

# **Trustworthiness of tweets in post disaster events: A case study of Nepal Earthquake 2015**

**By Bipulendra Adhikari**

A thesis submitted in partial fulfilment for the degree  
Doctor of Philosophy in Media and Communication

University of Canterbury

2020

To my parents: Narayan Prasad Adhikari and Kamala Adhikari

&

Wife: Nisha Dhungel

## Acknowledgements

The big chunk of thanks goes to my parents Mr. Narayan Prasad Adhikari and Mrs. Kamala Adhikari for showering me with their unconditional love and support. Thank you Buwa for making me recite English words from the dictionary in my younger days and, just to let you know, my friends are amazed with my word play (they did not know my secret till now). Thank you mummy for your pressing words to study well with your ‘ready-made’ examples of what would happen to me in the future if I did not.

Nisha, you deserve half of the credit for this PhD too, for your encouraging words when I was often off the track. I am done with the formal studies now and I pass the baton to you.

My amazing supervisor team—Dr Donald Matheson and Dr Zita Joyce—deserve accolades for their patience and friendly guidance throughout the journey. This would not have been possible without your pertinent feedback. Thanks Donald, for your hard questions and comforting smile. How do you manage both at the same time?

I am also very much thankful to all my participants who collaborated with me to generate ideas and understandings on trust and trustworthiness. We achieved this together.

I also recognise my only younger brother Sailendra Adhikari, *buhari* Sangeeta, and *puntu choro* Mr. UK Adhikari for their financial and emotional contribution to my study.

Thank you all my friends from Nepal to New Zealand. Your company helped me to push my PhD journey to this destination.

Last but not least, *tēnā koutou* to all my media and journalism and political department friends—past and present.

*Dhanyabad and Namaste.*

## Abstract

This research focuses on the trustworthiness of information shared through Twitter in a post-disaster event, particularly focusing on the Nepal earthquake, 2015. It explores how Twitter users access and verify tweets by utilizing their social networks and social capital in uncertain times like disasters. The availability of large amounts of information may affect people's ability to select trustworthy information to make critical decisions in a post-disaster event. It investigates receivers' perspectives of information verification processes by identifying the major sources of information post disaster through in-depth interviews.

A good understanding of information sharing and verifying processes is important as this helps government, media organizations and the public in their decision-making processes to respond to disaster events. It is difficult to assess what information a receiver finds trustworthy as this has been found to be influenced by the existing beliefs of the receiver. Thus, trust is a social and psychological phenomenon which can be studied on four levels: individual, interpersonal, relational and societal. This understanding of trust helps to explore how receivers verify information as trustworthy or not, as a failure to trust information may lead to a poor disaster response.

The receivers' access to regular information could be disrupted in a disaster event, which can make receivers rely on information outside their regular network (weak ties environment). The research explores how trust develops in a weak ties environment and how receivers utilize their networks and social capital to verify trustworthiness of information, based on interviews with sixteen Twitter users across four different geographical locations. The interview participants shared their experiences of how they trusted information in the Nepal earthquake event, and the factors that influenced their trustworthy judgement of information. The constructive paradigm approach for the holistic understanding of the trustworthiness of tweets (information) has been adopted, as social knowledge is constructed based on the interaction between researcher and participants rather than being discovered.

The findings show that impersonal trust—trust that can evolve and dissolve among people or institutions for a certain time with no pre-existing relationships or links—is an important aspect in the online environment for collective action. The research also finds that receivers rely on various factors to perceive trustworthiness of information accessed through government, media and weak ties networks. The research argues that if the receivers have high social capital within

their networks, the trustworthy judgement of information becomes easier and vice versa. It also emphasizes that people prefer to utilize their social networks to make trustworthiness judgements, rather than using outside networks.

The research contributes to government understanding of public sentiments after a disaster, the functioning of media organizations, news prioritizing processes, and their collaborating functions in an uncertain environment, by analysing the factors that people rely on while perceiving information as trustworthy. The research also contributes to disaster literature, particularly focusing on how people perceive trustworthiness of information and the factors that influence trustworthy judgement.

## Abbreviations

CBS	Central Bureau of Statistics
CIAA	Commission for the Investigation of Abuse of Authority
CNCRC	Central Natural Calamity Relief Committee
CNLP	Crisis Natural Language Processing
DOFE	Department of Foreign Employment
DRMM	Disaster Risk and Management Act
DRRP	Disaster Risk Reduction Portal
MIS	Management Information System
MOS	Mercantile Office Systems
NADRRM	National Authority for Disaster Risk Reduction and Management
NASA	National Aeronautics and Space Administration
NCDRM	National Council for Disaster Risk and Management
NDRP	National Disaster Risk Policy
NEA	Nepal Electricity Authority
NEOC	National Emergency Operation Centre
NPC	National Planning Commission
NSC	National Seismological Centre
NSDRM	National Strategy for Disaster Risk Management
NTA	Nepal Telecommunication Authority
NTC	Nepal Telecom
NVC	National Vigilance Centre
RONAST	Royal Nepal Academy of Science and Technology
SAR	Search and Rescue
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNISDR	United Nations Office for Disaster Risk Reduction
WFP	World Food Programme

<b>Acknowledgements.....</b>	<b>A</b>
<b>Abstract .....</b>	<b>B</b>
<b>Abbreviations .....</b>	<b>D</b>
<b>List of figures.....</b>	<b>G</b>
<b>List of tables .....</b>	<b>G</b>
<b>CHAPTER 1.....</b>	<b>1</b>
1. <i>Introduction.....</i>	<i>1</i>
1.1. Positioning my research.....	3
1.2. Background of the study .....	4
1.3. History of Nepal’s earthquakes .....	4
1.4. Impacts of Nepal Earthquake 2015 .....	5
1.5. Internet and social media in context of Nepal.....	7
2. <i>Research question and significance of the study.....</i>	<i>10</i>
3. <i>Outline of thesis.....</i>	<i>13</i>
<b>CHAPTER 2.....</b>	<b>15</b>
2. <i>Literature review.....</i>	<i>15</i>
2.1. Trustworthiness of information in post disaster communication.....	16
2.1.1. Disaster: A socio-psychological concept .....	16
2.1.2. Community resilience and social media in a disaster .....	17
2.1.3. Trust and trustworthiness of information .....	19
2.1.3. a. Definition of trust .....	20
2.1.3.b. Definition of trustworthiness .....	22
2.1.3.c. Trustworthiness of online information during disasters .....	23
2.2. Theoretical frameworks.....	25
2.2.1. Social network of weak ties.....	26
2.2.2. Social capital in the context of a social network .....	27
2.2.3. The issue of trust in social networks.....	29
2.2.4. Trust: An element of social capital in the context of disasters.....	30
<b>CHAPTER 3.....</b>	<b>34</b>
3. <i>Methodology.....</i>	<i>34</i>
3.1. Constructivist paradigm.....	34
3.2. Case study method.....	35
3.3. Research design.....	36
3.3.1. Survey .....	41
3.3.1.a. Population, Sample and Sampling Method.....	43
3.3.1.b. Questionnaire: validity and reliability .....	45
3.3.1.c. Questionnaire.....	46
3.3.1.d. Results of survey .....	47
3.3.1.e. Pilot study.....	48

3.3.2. Interview .....	49
3.3.2.a. Sampling and data gathering procedure.....	52
3.3.2.b. Validity of the interview data.....	56
3.3.2.c. Analysis process of interview.....	56
3.3.3. Document analysis .....	57
3.4. University of Canterbury’s Human Ethics Committee clearance .....	58
<b>CHAPTER 4.....</b>	<b>59</b>
4. <i>Is the government a source of trustworthy information in disaster events?</i> .....	59
4.1. Introduction.....	59
4.2. Legislative and institutional framework for disaster management in Nepal .....	60
4.3. Government as a source of information in a post disaster situation.....	63
4.4. Public trust in the government .....	65
4.4.a. Personal experience.....	66
4.4.b. Past experience with government organizations and officials .....	67
4.4.c. Public risk perception and past disaster management performance of government organizations or officials .....	75
4.4.d. Socio-political factors and trustworthy government information.....	80
4.4.e. Social media effects on public trust in government information.....	83
4.4.f. Social networks and trust in government information.....	87
4.5. Conclusion .....	91
<b>CHAPTER 5.....</b>	<b>93</b>
5. <i>Retweeting trustworthy information in post disaster events</i> .....	93
5.1. Introduction.....	93
5.2. Increasing visibility or trusting information .....	97
5.3. Retweet: A display of social networking, not trustworthy information .....	101
5.4. Does retweeting mean endorsing it as trustworthy information?.....	105
5.5. Retweets as a form of social capital .....	109
5.6. Conclusion .....	115
<b>CHAPTER 6.....</b>	<b>117</b>
6. <i>Fake Twitter accounts and trustworthy information in a post disaster situation</i> .....	117
6.1. Introduction.....	117
6.2. Understanding fake Twitter accounts .....	118
6.2.a. Content based approach to judge trustworthiness of information .....	124
6.2.b. Social networks-based approach to fake Twitter accounts.....	131
6.3. Conclusion .....	135
<b>CHAPTER 7.....</b>	<b>138</b>
<b>7. Media organizations and trustworthiness of tweets in post disaster situations .....</b>	<b>138</b>
7.1. Introduction.....	138
7.2. Twitter journalism in the context of Nepalese media organizations .....	139
7.3. Journalists and trustworthiness of information in Twitter in disaster event .....	150
7.4. ‘Clickbait’ journalism, fake news and Twitter in post disaster events .....	154



7.5. Conclusion .....	158
<b>CHAPTER 8.....</b>	<b>161</b>
8. <i>Conclusions</i> .....	161
8.1. Overview .....	161
8.2 Key findings.....	162
8.2. Contributions of research.....	171
8.3. Limitations and future research opportunities .....	174
<b>Appendices .....</b>	<b>177</b>
<i>Appendix A: Consent form for participating in survey</i> .....	177
<i>Appendix B: Consent form to participate in interview</i> .....	179
<i>Appendix C: Approval of Human Ethics committee</i> .....	181
<i>Appendix D: Online survey questions delivered through Qualtrics</i> .....	182
<i>Appendix E: Structured In-depth Interview Questions</i> .....	185
<i>Appendix F: List of past earthquakes in Nepal</i> .....	186
<i>(ML is Richter Magnitude, MW is Moment magnitude)</i> .....	188
<b>References.....</b>	<b>189</b>

