of crisis informatics research. *International Journal of Human-Computer Interaction*, 34(4), 280-294
- Romano, A. J. (2013). *The use of social media during a crisis on campus (Master's thesis)*. Available online at: <http://cardinalscholar.bsu.edu/handle/123456789/197836>
- Saunders, M., Lewis, P. and Thornhill, A. (2012). *Research Methods for Business Students (6th edn)*. Harlow: Prentice-Hall.
- Semaan, B. (2019). 'Routine Infrastructuring' as 'Building Everyday Resilience with Technology' When Disruption Becomes Ordinary. *Proceedings of the ACM on Human-Computer Interaction*, 3(CSCW), 1-24
- Sherchan, W., Pervin, S., Butler, C. J., Lai, J. C., Ghahremanlou, L., & Han, B. (2017). Harnessing Twitter and Instagram for disaster management. *IBM Journal of Research and Development*, 61(6), 8-1.

- Shultz, J. M., Muschert, G. W., Dingwall, A., & Cohen, A. M. (2013). The Sandy Hook Elementary School shooting as tipping point: "This Time Is Different." *Disaster Health, 1*(2), 65-73
- Singh, D., & Dwivedi, A. (2020). Onslaught of Infodemic. *Supremo Amicus, 20*, 133
- Singh, D., Shams, S., Kim, J., Park, S. J., & Yang, S. (2020). Fighting for Information Credibility: An End-to-End Framework to Identify Fake News during Natural Disasters. In ISCRAM 2020 Conference Proceedings. 17th International Conference on Information Systems for Crisis Response and Management. Virginia Tech, Blacksburg, VA (USA).
- Tauri, J. M. (2018). Research ethics, informed consent and the disempowerment of First Nation peoples. *Research Ethics, 14*(3), 1-14.
- Taylor, Z. W. (2017). Speaking in tongues: Can international graduate students read international graduate admissions materials? *International Journal of Higher Education, 6*(3). <https://doi.org/10.5430/ijhe.v6n3p99>
- Taylor, Z. W. (2018). Comprehension in a Crisis: Evaluating the Readability and Translation of Emergency Response Messaging in US Higher Education. Taylor, ZW (2018). Comprehension in a Crisis: Evaluating the Readability and Translation of Emergency Response Messaging. *Journal of Student Affairs, 27*, 83-91
- The University of Texas at Austin Police Department. (2017). *Campus watch archives, January 2017 to August 2017*. Available online at: <https://police.utexas.edu/campuswatch/archives/?year=2017>
- Tim, Y., Pan, S. L., Ractham, P., & Kaewkitipong, L. (2017). Digitally enabled disaster response: the emergence of social media as boundary objects in a flooding disaster. *Information Systems Journal, 27*(2), 197-232
- Tran, T., Valecha, R., Rad, P., & Rao, H. R. (2020). Misinformation harms: A tale of two humanitarian crises. *IEEE Transactions on Professional Communication, 63*(4), 386-399

- Twigg, J., & Bottomley, H. (2011). *Making local partnerships work for disaster risk reduction. Humanitarian Practice Network*. Available online at:
<https://odihpn.org/magazine/making-local-partnerships-work-for-disaster-risk-reduction/>
- Uddin, B., Reza, N., Islam, M. S., Ahsan, H., & Amin, M. R. (2021). Fighting Against Fake News During Pandemic Era: Does Providing Related News Help Student Internet Users to Detect COVID-19 Misinformation? In *13th ACM Web Science Conference 2021* (pp. 178-186)
- Uscinski, J. E., Enders, A. M., Klofstad, C., Seelig, M., Funchion, J., Everett, C., ... & Murthi, M. (2020). Why do people believe COVID-19 conspiracy theories? *Harvard Kennedy School Misinformation Review*, 1(3), 1-15
- Van Der Linden, S., Roozenbeek, J., & Compton, J. (2020). Inoculating against fake news about COVID-19. *Frontiers in psychology*, 11, 2928.
<https://www.frontiersin.org/articles/10.3389/fpsyg.2020.566790/full>
- Watermeyer, R., Crick, T., Knight, C., & Goodall, J. (2021). COVID-19 and digital disruption in UK universities: Afflictions and affordances of emergency online migration. *Higher Education*, 81(3), 623-64
- Wellington, J. J., & Ramesh, P. (2017, March). Role of Internet of Things in disaster management. In *2017 International Conference on Innovations in Information, Embedded and Communication Systems (ICIIECS)* (pp. 1-4). IEEE
- Wendling, C. J., & Jacobzone, S. (2013). *The Use of Social Media in Risk and Crisis Communications*. OECD.
- Yan, L. L., & Pedraza-Martinez, A. J. (2019). Social Media for Disaster Management: Operational Value of the Social Conversation. *Production and Operations Management*. doi:10.1111/poms.13064
- Young, C.E., Kuligowski, E.D., & Pradhan, A. (2020). A Review of Social Media Use During Disaster Response and Recovery Phases. *Natl. Inst. Stand. Technol. Tech. Note 2086*. <https://doi.org/10.6028/NIST.TN.2086>

APPENDICES

Appendix A: Interview Questions

Appendix A: Interview Questions

1. What types of social media platforms do you usually use? Please explain why you prefer the platform to other platforms.
2. In what ways do you use social media platforms as part of the disaster management strategy in your institution?
3. What can you say about the effectiveness of social media a disaster management tool?
4. If you were in a position to, what are some of the changes that you would implement to enhance the effectiveness of social media for disaster management in your institution?
5. Would you recommend social media platforms as tools for disaster management in other universities? Please explain why.
6. What challenges characterize the use of social media in disaster management in general?
7. Is fake news and spam prevalent when social media is being used during emergency management efforts at your university/college?
8. Have you personally witnessed the use of social media in managing disasters at your institution and if so, in what ways?
9. If your answer to the above question was yes, what was the experience like in both a positive and negative manner?
10. When using social media to manage disasters, have you experienced spam and fake news about the emergency you were trying to manage?
11. How did you react to the spam and fake news issue as you progressed with managing the disaster?
12. What can you say about the association between use of social media for disaster management and spam/fake news?
13. Do you think spam and fake news interferes with the quality of disaster management efforts?
14. Considering the effect of fake news and spam, why would you still recommend the continued use of social media for disaster management?

15. Do you believe that social media is a necessary tool in managing disasters in Kentucky's higher education institutions?
16. How does your institution attempt to address the effect of spam and fake news on disaster management efforts?
17. Does your institution have a social media policy that is specifically applicable during the emergency/disaster times?
18. Given the power and chance, what solutions would you implement to minimize the impact of spam and fake news in disaster management efforts?
19. What is your institution doing to eradicate spam and fake news during the emergency and disaster times, and do you believe it is efficient and why?
20. Is there anything else I did not ask that you would like to add?