List of figures

Figure 1 Screenshot of social media users in Nepal (May, 2020) .....	9
Figure 2 A flow chart explaining the research design.....	41
Figure 3 A tweet on the impact of the Nepal earthquake .....	43
Figure 4 Institutional Structure of disaster management in Nepal .....	62
Figure 5 Tweets from Nepal Police .....	71
Figure 6. A tweet from a user shows before and after picture of Dharahara .....	145

List of tables

Table 3. 1 Distributions of participants who agreed to an interview .....	52
Table 3. 2 Geographical distribution of the interview participants .....	54
Table 3. 3 Demographic characteristics of interview participants.....	55
Table 6. 1 Set of attributes proposed by various researchers .....	119
Table 6. 2 List of features of fake Twitter accounts based on interview .....	120

## CHAPTER 1

### 1. Introduction

On Saturday, April 25, 2015, a 7.6 magnitude earthquake struck Nepal at 11:56 a.m. local time, with its epicentre at Gorkha district, about 80 kilometres northwest of the capital city, Kathmandu. This main shock was followed by 553 aftershocks, of a local magnitude greater than 4.0, within the first 45 days (Adhikari et al., 2015), with one of 6.6 magnitude later at 12:30 p.m. (local time) on the same day, and a 6.8 magnitude on May 12, 2015 (Government of Nepal, 2016). The earthquake affected 31 of 77 districts (then 75 districts<sup>1</sup>), where 14 districts were declared “crisis hit”. The earthquakes claimed over 8,790 lives (Nepalese and foreigners) and injured 22,300, which impacted 8 million people, almost one-third of the population of Nepal, and the estimated total value of disaster effects (damage and losses) was NPR706 billion (US\$7 billion) (NPC, 2015). The Nepal Earthquake of 2015 is considered to be one of the worst natural disasters in last 80 years in the history of the country. The Government of Nepal made an appeal to the international community for assistance within hours of the incident, after holding an emergency cabinet meeting headed by the then prime minister, Sushil Koirala. Around 60 countries as well as the United Nations and other agencies supported Nepal in search and rescue operations.

This disaster of such a big magnitude also brought uncertainty, fear and anxiety among people, who struggled to find trustworthy information to ascertain the impact, which could help in the decision making process. The disaster not only affected the general public but also widely affected government and media organizations, which are considered as sources of information. In other countries, social media has become an alternative information source at moments of disaster. However, the poor presence of government organizations on Twitter affected most users trying to access disaster-related information. This raises important questions about the quality of social media information in Nepal after the earthquake and the way people used social media that contribute to an understanding of social media in non-western contexts and to an understanding of post-disaster communication.

---

<sup>1</sup> The 77 districts were declared on 4<sup>th</sup> schedule of Constitution of Nepal 2015 when the country was divided into 7 provinces. The Constitution of Nepal was promulgated on 20 September, 2015 (Retrieved from <http://www.lawcommission.gov.np/en/archives/792> on 14 June 2019).

It is evident that the availability of tools and technology help people to communicate these real events in a virtual environment. The expeditious nature of social media like Twitter complements the urgency of real time communication during and after disaster events (Gurman & Ellenberger, 2015). Research in western contexts has found that, during disaster events, many people use social media for emergency warnings/alerts, requests to receive assistance, to support recovery efforts, and to monitor or share real-time information, among others. The social media are thus considered as “digital habitats” (Wenger et al., 2009) where users gather to collect and share information. The accessibility of social media like Twitter makes it easy for users to collect and share information from friends and strangers equally. The consumers of social media contents play the role of gate-keepers for content producers and contribute to the content generation process (Spence et al., 2015). These ‘backchannel’ sources of information (social media contents) play a crucial role in disaster events when the official sources (government agencies) are unavailable (Sutton et al., 2008). Ross et al., (2011) assert there are two forms of communication: formal and informal. Because social media communication travels through informal channels it is considered to be a backchannel (McNely, 2009). This backchannel medium offers communication not only between victims of the disaster but also between victims and the rest of the world (Takahashi, et al., 2015). However, it should be noted that Twitter also acts as a platform to disseminate rumours and misinformation (the research addresses these words as untrustworthy) particularly in fast-paced crisis events like the Nepal earthquake, as social media has the capacity to reach a large audience within a short span of time.

In this context, the research explores how people (both inside and outside disaster-affected areas) perceive information on Twitter as trustworthy or not. The research tries to understand receivers’ trustworthy information accessing behaviour based on two situations: information from a weak ties environment (outside the regular friends and families network) and the availability of large amounts of information (both relevant and irrelevant). This basically focuses on how impersonal trust (described in detail in Chapter 2) develops among persons with no previous personal history (weak ties) on Twitter (online environment), and how this helps in judging information as trustworthy.

## 1.1. Positioning my research

Twitter has always been an important source to keep myself abreast of the latest information—local and global issues—since joining in February, 2010. The importance of trustworthy information became acute for me after the Nepal earthquake, particularly when the government sources of information were lacking or not sufficient. Being a journalist (when the Nepal earthquake struck) it was important that I provide trustworthy information to the readers both at the organizational (media organization affiliated) and personal (social networks like Twitter) levels. The limitation of information access (due to technical failure or poor availability of government information) posed a big challenge to provide information to even friends and families (on the personal level) who looked to me because I was a journalist. The disaster-related information provided to them (friends and families) was often questioned and challenged as they were cross-referenced with the information they already had. These multiple incidents on failing to convince my friends and families encouraged me to research more deeply my understanding of people's perception of trustworthy judgment of disaster-related information. I was interested to know how people make trustworthy judgments about information when they have limited or no access to official sources such as the government and its agencies. In addition to that, I was also keen to know if people trust disaster-related information from the government and its agencies and, if not, what sources of information people do trust.

My initial interest on public judgments about trustworthiness of information encouraged me to analyse and research this public behaviour further. Being a journalist I had the privilege to access public opinion particularly through emails and social media comments received on news articles. In addition to that, I travelled across around 10 severely affected districts in the aftermath of the Nepal earthquake to collect news stories. These travels provided me an opportunity to interact and communicate with people across the disaster affected districts and understand their information accessing and verifying behaviour. I was fascinated to know that people have their own judgment criteria to understand and interpret disaster-related information i.e. an information believed trustworthy by one person was believed untrustworthy by other. These factors motivated me to research how people perceive trustworthiness of information from official and unofficial sources.

## 1.2. Background of the study

This section provides a background to the readers who are not familiar with details of Nepal's earthquake sequences (including the past ones); the Nepal earthquake of 2015 and its impact; and an introduction to internet and social media in the context of Nepal, particularly focusing on the use of Twitter in the Nepal earthquake event. Nepal is a tiny Himalayan nation situated between India and China with an area of 147,516 square kilometres (as per Nepalese government decision on 18 May, 2020<sup>2</sup>) (Pokharel, 2020), which is around 0.03 percent of the world's land mass and 0.3 percent of the Asian continent<sup>3</sup>. According to the national census of 2011, the population of Nepal is 26,494,504 with a gender ratio of 94.2 i.e. 796,422 more females than males in the country (CBS, 2012).

## 1.3. History of Nepal's earthquakes

Nepal is considered as highly seismically active as it is situated at the boundary of the Indian and Tibetan tectonic plates (Dube, 2015) and is ranked in the 11<sup>th</sup> position in terms of earthquake risk (UNDP, 2004). The earthquake on 6 June, 1255, is considered to be the first recorded earthquake in Nepal (Government of Nepal, 2016), however, monitoring of earthquakes began only after November, 1978, by the Department of Mines and Geology under the Ministry of Industry in collaboration with *Laboratoire de Geophysique Appliquee*, Paris University, France. Currently, there are 21 short period seismic stations, 29 permanent global positioning system stations and 7 accelerometer stations (Government of Nepal, 2016; NSC, 2019). Based on available data on human casualties, Nepal was hit by two major earthquakes prior to 2015, in the last 100 years—1934 Bihar-Nepal earthquake (magnitude 8.4) and 1988 Udayapur earthquake (magnitude 6.5) (Shakya et al., 2012). The 1934 Bihar-Nepal earthquake claimed 8519 lives and the 1988 Udayapur earthquake claimed 721 lives (Dixit et al., 2013). A table on the history of past earthquakes in Nepal, which is adopted from Dixit et al. (2013) is available in Appendix F.

---

<sup>2</sup> The government of Nepal introduced a new map including Kalapani, Limpiyadhura and Lipulekh as Nepalese territories which added 335 square kilometres to previous 147,181 square kilometres area (<https://molcpa.gov.np/uploads/files/noticemolcpa.pdf>)

<sup>3</sup> Word 'around' has been added as Nepal's territory has been revised on 18 May, 2020. The official portal of Government of Nepal ([www.nepal.gov.np](http://www.nepal.gov.np)) states Nepal's territory as 0.03 percent of world mass and 0.3 percent of Asia continent based on previous 147,181 square kilometres territory (Retrieved from <http://nepal.gov.np:8080/NationalPortal/view-page?id=73> on 14 June, 2019)

#### 1.4. Impacts of Nepal Earthquake 2015<sup>4</sup>

The Nepal earthquake, 2015, was one of the worst (after the 1934 earthquake) in the history of the country. The human casualties could have been higher if the earthquake had struck at some other day and time (i.e. night). Saturday is a weekly holiday in Nepal and most of the school children were away from the schools. Based on data of identified victims, around 17 percent of the total victims were aged five and under, while 15 percent were between 6 to 16 years. However, this could have been worse as 7,000 schools were completely or significantly damaged by the earthquake and aftershocks. Similarly, more females died (56 percent) than males (44 percent), which is partly because of disparity in gender roles “that disproportionately assign indoor chores to women” (NPC, 2015, p. XI-XII), and the trend of male out-migration for employment. The earthquake also destroyed large numbers of infrastructures including monuments, schools, buildings, health posts, hydropower plants, trekking routes, and bridges. It triggered landslides, land degradation, flooding, and drying of water resources, among other impacts. The total value of this earthquake’s effects (damage and losses) is estimated as NRR706 billion (US\$7 billion) (NPC, 2015), of which 76 percent represents the value of destroyed assets and 24 percent represents losses and the higher costs of production of goods and services after the disaster. The loss is close to one third of the country’s gross domestic product (GDP) in the fiscal year 2013/14. This earthquake directly or indirectly affected 8 million people pushing 700,000 below the poverty line (Golam et al., 2015).

An emergency meeting of the Central Natural Calamity Relief Committee (CNCRC), chaired by the home affairs minister, was observed within two hours of the disaster event as mandated by the then active Natural Calamity (Relief) Act 1982<sup>5</sup>. The cabinet meeting of the Government of Nepal, chaired by the then Prime Minister Sushil Koirala, declared an emergency in 14 highly affected districts and appealed to the international community for assistance at 16:00 hours local time as per the recommendation of the earlier CNCRC meeting (Government of Nepal, 2015b). The nine-member National Emergency Operation Centre (NEOC) was activated at level four. NEOC<sup>6</sup> is the main centre for coordination and communication of

---

<sup>4</sup> Some of the research have cited Nepal Earthquake as Gorkha earthquake and Barpak earthquake based on location of epicentre. However, this research adopts Nepal earthquake to reflect uniformity with Twitter hashtag #NepalEarthquake

<sup>5</sup> This act has been replaced with Disaster Risk and Management Act 2017.

<sup>6</sup> Introduction of National Emergency Operation Centre (<http://neoc.gov.np/en/introduction-2.html>)

disaster events across Nepal. According to the Standard Operating Procedures–SOPs of NEOC–the decisions at level four activation are set by cabinet ministers of the Nepal government, with the chief secretary of the country leading the centre (Government of Nepal, 2015a). This is the highest level of disaster response activated by the Government of Nepal. In addition to 134 international Search and Rescue (SAR) teams from 34 countries, “22,500 civil servants, 65,059 staff of the Nepal Army, 41,776 staff of Nepal Police and 24,775 staff of the Armed Police Force, as well as 4,000 government and private health workers were mobilized to aid rescue and relief efforts” (NPC, 2015, p. XII).

The impact of the Nepal earthquake was also reflected on Twitter with hashtags #NepalEarthquake, #NepalQuake, #NepalQuakeRelief and #PrayforNepal, among others, trending worldwide (Malasig & Quinto, 2016; Thapa, 2016). The uncertainty, fear and anxiety after the earthquake were evident on Twitter as most users struggled to find trustworthy information (based on interviews with participants and data on Nepal earthquake tweets). Apart from the lack of trustworthy information, the users had to struggle to access information due to a lack of, or poor, internet connections and cellular traffic congestion in the context of Nepal, as Twitter was not a popular social media and access to the Internet was limited (discussed in detail in next section). Although the electricity problem has been addressed to some extent after Kul Man Ghising assumed the managing director role in Nepal Electricity Authority (NEA) in 2016 (The Kathmandu Post, 2019), Nepal had been reeling under severe power cuts for years, which peaked at 14 hours per day in the winter of 2014 (Kumar, 2018) when there was a generally agreed estimate of Nepal’s electricity capacity as 83,000 megawatts (Sangraula, 2017). In addition, the government and its organizations, including security agencies (Nepal Army, Nepal Police and Armed Police Force), had a limited presence on Twitter. The Nepal Police joined Twitter on 27 April, 2015, (Subba & Bui, 2017) while this was followed by the National Emergency Operation Centre (NEOC), Hello Sarkar (a department in the Office of the Prime Minister and Council of Ministers of Nepal). In the absence of government organizations on Twitter, the media, friends and families were among the main sources of information to many Twitter users. The uncertainty surrounding this high impact event gave rise to rumours and misinformation (untrustworthy information) as all users were affected by the earthquake to some extent. In addition, not everyone in Nepal had good internet connections and presence on Twitter. Therefore, this can be understood based on the use of internet and social media in the context of Nepal.

## 1.5. Internet and social media in context of Nepal

The Internet was first introduced in 1993 through a joint collaboration of the then Royal Nepal Academy of Science and Technology (RONAST) (now known as Nepal Academy of Science and Technology, NAST) and a private company, Mercantile Office Systems (MOS), in Nepal (Montgomery, 2002). The service was limited to RONAST and it did not last for long. The MOS set up a new technology with an email service that was accessed by international organizations only, as the charges were expensive. The Internet charges reduced after the government adopted its first telecommunication act in 1997, opening the door for private internet service providers (ISPs) to join (ibid).

According to the Nepal Telecommunication Authority (NTA)<sup>7</sup>, the Internet penetration in the country when the earthquake struck in Nepal was 43.36 percent (NTA, 2015) while the broadband service (fixed wired broadband, fixed wireless broadband and mobile broadband) as per May, 2019 is 61.83 percent, with mobile broadband covering 48.26 percent of it (NTA, 2019). However, based on the Nepal census, 2011, 3.33 percent of households have access to the Internet with 70 percent of this accessed by urban households (CBS, 2012). This has, however, found to be changing as mobile phones (cell phones) have been an important source for accessing the Internet in Nepal through two major network providers, Nepal Telecom<sup>8</sup> (NTC) and Ncell, covering 54 percent and 41 percent respectively of the total market share as per May, 2019 (ibid). The market share was 46 percent each by these network providers, as at 31 August, 2015, (NTA, 2015). Ncell had a brief network disruption<sup>9</sup> after the earthquake that lasted for a few days, however it recovered in a week or so, while NTC operated with traffic congestion at various stages. After the earthquake event, both network providers provided bonuses to their customers in difficult times. NTC provided unlimited calls, SMS and data facilities, while NCell provided bonus balance and 50 free SMS to its users for several weeks after the earthquake (Dhungana, 2016).

---

<sup>7</sup> 'Nepal Telecommunications Authority is the telecommunications regulatory body of Nepal'  
<https://nta.gov.np/en/about-us/>

<sup>8</sup> NTC is known as Nepal Doorsanchar Company Limited (NDCL) in Management Information System (MIS) reports (<https://nta.gov.np/en/mis-reports/>)

<sup>9</sup> 'Ncell reports 700-800 (43 – 50 %) cell sites to be malfunctioning or down out of 2600 across the country (Five days before the earthquake, on 20th April, 13% 2G and 1% 3G sites were down on a normal operational day)' (GSMA, 2015, p. 88)



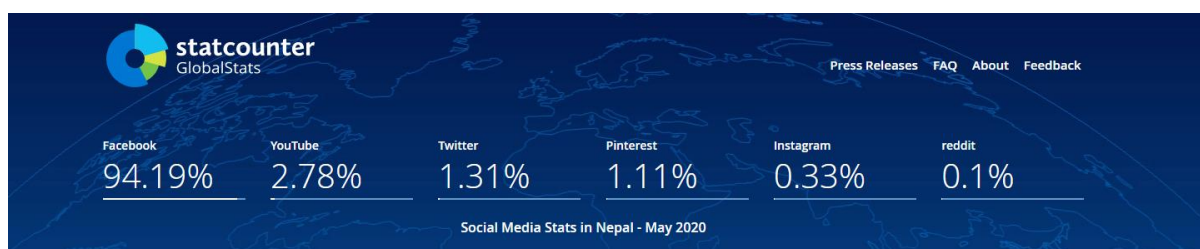
The visual and interactive features of social media make communication processes dynamic. Social media like Facebook, Twitter and Instagram, among others, are quite popular in Nepal as well. As per Alexa's websites ranking accessed on 05 June, 2020, Facebook is ranked at 5<sup>th</sup> position while Twitter is at 39<sup>th</sup> in Nepal (Alexa, n.d.). According to a survey conducted by Sharecast Initiative<sup>10</sup> among 4,145 respondents of 38 districts across the country, 98 percent of respondents who had access to the Internet accessed it through mobile phones (Sharecast Initiative, 2018). This survey somewhat reflects how people access the Internet in Nepal and provides evidence to support the NTA's MIS report mentioned above (NTA, 2019). A majority of these respondents (81 percent) access the Internet to use Facebook. There is definitely not a single answer to why people join social media like Facebook. However, it has been found that social media like Facebook, Twitter and others have "replaced the postal system as the swift communication medium" (Thapa, 2016, p. 567) in Nepal. Social media has been an integral part of some people's lives for computer-mediated communication (Correa et al., 2010). The social media provides a platform for people to connect and maintain relationships (boyd & Ellison, 2007) as a network or networks. According to Internet World Stats (2016) around 5,700,000 people had access to the Internet and Facebook as of 15 November, 2015, while more than one million use Twitter in Nepal (as cited in Thapa, 2016).

People are motivated to use or join the Internet for various reasons. Teo et al., (1999) assert people are motivated to use the Internet for both intrinsic (i.e. perceived enjoyment) and extrinsic (i.e. perceived usefulness) factors. Kim, et al., (2007) state that users of the Internet are both technology users and service consumers whose adoption could be guided by personal purposes. However, access to the Internet and social media are two different perspectives. People access the Internet for various reasons like banking, information and email, other than using social media. This research explores the use of social media in the context of the digital divide and affordability that have been widely present in Nepalese society. The issues of digital divide and digital affordability are crucial in the context of Nepal. Apart from the digital divide based on accessibility, the issues like literacy (digital literacy), poor telecom infrastructure, geographical remoteness, and digital affordability, among others, are still affecting Nepalese people's access to the Internet (Jha & Pandey, 2016) and social media. Abu-Taieh (2014) found that Nepal is among 83 other countries where the number of female Facebook users is less than the number of male users.

---

<sup>10</sup> Sharecast Initiative is "a new media organization focused on promoting digital content sharing and distribution through online and local radios in Nepal" <http://www.sharecast.org.np/>

**Figure 1 Screenshot of social media users in Nepal (May, 2020)<sup>11</sup>**



Yet, the features of social media like connectedness, openness, participation, conversation and community (Mayfield, 2008) could be reasons that attract people to join. Human beings by nature have a need to belong or be affiliated with others (Watson & Johnson, 1966) because these affiliations help them to access information which might help to achieve their goals. Some people may also join out of curiosity when they find most of their friends/families already have social media accounts. It could also be needed in the context of some Nepalese people where the country is suffering from high out-migration. According to National Population and Housing Census 2011, one in every four households (25.42 percent) reported that at least one member of their household is absent or is living abroad (CBS, 2012). The Department of Foreign Employment (DOFE), a government body under the Ministry of Labour, Employment and Social Security Nepal, “issued 786,564 permits for foreign employment for over 100 destination countries” (DOFE, 2018, p. 1) in the fiscal years 2015/16 and 2016/17. Meanwhile, DOFE has issued over 4 million labour approvals to Nepalese workers in the last decade since 2008/09 and the foreign employment of Nepalese people contributed 8.79 billion USD in 2018/19 for Nepal (a quarter of country’s GDP) (Government of Nepal, 2020). This is the reason why social media could be a tool for connectivity and communication for some people whose family members are abroad for foreign employment. Facebook Messenger and cross-platform instant messaging apps such as IMO, WhatsApp, and Viber are among the favourites for text, audio and video connectivity among Nepalese people. The relevancy and use of social media thus varies among Nepalese people. This category of people who have been living outside Nepalese territory also struggled to find trustworthy information despite having good internet connections. The research answers the questions based on information accessing and verifying behaviour of people (from four different categories of people based on geographical locations during the Nepal earthquake event including Nepalese living abroad). The geographical categorization is an important aspect as it not only describes the information

<sup>11</sup> Retrieved from <https://gs.statcounter.com/social-media-stats/all/nepal> on 5 June, 2020

accessing behaviour of Twitter users but also affects how they verify information. This is because Twitter users from outside the disaster area may also be contributing tweets related to the disaster event. In addition, foreigners who may be trapped in the disaster area may also be another contributors of disaster related information. Research by Devkota and Miyazaki (2018) on geo-tagged tweets after the Nepal earthquake event found that one-third of the tweets in Nepal were actually contributed by foreigners. These aspects imply that geographical categorization of Twitter users to understand, interpret and verify disaster-related tweets is an important aspect of understanding disaster communication on Twitter.

## 2. Research question and significance of the study

The significance of this research is to understand the trustworthiness of information on Twitter during disaster events, in the context of the Nepal earthquake, 2015. More precisely this research focuses on answering:

***How do Twitter users perceive the trustworthiness of tweets in a post disaster event?***

This overarching research question will give rise to further sub-questions (below) which are expected to be answered based on the Nepal Earthquake, 2015.

*RQ1. How are government and government organizational sources considered to be trustworthy sources of information during disaster events?*

*RQ2. How did participants retrospectively consider their sharing of trustworthy information on Twitter in post disaster events?*

*RQ3. What level of trust do users have in information from fake Twitter accounts in a post disaster event?*

*RQ4. What are the different levels of trust in post disaster tweets from different media organizations and journalists?*

These sub-research questions are significant for understanding the trustworthiness of tweets based on information accessing and verifying behaviour of Twitter users in the context of disaster events like the Nepal earthquake. This is important because people become active users of social media platforms after the disaster event (Grunig, 2013). In addition, the research explores a different perspective of information accessing and verifying behaviour of people particularly from developing countries like Nepal, which has wide variations on the digital divide and affordability within the country itself.

Firstly, there is a wide body of research that focuses on the use of Twitter in the Nepal earthquake event. It is thus important to understand if Twitter is a useful tool to access trustworthy information in disaster events, particularly in countries like Nepal which have low literacy rates. There is a vast disparity in literacy rates in the context of Nepal as it is affected by gender and place of residence as well as geographical region. The literacy rate of the country stands at 65.9 percent based on the population census, 2011, with male literacy of 75.1 percent against the female of 57.4 percent (CBS, 2012). There has been only a 10.64 percent increase in literacy rate over the last 70 years with male literacy increased by 11.27 percent and female by 8.09 percent during the same period (Dhakal, 2018). The research is significant for understanding how Twitter users with different literacy backgrounds understand the trustworthiness of information in a disaster event.

Secondly, there is an unequal distribution of population and internet users in the country. The use of the Internet is also geographically imbalanced in Nepal, with an overwhelming concentration in towns and cities, i.e. 70 percent of household internet users are based in urban areas (CBS, 2012). In addition, Twitter is still not the most popular social media in Nepal (Alexa, n.d.), with the majority of users based in urban areas. An online survey conducted in December, 2017, among 865 Twitter users in Nepal, found that 20 percent of Twitter users are from the Kathmandu Valley (Kathmandu, Bhaktapur and Lalitpur districts) (Acharya, 2018). This finding on the number of Twitter users is similar to the imbalance in the country's population distribution, with Kathmandu being the most highly populated district in the country, having 4,416 person per square km (CBS, 2012). Therefore, this research focuses on the trustworthiness of information based on participants in various geographical locations (including inside and outside disaster affected areas in the country, and people living outside Nepal).

Thirdly, the use of Twitter in the Nepal earthquake event, and now, has been drastically changed—based on Twitter’s features and popularity. Twitter was founded in 2006 and has undergone many changes to its features. Twitter had a 140-character limitation during Nepal’s earthquake days, while it has now expanded to 280 characters. This has given some leverage to users who were not able to express their opinions in the limited character space. In addition, all users (based on interview participants) were not comfortable using shortcut words like ‘d’ for ‘the’, ‘2’ for ‘to’ and ‘2day’ for ‘today’, among others, to adjust the character limit. The website links were also shortened by various URL shortening options available on Twitter during Nepal’s earthquake, like bit.ly, goo.gl., tinyurl etc. Therefore, it is important to understand how users perceive and interpret the trustworthiness of tweets with shortened website links, i.e. are the users motivated to click the website links shared in a weak ties environment and how do they perceive these links in the context of a disaster situation (discussed in detail in Chapter 7).

Fourthly, this research focuses on sources of information like government, media and journalists, by exploring how Twitter users access and verify information from these sources. This is particularly important as it was noted that many government organizations in Nepal were either not present or poorly present (limited one-sided information flow and not engaging in comments or feedback from Twitter users). Twitter users were thus exposed to national and international media organizations as information sources. The earthquake also drew attention from many international media organizations; as a result the English language functioned as a *lingua franca* among Twitter users and the former. English is not the mother tongue of Nepal although English language has been an important component of the Nepalese education system (Giri, 2014). Eagle (1999) found that “English is the second most widespread language in Nepal in terms of popularity, education, and use” (p. 32), however the national report ‘National Population and Housing Census 2011’ (Table 21) has stated that only 2,032 have referred to English as their mother tongue (CBS, 2012, p. 165). However, it is true that many Nepalese people can speak, read and write in English with various levels of proficiency (Pandey, 2020). The research has not found any differences in the use of English between both males and females, however “on social media females seem relatively less active than males for posting their political and other ideological perspectives” (ibid, p. 5) in the context of Nepal.

### 3. Outline of thesis

Chapter 1 provides the background of the research. This chapter has been divided into three sub-chapters focusing on past earthquakes (history) in Nepal, the Nepal earthquake of 2015 and its impacts, and the use of internet and social media preferences in Nepal. These sub-chapters are important to understand the significance of the research, particularly focusing on a developing country like Nepal, as it explores people's information accessing and verifying behaviour based on the trustworthiness of the information.

Chapter 2 offers a literature review which is divided into two sub-chapters: trustworthiness of information in a post disaster event, and the theoretical frameworks required for the research. The first sub-chapter provides a brief overview to understand disasters, community resilience in the context of use of social media in a disaster, and a definition of trust and trustworthiness and their differences in the context of this thesis. The theoretical framework highlights contending theories—social capital and social networks—to understand the flow of information in an online network of weak ties. These two theories are important to this research as they are significant approaches to understanding how Twitter users access, distribute and verify information in a weak ties (online) environment.

Chapter 3 gives an account of the research design and methodological approaches. It explains why surveys and in-depth interviews were the best methods for this research to answer the research questions. This chapter reviews how a survey was utilized to select participants (from four different categories) for the in-depth interview, who shared their Twitter using behaviour in the context of the Nepal earthquake.

Chapter 4 highlights whether the government and its organizations are still a source of trustworthy information in a disaster event, particularly in the context of Nepal where their presence was nearly non-existence before the Nepal earthquake. The chapter also shares how Twitter users from various backgrounds perceive government information, and how their trust of various government organizations differs from each other when assessing information as trustworthy.

Chapter 5 explores retweeting behaviour in a post disaster event, to understand how Twitter users perceive information before sharing on their network. It helps to understand if the retweeting behaviour of Twitter users differs in disaster and non-disaster events. This particularly focuses on what makes a retweeter decide on the trustworthiness of a tweet before retweeting on their network.

Chapter 6 outlines Twitter users' understanding of fake Twitter accounts, to understand the level of their trustworthy perception in the context of Nepal. It explores how Twitter users judge fake accounts and the information shared by them based on content and social network approaches.

Chapter 7 is based on the concept of media organizations and journalists as sources of trustworthy information, which sometimes can question the trustworthiness of information provided by official sources (government) and which may present themselves as a parallel official information source. The chapter focuses on ambient journalism, clickbait journalism and the spreading of fake news.

Chapter 8 concludes with key findings and contributions of the research, outlining the limitations of the theoretical frameworks and approaches. It summarizes the contribution of this research to future studies and makes some recommendations on how the limitations of this research can be addressed in future studies.

## CHAPTER 2

### 2. Literature review

People need to make critical decisions during disaster events regarding how to be safe. The variety of information available during and after disaster events keeps people safe and helps them to recover from disaster impacts. The trustworthy information about potential disaster impacts and recommended actions to avoid harm helps people identify and reduce their personal level of risk. An individual will perceive information and analyse it based on their understanding and experience to achieve a high level of ‘situational awareness’ (Vidulich, et al., 1994). However, not all individuals have equal access to relevant information nor understand sources, which makes it more difficult for them to evaluate trustworthy and untrustworthy information in their unique situational context.

A primary challenge in post disaster events is communication. The lack of trust in information or sources leads to a poor disaster response. Disaster response is an action taken before, during or after disaster events to mitigate its impacts (Mileti, 1999). Therefore, trust affects the overall communication process, including information seeking and participation in the disaster response based on available information (Jaeger et al., 2007). It is difficult to assess what information a receiver finds trustworthy, but there is evidence that the acceptance of the information is particularly determined by the existing beliefs of the receiver (Mileti, 1999). It is important to understand how receivers measure trustworthiness of information, particularly on Twitter, as they are now their own gatekeepers (Haas & Wearden, 2003). Each receiver may have their own set of judgement criteria to measure trustworthiness of information. There is evidence that receivers judge trustworthiness of information based on the sender’s profile (Westerman, et al., 2012), their network (Burt, 2000), or their connection (boyd & Donath, 2004). This chapter identifies the value in studying the trustworthiness of information in a weak ties environment and disaster situation, based on the concept of social capital and social networks from receivers’ perspectives. It argues that there is a need for more research, in the context of developing countries like Nepal, on how receivers judge tweets as trustworthy by utilizing their social capital and networks, and how this is influenced by their existing beliefs and values. This chapter tries to understand how people’s trust in information differs based on two sources—individual and official.



## 2.1. Trustworthiness of information in post disaster communication

This sub-chapter evaluates previous studies in disaster communication through Twitter and establishes a theoretical framework for trust in a post disaster context. It provides an overview of communication practices through Twitter in the aftermath of disaster events. It focuses on immediate actions taken after the disaster events rather than long-term reconstruction and recovery. The section begins with understanding 'disaster' in a socio-psychological context and the importance of trust in the information sharing process.

### 2.1.1. Disaster: A socio-psychological concept

Disasters are often cited as the sudden disruption of regular routine events in society; sudden events that prevent people from doing regular routine work. In order to understand how people respond to disaster events, the nature and context of disasters should first be viewed. According to Fritz (1961), a disaster is understood as,

*...an event, concentrated in time and space, in which a society, or a relatively self-sufficient subdivision of a society, undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfilment of all or some of the essential functions of the society is prevented. (p. 655).*

The United Nations Office for Disaster Risk Reduction (UNISDR) defines disaster as,

*A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts. (UNISDR, 2009, p.9.)*

These definitions explain that an event can be considered as a disaster when there is a collective stress and disruption on the regular routine events in the society. There is, however, no uniformity in the definition, as disaster can be described in different terms. Scholars like

Quarantelli (1999) and Kroll-Smith and Couch (1990) view disaster as an event where there is not necessarily destruction but considerable social disruption has occurred (Oliver-Smith & Hoffman, 1999). This perspective that defines disaster as a socially constructed crisis of the society, theorizes disaster as the psycho-social disruption of society and believes that issues of material or infrastructural damage fail to address the essential elements of a disaster. However, in this research disaster will be viewed as social disruption, physical harm and psychological dislocation. There is a school of thought that an event should be viewed as a disaster if it affects human lives and livelihood (Nakagawa & Shaw, 2004). An event cannot be considered to be a disaster unless there is some physical or infrastructural harm to human beings. Some scholars argue that the experience of disaster is often an outcome of economic imbalance in the society (Fischer, 1998). People living in hazardous places fall prey to disasters, and people with less economic power tend to live in these hazardous places as they are more affordable for them (ibid). Thus, some believe the analysis of disaster should begin with human relations and focus on the impact on those relations.

Disasters are considered as “non-routine, destabilizing, causing uncertainty, disorder and socio-cultural collapse” (Oliver-Smith & Hoffman, 1999, p. 23) This concept holds that there was societal equilibrium or normal state (normalcy) before the disaster, and disaster recovery is considered as returning to this normal state. People struggle to return to their prior normal state, i.e. ‘bounce back’. However, returning to the normal state might not always be feasible after a disaster (Hills, 1998), but the society might do better through ‘bouncing forward’ (Manyena et al., 2011) rather than ‘bouncing back’. The ‘bounce forward’ notion encapsulates change processes brought by the new realities after the disaster, while ‘bounce back’ refers to recovery within a short timeframe with minimal or no external assistance. Apart from ‘bounce back’ and ‘bounce forward’ concepts, some believe disaster to be a catalyst for change (Paton & Johnston, 2017). These changes could be physical, economic, political and psychological issues that people undergo to adapt to new realities. Though adjusting to changed circumstances or new realities and learning from past experience have always been part of human development, this might not be the same in all societies.

### 2.1.2. Community resilience and social media in a disaster

The impact of a disaster exposes people to new realities. They need information to address demands and consequences to cope with new realities. Social media has been playing an

important role to help people source, communicate and exchange information (Gao et al., 2011; Potts, 2013; Sutton et al., 2008). The process to access information in real time events is made possible by social media, which is otherwise hard to obtain through traditional media, and this is gaining prominence in disaster studies. However, access to information is not the only issue that needs to be considered in a post-disaster situation. This is because people's circumstances and needs change from group to group or society to society over time (Comfort et al., 2004). This diversity of needs often means official response agencies fail to meet people's specific and local information requirements (Palen et al., 2010; Sutton et al., 2008). This could be due to the top-down and centralized communication model of official response agencies, which often delays information flow, prompting people to turn to social media for information that addresses their needs in the changed circumstances (Chatfield et al., 2014; Jaeger et al., 2007). In addition, the authorities' failure to understand public behaviour post-disaster make the disaster management process very difficult. Jurgens and Helsloot (2018) believe authorities fail to run effective disaster response processes because their understanding and preparation are based on three myths—individuals panic during a disaster; individuals are helpless; and robbery is frequent, during and after disaster events. This undermines people's capacity to respond to disaster events by utilizing social media.

As well as promptness of accessing information, the community resilience-building capacity offered by social media means it often appears in disaster-related literature. The word 'resilience' derives from the Latin word *resilo* meaning 'jump back' or 'bounce back' (Dufty, 2012, p. 40.). There is a dilemma among scholars about defining resilience as 'bounce back' or 'bounce forward' in the context of disasters (Manyena et al., 2011). However this research opts for the 'bounce forward' concept argued by Manyena et al., (2011) to address new realities wrought by a disaster. The relationship between disaster resilience and social media is important for understanding information gathering, information disseminating, collaborative problem solving, and coping in post-disaster events (Jurgens & Helsloot, 2018). Manyena et al. (2011) posit that "...disaster resilience could be viewed as the intrinsic capacity of a system, community or society predisposed to a shock or stress to adapt and survive by changing its non-essential attributes and rebuilding itself" (p.5). A geographical area could be full of people, information and materials after a disaster event, termed as "collective behaviour that describes the kinds of self-organizing activities of public" by Palen and Vieweg (2008, p. 55). People converge to a disaster area to help, to memorialize, out of curiosity, or to benefit from the victims. People here should not only be viewed as people who carry out rescue operations but also as disaster survivors, curious onlookers and compassionate helpers (Hughes et al., 2008).

Fritz and Mathewson (1957) have offered the five types of people involved in social convergences as the returnees, the anxious, the helpers, the curious, and the exploiters. Kendra and Wachtendorf (2003) have added two more types of people based on social convergence—the mourners and the supporters—based on the World Trade Centre disaster in 2001. The potential to connect through social media has reduced the limitation of this social convergence to geographical access (Hughes et al., 2008; Palen, 2008). In addition, the potential of connection for assistance is not limited to the strong ties of relatives and friends but also to the weak ties of societal groups, even ad hoc groups, activated post disaster (Procopio & Procopio, 2007). The connection through social media to victims or information seekers gives a sense of community by reconstituting normalcy and relationships (Seeger et al., 2003). Despite the invaluable assistance to victims and disaster response teams through ‘digital volunteerism’ (Starbird, 2011), the question of trustworthiness of information needs to be properly addressed.

### 2.1.3. Trust and trustworthiness of information

The lack of trust in information could also be a reason for the failure of an effective disaster response. It is difficult to discriminate between trustworthy and untrustworthy information especially in a disaster situation. People seldom respond to information that they don't trust. Trust is an important aspect of this research. It is widely accepted that trust is multidimensional in nature (Blomqvist, 1997; Corazzini, 1977). Since it is a multi-disciplinary, a general definition of ‘trust’ is lacking, as it has been widely studied in disciplines such as sociology, philosophy, psychology, economics, and organizational behaviour (Chopra & Wallace, 2003; Rousseau et al., 1998). However, while its definition is difficult, its role is better defined. It has been accepted that trust is important in a number of ways: it facilitates cooperative behavior (Gambetta, 1988), promotes network relations in organizations (Miles & Snow, 1992), facilitates the formation of ad hoc work groups (Meyerson et al., 1996), and promotes effective responses in a disaster through collaboration (Waugh & Streib, 2006), among others. ‘Trust’ in this research has been studied to understand cooperation among groups (Deutsch, 1962) and to understand interpersonal and intrapersonal relationships of individuals or groups. Though there could be cooperation among individuals or groups unrelated to trust, such as coercion (e.g. court order) (Rousseau et al., 1998), however, this research will focus on voluntary cooperation in a post disaster environment.

### 2.1.3. a. Definition of trust

As noted above, the multi-dimensional nature of trust makes it hard to adopt one definition. The definition of ‘trust’ in this research has been adopted in the context of a weak ties environment, i.e. on Twitter, and particularly focuses on disaster events (defined in detail below). It is evident that trust plays an important role as a facilitator in an uncertain environment such as a disaster (Aljazzaf et al., 2010). That is to say, interaction in a weak ties environment could be an act of trust among the participants. The dimension of trust between an online and offline environment can be identified as ‘slow’ and ‘swift’ trust respectively (Corritore et al., 2003). “Slow trust occurs over time and is the kind of trust typically seen in long-term relationships. Swift trust occurs when relationships are quickly created and then quickly cease to exist” (ibid, p. 7). The trust that evolves during disaster events is closer to a swift trust dimension where trust among participants can occur and end quickly. Poortinga and Pidgeon (2003) stress that trust in the context of a disaster is an important factor of risk perception and risk acceptance. It is thus important to understand a level of trust may evolve among people or institutions despite no pre-existing links or history. This level of trust has been identified as ‘impersonal’ trust, which can be evaluated in the context of weak ties and a disaster event. The “impersonal trust may replace personal trust as a driver of evaluating information during disasters” (Mehta et al., 2017, p. 3). This impersonal trust can arise during a situation, or among the people or institutions, for a certain time with no pre-existing relationships or links. Therefore, this research has adopted impersonal trust to understand trust in the context of weak ties and disaster events.

The impersonal trust can be understood as:

*Impersonal trust arises when social-control measures derived from social ties and direct contact between principal and agent are unavailable, when faceless and readily interchangeable individual or organizational agents exercise considerable delegated power and privilege on behalf of principals who can neither specify, scrutinize, evaluate, nor constrain their performance (Shapiro, 1987, p. 634).*

In a broad sense, trust is a social and psychological phenomenon. Trust has been studied under four levels: individual (personality character), interpersonal (social tie based on one person to

another), relational (mutual relationship), and society (a feature of society as a whole) (Kelton et al., 2008). An individual trust is purely based on the psychological trait, a general expectancy towards others. This has been criticized for failing to address a societal context of trust (Lewis & Weigert, 1985) in which a particular instance of trust occurs. The most common approach to trust is interpersonal trust, which is defined as an attitude of trustor towards trustee based on confidence or expectation of the latter's competence (Giddens, 1991), goodwill (Hardin, 2001) or future actions (Gambetta, 2000). The relational property of trust emphasizes trust not as an attitude or behavior, but rather as an emergent property of their relationship as a whole (Kelton et al., 2008). The societal model of trust asserts its importance to the proper functioning of society. This functional account of trust emphasizes trust as a role which helps people to cope with the complexity of society (Luhmann, 1979). Thus, an appropriate approach to define trust in an online environment is impersonal trust. This is because trust can evolve and dissolve among the users (people or institutions) within little time and without pre-existing relationships or links, which is highly likely in a post disaster situation where everyone may not have equal access to information.

The existing research on trust is more related to the offline environment (Seligman, 1997; Sztompka, 1999; Uslaner, 2002). However, most research findings on trust related to offline behaviour, are also applicable in an online trust environment, as both environments have much in common. The most common element in these environments is exchange (Corritore et al., 2003). The exchange can be restricted by risk, fear, complexity and costs (ibid). The cooperation and coordination among individuals or groups, based on interaction and communication, can reduce fear of risk in both environments. The social rules of interaction and communication applicable in an offline environment are also applicable online. But some scholars argue that trust is not a central pillar of social order and may not be important in various social exchanges (Hardin et al., 2005). They assert that trust only exists when one party believes the other party will act in their interest, which is referred to as 'encapsulated trust'. Siebecker (2009) defines encapsulated trust as "a rational expectation that others will take our interests into account when determining what course of action to pursue" (p. 119). However, this encapsulated trust is context specific, i.e. what one individual or group trust may not be the same for another individual or group. The notion of trust makes sense only if the encapsulated trust concept, which is self interest-based, goes beyond calculative self interest (Williamson, 1985). Some proponents even treat trust as meaning reliability or confidence, but these concepts are narrower than our concept of trust (Kelton et al., 2008).

Trust is also adopted as a relational concept (Hardin, 2002), which defines how a person, group, institution or group of nations think about others. From a sociological perspective, trust is conceived as pertaining to collective property, not to isolated individuals (Lewis & Weigert, 1985). So, trust is applicable to the relations among people rather than psychological states taken individually. The research adopts trust as a sociological perspective rather than psychological because an individual has no obligation or need to trust apart from their social ties. This implies that the bases of trust rest on a sociological perspective, i.e. trust in the other person or institution. Rousseau et al. (1998) view trust as a “psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another” (p. 395). Therefore, trust is a psychological phenomenon which occurs in various social contexts: individual (personal trait), interpersonal (relationship between one individual and another), relational (mutual relationship), and societal (collective property in society) (Chopra & Wallace, 2003). The trust in an online environment (weak ties) can be viewed through impersonal and societal perspectives. The weak ties are often considered as connections or networks that link people—individuals or groups—from heterogeneous social groups into a larger social setting (Kavanaugh et al., 2003), who may or may not have previous links. The relationship in this form of connection is less personal, or is often based on indirect or secondary social relations, which Granovetter (1977) terms as ‘weak ties’ and Putnam (2000) as ‘bridging social capital’, which are described in detail below in the theoretical frameworks section.

#### 2.1.3.b. Definition of trustworthiness

Trustworthiness is often modeled as a precursor to trust. However, Hardin (2002) argues that trust and trustworthiness are two different concepts and they should be treated separately. Trust is a willingness to depend on others in situations of risk while trustworthiness is a set of beliefs about others which precedes that willingness (Mayer et al., 1995). Trustworthiness is sometimes used interchangeably with ‘credibility’. However, Alberts and van der Geest (2011) assert that credibility is a narrow concept while trustworthiness is a broad one. Credibility is the receiver’s belief that information from the sender is accurate and reliable, while trustworthiness is not limited to the reliability of information. It is, rather, about the reliability and accuracy of the source, information and medium through which information is disseminated. However, some scholars identify trustworthiness and expertise as being two components of credibility (Fogg

& Tseng, 1999; Hwang, 2013). They assert trustworthiness in terms of having good intentions, being truthful and unbiased, while expertise is viewed in terms of being knowledgeable, experienced and competent. They believe that trustworthiness and expertise are two components of credibility. Thus, this research adopts trustworthiness as a sense of credibility. The definition of trustworthiness in this research has been adopted from Ohanian (1991) who defines trustworthiness as the extent to which the receiver (consumer) believes the sender is capable of sincerely communicating information without prejudice. The source's expertise and competence, contents of the information, and endorsement from others in the network (family and friends) through retweet and comment are among the features that this research adopts to verify the trustworthiness of information on Twitter in post disaster events.

### 2.1.3.c. Trustworthiness of online information during disasters

There is evidence that people enter into relationships through new media when they are treated as real people and places (Reeves & Nass, 1996). It has already been mentioned above that trust literature on an offline environment sometimes is applicable to an online environment too. The concept of trust during a disaster situation is a precursor to risk perception and risk acceptance (Poortinga & Pidgeon, 2003). Therefore, the concept of trust in an online environment is somewhat different to that which has been accepted earlier in an offline situation. The definition above views trust as a dyadic process. However, trust in disaster situations is a more complex relationship model, where an individual or group has to trust multiple individuals or groups who may be previously unknown. In addition, an individual needs to consider the source, message and channel when trusting online information (Burford et al., 2002). Thus, trust assessment in online and offline environments is much the same. Though disaster management agencies or government agencies are considered highly trusted for information in disaster events, an uncertain environment can limit their expertise and lead people to pursue alternative sources (Haynes et al., 2008). In this way disasters bring together people who do not have a pre-existing relationship (Paton, 2007). In such scenarios, people judge trust intuitively through perceived values rather than by any critical assessments (Poortinga & Pidgeon, 2004). This judgement is facilitated when people share similar social identities and evaluations of the situation (Poortinga & Pidgeon, 2004).

Gefen (2002) argues that the judgement of trustworthiness is based on three characteristics: ability, benevolence and integrity. Ability is a skill that enables influence in a particular



environment; benevolence refers to the belief that the person trusted would not harm the recipient; and integrity is a belief that the trusted person adheres to similar values and principles as their own (Mayer et al., 1995). Some disaster researchers have added features such as identifying competence, vested interests and scepticism (Haynes et al., 2008) to define trustworthy judgements and related behaviours. Scholars fear that online information could be incomplete and inaccurate given the lack of professional gatekeepers (Metzger et al., 2003). These issues are particularly relevant in research on Twitter information, post disaster, where receivers are themselves the gatekeepers (Haas & Wearden, 2003). In some cases, the information even fails to identify its sources. This lack of source identity makes it difficult to judge the trustworthiness of information, as the source is one of the requirements for judging information trustworthiness (Sundar, 2008). The sources of information on Twitter sometimes are either masked or unavailable. While there could be some source information in an introduction section of a Twitter user, it could be hard to interpret based on this information only. In addition, it is hard to trace original sources of information if the content has been refined multiple times.

The judgement of information thus lies in personal intuition, as trust determines how much an individual is willing to accept the information from others. The level of trust in information also varies from person to person. People tend to judge online information (which is also applicable to Twitter) based on five different criteria: accuracy (if the information could be verified offline), authority (source of information based on credentials or qualifications), objectivity (purpose of providing information, i.e. are there any vested interests), currency (how up to date is the information), and coverage (depth of information provided) (Metzger, 2007; Metzger & Flanagin, 2013). This makes judgement a complex and intensive activity. In addition, people have constraints on their ability to evaluate information. The limitations imposed by the human mind make it difficult for people to act rationally while processing information (Simon, 1955), which is referred to as 'bounded rationality'. Salinger (2010) defines bounded rationality as meaning that "individuals (or firms) act purposefully, but not necessarily as if they are both fully informed and perfectly rational" (as cited in McSweeney, 2010, p. 239). This is based on the idea of 'least efforts' and considers the fact that people have to arrive at their inferences based on a "realistic amount of time, information and computational resources" (Gigerenzer & Todd, 2000, p.741). Thus, trustworthiness of information in an online environment is based on heuristic processes. The cues in information content and sources could be some of the heuristic approaches that could determine trustworthiness of information. The trustworthiness of information helps people to make decisions about their disaster response. Most decisions regarding disaster response are based on interactions among members

of society. In addition to individual intuition, perceived risk is another factor that helps people in the decision making process during a disaster response (Patterson et al., 2010). Perceived risk consists of two main elements: assessment of a natural hazard, and one's vulnerability (ibid). The assessment of a natural hazard comprises physical attributes like the distance between shelter and the hazard area. Vulnerability is regarded as the risk perception capacity of an individual to cope and recover from the impact of a natural hazard (Wisner et al., 2004). An individual's risk perception is affected by factors like social network, social capital, household preparedness and availability of resources (financial and logistics), among others. In addition, the perceived credibility of source information plays an important role in understanding and interpreting disaster information.

As social networking sites like Twitter often lack professional gatekeepers, users become more responsible for judging the trustworthiness of information. This shift from the traditional notion of gatekeeping is termed 'gatewatching' by Bruns (2015). Gatewatchers cannot control the flow of information, rather they diffuse information while making their sources known to others, which is also cocreation of content. This helps other gatewatchers to judge the trustworthiness of information based on their perception. Some scholars have found that characteristics of receivers (gatewatchers), such as personal involvement, familiarity with topics and need for cognition, also affect credibility judgement (Fogg & Tseng, 1999; Self, 2014). These features determine the ability and motivation of users to process information credibility (Chaiken, 1987). Thus, receivers undergo a long series of psychological processes before determining trustworthiness of information and disseminating it to their network, which can be better explained using two theories—social network theory and social capital theory—as discussed in detail below.

## 2.2. Theoretical frameworks

In order to understand trust in the context of this study, online information flow in a disaster context has to be addressed. The research is particularly focused on understanding how information flows in the social network, and what are the clues attached to these networks that help to judge information as trustworthy or not in the context of a disaster event. The research borrows from two theoretical approaches. Firstly, the social network of weak ties proposed by Granovetter (1977), which addresses how individuals connected through weak ties are likely to be more influential than those with close ties, in sharing information. Secondly, the social

capital approach based on social structure and action proposed by Lin (2001), which addresses social capital based on trust as a component of social relations, which is facilitated and constrained by them.

### 2.2.1. Social network of weak ties

The idea of networks has been adopted as theory and method (Burt, 1987; Castells, 2000). As the term 'network' has been used in many contexts some scholars noted that it is losing its original meaning (Ebers, 1997). Castells (2000) has put forth the idea of a network society as a form of social structure. According to him, this social structure is "organized around relationships of production/consumption, power, and experience, whose spatio-temporal configurations constitute cultures" (ibid, p.1). The keys to enactment of this social structure are information and connectivity. This enactment happens through ties among members, known as 'nodes' (Ebers, 1997). The idea of a network is applicable to the individual (Haines et al., 2002), community (Girvan & Newman, 2004), and organizational (Kapucu, 2005) levels, as it governs and organizes interaction. Therefore, studying people or groups of people in the context of social structure encompasses that they are situated in a network, or within networks. Thus, network theory can be utilized to understand people or groups in a structure. The study of networks in online communication is based on weak ties, where communication can happen between strangers. The research will look into social network theory based on the theory of weak ties approaches developed by Granovetter (1977) to understand how social network theory is applicable in an online social networking environment.

As network theory acknowledges a network as a structure, an individual entity (known as a node) in the network does not exist alone, rather in relationships among individuals (nodes) (Powell, 2012). This node can be a person, organization, community or any other entity that has or is capable of establishing relationships with other entities (Borgatti & Ofem, 2010). These nodes are part of the network and should have some sort of relationship with other nodes in order to exist in that network. This relationship could be reciprocal and based on future expectation. It is not necessary that nodes who communicate in networks know each other, as this can occur with multiple users who are unknown to each other. This transformation is viewed as a shift from living in "little boxes to living in the networked societies" (Wellman & Hampton, 1999, p. 648). The relationship between and among nodes is built through repeated communication. This relational nature of communication among nodes is the backbone of

network theory, and the flexibility of social network theory makes it easy to apply in different contexts. The social network forms a crucial bridge for the transformation of information, by channeling selective disaster-relative information. The information passes through various networks which affect how information is processed, filtered and selectively passed on (McPherson et al., 2001). Thus, a network acts as a conduit for sharing disaster information, and how this information in the network is analyzed and understood as being trustworthy is based on the social capital possessed by that particular network.

### 2.2.2. Social capital in the context of a social network

The social capital theory proposed by Lin (2001) views capital as ‘collective goods’ rather than ‘individual property’. The social capital as defined by Lin (2001) is “capital captured through social relations and that its capture evokes structural constraints and opportunities as well as actions and choices on the part of the actors” (p. 3). This views capital as a collective social asset of actors gained as members of a network through connections and access to resources. Lin (2001) asserts that components of social capital—information, influence, social credentials and reinforcement—embedded in a network, enhance the outcome of actions. The information that flows through ties in the network provides its members with information and choices otherwise not available. The social ties and relationship of members in a network provide social credentials and influence to other members of the network. The social relations are also expected to reinforce identity and recognition (ibid). At one point it might look like social capital is similar to human capital when viewed through a relational perspective. People invest in relationships with an expected return. However, social capital is understood to give access to personal and social resources. The personal resources are possessed by an individual while social resources are resources gained by an individual through social ties. There are three elements of social capital that can better help to understand benefits accrued by individuals through networks: the number of members in the network, the strength of ties in the network, and the resources possessed by those members of the network (Flap, 2004). Therefore, social capital resources can be available to an individual in the network through social relations, even though they are possessed by other persons.

The concept of social capital is also best suited for understanding the social implications of social networking sites (Kaigo, 2012). Some scholars have focused on developing online social capital through an extension of offline social capital (Valenzuela et al., 2009; Valkenburg et al., 2006). However, there is evidence that social capital exists among online members with no,

or few, prior offline ties (Kobayashi, 2010; Kobayashi et al., 2006). There are two different dimensions for studying online social capital developed through social networking sites like Twitter—online bridging social capital, and online bonding social capital (Putnam, 2000; Zhu & Chang, 2012). The bridging social capital facilitates information dissemination and solidarity in a weak ties context. The bonding social capital is a homogenous network of like-minded individuals (strong ties) which is likely to result in emotional support and access to resources otherwise not possible in a weak ties network (Hofer & Aubert, 2013). Some scholars argue that individuals lose social connectedness by spending more time in an online environment (the Internet), which is detrimental to social connectedness (Kraut et al., 1998; Nie & Hillygus, 2002). However, this underestimates the fact that online connections can also build networks of like-minded people. There is evidence that social networking sites (the Internet) supplement pre-existing social ties (Wellman et al., 2001). These internet-based social networking sites also create online ties among individuals who have never met before, which can generate bridging social capital online (Best & Krueger, 2006). A sense of belongingness can be generated online by the connection of like-minded people, thus generating bonding social capital from bridging (Blanchard, 2007). Thus, through using social networking sites for the purpose of interaction and communication, this can further strengthen offline ties and create new online ties (boyd & Ellison, 2007; Lampe et al., 2007; Moore et al., 2012).

Larger networks of people can be easily built and maintained through social networking sites like Twitter in comparison to offline mechanisms. Though Twitter doesn't meet all the requirements of social networking sites mentioned by boyd and Ellison (2007), it allows users to connect and interact with each other, which resembles features of other social networking sites. Previous research has suggested that the use of social networking sites impacts on an individual's social capital (Lampe et al., 2007; Subrahmanyam et al., 2008). As Twitter users require no approval from the target person that a user wants to connect or interact with, it can help to create and maintain ties. The users can express, follow and interact on various views and opinions; this gives rise to connectedness and belongingness (Java et al., 2007). This will have a positive effect on users' bridging social capital. Twitter users can consider their followees and followers as their community. The support provided by these followers and followees is one good example of bonding in the online environment. However, too many connections can also decrease social capital in an online environment. If Twitter users have followed a large number of people on Twitter, they may spend a lot of time reading others' tweets and find that their access to social capital suffers (Hofer & Aubert, 2013). Twitter users

with large numbers of followees can suffer from information overload and Twitter users with many followers are likely to have less bonding with them.

### 2.2.3. The issue of trust in social networks

People are likely to pay attention to information shared by a person whom they trust. This implies that people are less likely to trust information from someone in whom they lack trust. This will impede the transformation of information into usable knowledge (Fisher, 2013). Therefore, trust plays an important role in the information seeking and sharing processes in a network. As Granovetter (1977) has stated, the “strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding) and the reciprocal services which characterize the tie” (as cited in Marsden & Campbell, 1984, p. 483). Petróczy et al., (2007) argue that “closeness, duration and frequency, breadth of topics and mutual confiding” (p.40) are indicators of tie strength, while “neighborhood, affiliation, similar socio-economic status, workplace and occupation prestige” are predictors (p. 40). Many attempts have been made to find valid indicators and predictors to measure tie strength in networks (Wasserman et al., 1993). It is assumed that close friends and family have strong ties while acquaintances have weak ties (Granovetter, 1977; Murray et al., 1981). Trust among entities of a network increases overall information quality (Tang et al., 2012). However, the level of trust is quite different in these two types of ties.

The strong ties are often embedded with large amounts of social capital and high levels of trust among entities (Fisher, 2013; Murayama et al., 2013). There is high level of trust among entities with strong ties in comparison to those with weak ties. The fear of reciprocity, which is based on future exchange relations, is another factor that contributes to trustworthy information in strong ties. An individual who is acquiring information from strong ties in a source is aware of his or her perception (e.g. competence, behavioral characteristics etc). Based on strong bonds, individuals with strong ties are more willing to be helpful (Krackhardt, 1992). In addition, an individual in a strong ties situation seeks advice only from those domains where they trust the source’s competence (Rulke & Rau, 2000), or strong ties tend to develop common ways of thinking and communicating (Walker, 1985). However, there is scant or fleeting trust that binds entities in a weak ties situation, as this is formed on unstable networks (Widén-Wulff et al., 2008). Also, weak ties acquire information across their network easily but impede transferring information within its sub-groups (Hansen, 1999). However, Fisher (2013) argues that weak

ties can encourage trust by bridging social capital to facilitate collective action. While describing a relationship between trust and network ties, Levin and Cross (2004) have argued that trust is a relational variable while tie strength is a structural variable. According to them, even in low trust scenario (weak ties) members of a network can get novel and potentially useful knowledge based on structural benefit (knowledge acquired across members of the network). While with strong ties, they argue, despite the high level of trust, members of the network will not receive a structural benefit and may draw redundant information. The tie strength here implies closeness and interaction frequency between the information seeker and the source (Granovetter, 1977; Hansen, 1999). The trustworthiness of the source will be only questioned if the receiver is not aware of or confident of the trustworthiness of the information received. If the information is explicit, the trustworthiness of the source should not be critical as information is understood apart from the trustworthiness of source (Levin & Cross, 2004). However, this does not apply to tacit information where the receiver should trust the source's competence. The trust between receiver and source is important in the context of tacit information sharing (Simonin, 1999). In this scenario, though both weak and strong ties are important in society, however, it has to be noted that weak ties are an important component in a disaster context. This is particularly because it not always possible to access information from strong ties in this uncertain situation. Hampton (2002) has found that interaction among weak ties members (at local levels) can lead to increased community involvement and public participation. The weak ties facilitate knowledge-sharing among the wider community members, which can be an important factor for collective action. Though there are issues of trust in a weak ties environment, it should be noted that every member of the network has their own way of perceiving information as trustworthy. In addition, trust is an integral element of social capital, which is discussed below in the context of disasters.

#### 2.2.4. Trust: An element of social capital in the context of disasters

The notion behind social capital is the investment in social relations with expected returns (Lin, 1999). It is assumed that people engage in social networking or social relations expecting that they can generate maximum profit when they need it. However, it is important to note that theorists differ in their emphasis on whether this profit is accrued by an individual or the group. Bourdieu (1986) believes that social capital is a tool utilized by individuals of a dominating or privileged group to maintain that group's domination, while Coleman (1988) and Putnam (2000) stress social capital as a public good. There is also a major distinction between Coleman

and Putnam's perspectives in defining social capital. Coleman stresses the strong ties of social capital, thereby stressing close-knit social relations. He points out two perspectives of social capital. One, being the multiple dimensions of their social relations, like friends attending the same church or their children attending the same schools. The other perspective is that everyone in that set of people knows at least two other people. His idea is that if there are multi-faceted aspects to social relations, there will be high social capital. Thus, he believes that high social capital is only possible in close-knit social relations.

The major differences in the above views pose a serious question: is social capital an individual's good or a public good? Most scholars see it as both. The embedded resources in the social capital are beneficial to the group and to the individual in the group (Lin, 1999). At the group level, the social capital represents the aggregation of resources like economic, political, cultural and social resources of members of the network or networks. In addition to whether social capital is an individual or public good, the other major controversy regarding the collective aspect of social capital is whether there should be closed networks in social relations, or social networks (Bourdieu, 1986; Coleman, 1988; Putnam, 2000). Some scholars see the closed density of social capital as a distinctive advantage of social capital as they believe it maintains trust, norms, authority, and sanctions in the network, which enables the effective mobilization of network resources. This concept undermines the importance of bridges in the network (Burt, 2017; Granovetter, 1977) for facilitating effective information flow. It is likely that closed or denser networks are useful for preserving or maintaining resources for a privileged class (Bourdieu, 1986), or for a mother to move to a cohesive community for the security of her children (Coleman, 1990). However, bridges or weak ties in the network should be beneficial for those searching for and obtaining resources not presently possessed. In addition, Burt (2017) argues that individuals invest in structural holes to invest in their social capital. These structural holes enable the individual to connect with people to whom they are not directly connected. Whether these ties are sustained over time is likely to depend on the payoffs to each of the parties. But having weak ties does not guarantee the rewards from the social networks or connections. Though trust is one element of social capital, it is a key factor that helps to sustain the ties over time. In addition to the trust, the location in the network is considered key to social capital (Burt, 2017; Granovetter, 1977). By identifying the location of the node in the network, it is possible to assess how closely or how far the node is from a strategic location. Marsden & Campbell (1984) proposed the social resource theory, which focuses on embedded resources to measure social capital. As per this concept, the measurement of social capital is based on the amount of characteristics of others—network resources and



contact resources—with whom the individual has ties. Network resources represent accessible resources embedded in the network, while contact resources refer to resources embedded in contacts, used as a helper in instrumental action (Lin, 1999). The follower-followee relationship in Twitter can be viewed as a network. The bonding social capital in Twitter has been associated with the number of followers, while bridging social capital is related to the number of followees (Hofer & Aubert, 2013). A piece of information shared by a Twitter user appears in their followers' timelines, which can be further shared with (retweet with comment) or without (retweet) any modification. The bridging social capital (Putnam, 2000) gained through the weak ties of Twitter's followees-followers' relationship can be maintained as one progresses through life's changes. This concept has been termed 'maintained social capital' (Lampe et al., 2007), which is defined as "whether online network tools enable individuals to keep in touch with a social network after physically disconnecting from it" (p. 1146). The computer-mediated interaction has played many positive roles in community interaction, development and social capital (Hampton & Wellman, 2003) as it forms bases for weak ties. The capacity for the distribution of photos, audios and videos through social networking sites will develop new forms of social capital. The users can draw resources through their bridging social capital by creating and maintaining large networks (boyd & Donath, 2004; Wellman et al., 2001). Some scholars support this form of social capital accrued through social networking sites as they believe it has supplemented or replaced in-person interactions (Wellman et al., 2001), while others criticize it for diminishing an individual's social capital (Nie, 2001). The positive and negative impacts on social capital through online ties depend on how scholars conceptualize the medium (Williams, 2006) and how people use it (Kim, 2006). The bonding social capital of strong ties can provide emotional support or access to scarce resources, but it is unclear on the nature of social capital formation when online and offline ties are coupled together. However, Kaigo (2012) argues that Twitter may increase a user's online and offline bonding social capital.

The most appropriate norm of social capital is trust. Putnam (2000) defines social capital as "connections among individuals—social networks and norms of reciprocity and trustworthiness that arise from them" (p.19). He argues that trust is an essential component of social capital as it encourages and strengthens cooperation. A high level of trust increases cooperation, and cooperation among the members increases trust. The norms of reciprocity that arise through cooperation and trust make collective action easier by limiting opportunism (Albrecht, 2018). Norms of reciprocity are thus considered as sources of social trust (Putnam et al., 1994). Social trust helps to build networks or cooperation among people. However,

Chang (2010) argues that social cooperation among members of society is not always same before and after disaster events. Though people generally participate in collective action after disaster events this might not be always be the case, as it might be rational for them to pursue their egoistic interests (Willer, 2009). The safety of their personal belongings could be of more importance to them than participating in collective action, i.e. protection of personal property comes before protection of community. Thus, disasters trigger a change in the level of social capital in a community. This change in social capital is also related to a change in trust. The person who has a high level of trustworthiness over a person before a disaster might have a low level of trustworthiness to that particular person after a disaster. However, this research focuses on the understanding of trust among Twitter users for collective action immediately after the disaster event rather than for the long-term recovery process.

As also stated above, a disaster brings together a number of official and unofficial stakeholders who may or may not have a pre-existing relationship (Paton, 2007), and gives rise to impersonal trust among them for collective action. It should also be noted that every individual has their own perception of the definition of information as trustworthy or not, which they can evaluate with the help of social capital and social networks. However, the judgement of information in a disaster event can be based on intuition about perceived values among users with similar social identities, or people who perceive a situation similarly, rather than based on systematic assessments (Poortinga & Pidgeon, 2004). The research therefore explores how to understand the way individuals or groups perceive information as trustworthy from different sources and how these measures are affected by the perceived beliefs and values possessed by the individuals. The methodology chapter (Chapter 3) of this research illustrates how this research explores the information verification process of receivers in the context of a disaster event.

## CHAPTER 3

### 3. Methodology

This chapter sets up the methodological framework adopted in this research to explain how people evaluated the trustworthiness of tweets (information) in the post disaster event in Nepal. The chapter begins with the rationale of the constructivist research approach which has become an integral part of adopting qualitative research for this study. The chapter elaborates how a survey was implemented to selected participants for in-depth interviews and how their responses were validated through tweet analysis for this research. This can help to understand the rationale of applying a qualitative method (in-depth interviews) as the main source of data in the Nepal earthquake context.

#### 3.1. Constructivist paradigm

The research adopts a constructive paradigm approach for the holistic understanding of the trustworthiness of tweets in a post disaster event. Epistemologically, the researcher positions himself in the constructivist paradigm, as social knowledge is constructed based on interaction between the researcher and the participants rather than being discovered (Patton, 2002). The experience shared by the participants of how they judge tweets as trustworthy or not are based on their socio-cultural context. The interpretation of trustworthiness of information is based on the fact that “truth is relative and that it is dependent on one’s perspective” (Baxter & Jack, 2008, p. 545). This individual interpretation of each participant is also an outcome of the relationship between their experience and the socio-cultural context (Creswell & Creswell, 2018; Guba & Lincoln, 1982). As constructivism relies on the social construction of reality, there is the possibility of collaboration between the researcher and participants, where the latter share their experiences (Guba & Lincoln, 1982; Patton, 2002). The experience shared by the participants will help the researcher to understand the formers’ actions and their views about the reality (Lather, 1992). The sharing of people’s understanding and knowledge about the world, based on their experiences, is a part of the constructivist philosophical paradigm (Honebein, 1996).

The constructivist paradigm portrays the idea that learning can happen outside the lecture theatres or classroom. It is rather a process whereby a person discovers knowledge through experience (Dogru & Kalender, 2007). The paradigm further explores how a person’s

experience, and the context of an event, have impacted to make sense of their constructed understandings, and helps to understand their actions based on these understandings (Charmaz, 2006; Crotty, 1998). Therefore, the research adopted a constructivist paradigm for the collaborative understanding of the participants' experiences of the Nepal earthquake event and for me, as the researcher, on understanding and interpreting the research participants.

### 3.2. Case study method

The case study method provides in-depth knowledge to understand a real-world case (Yin & Davis, 2007) through the interpretation of information by an individual or groups. The research adopts Yin (2018) case study method, which is based on the constructivist paradigm (Baxter & Jack, 2008). According to Yin (2018), a case study can be used when,

*(1) your main research questions are “how” or “why” questions, (2) you have little or no control over behavioral events, and (3) your focus of study is a contemporary (as opposed to entirely historical) phenomenon—a ‘case’ (Yin, 2018, p. 33).*

The research has adopted embedded units of analysis to analyse the information verifying process of Twitter users (based on different geographical locations) to understand the trustworthiness of information. The embedded case method allows the researcher to explore the case while considering the influence of various factors (Baxter & Jack, 2008). According to Yin (2018), “the subunits can often add significant opportunities for extensive analysis, enhancing the insights into the single-case” (p. 101). The participants of the interview were from various geographical locations (during Nepal earthquake event, not necessarily when the interview was taken). As a result, the researcher assumed that the embedded unit of analysis would help the researcher understand their views on the trustworthiness of tweets and the interviews are appropriate for exploratory qualitative research (Kvale, 1996). The multiple unit of analysis is also considered more easily generalized than a single-case study approach (Putney, 2010), and the researcher believes that this approach will broaden his research scope and the understanding of the process. The following section will discuss the design adopted for the research.

### 3.3. Research design

The research is based on a naturalistic empirical study as trust is not a basic psychological state that can be tested in a laboratory setting but something that arises in a social context. The qualitative research has been adopted for this research as the researcher seeks to understand the information flow and verification of information as trustworthy, using the Nepal earthquake, 2015, as a case study. The case study approach is considered to be appropriate to answer the research questions such as ‘why’ and ‘how’ things are done (Lee, 1989). Although the quantitative research approaches have dominated research on Twitter and disasters, qualitative research has been adopted to explore participants’ understanding (Neuman, 2006) on judging the trustworthiness of information (tweet). The contextual understanding and culture of disaster affected people (Hannigan, 2014) (either directly as disaster affected people or indirectly as people not affected by disaster but seeking information about their families or friends) are important to explore ‘why’ and ‘how’ Twitter users perform a particular behaviour after a disaster event. The qualitative research is “more likely to provide meaningful contextualisation and clarity to the research questions and concepts” (Azungah, 2018, p. 384). The social phenomenon can be understood properly based on text, words and talk (Yauch & Steudel, 2003). The importance of qualitative research in the context of a disaster can be more relatable based on an argument by Morgan and Smircich (1980) as below:

*[...] the social world constitutes some form of open-ended process, any method that closes the subject of study within the confines of a laboratory, [...] does not do complete justice to the nature of the subject* (Morgan & Smircich, 1980, p. 498).

Therefore, the researcher employed in-depth interviews to understand the meaning and use of Twitter in the context of the Nepal earthquake. The survey helped the researcher to select participants of the interview based on four geographical locations (described in detail below), and a document analysis (tweets of the participants and government documents) further supported the validation of information shared by interview participants, to understand how they perceived information as trustworthy or not after the Nepal earthquake. The geographical locations also are important in the context of Nepal as there was (2015) and still is (2020) a variation in the population between rural and urban settlements. The survey has been also employed to understand the implications of demographic indicators (age, gender and academic qualifications) in judging the trustworthiness of disaster information.

Firstly, the researcher has adopted a survey to select participants for the interview. The survey generated demographic information (age, gender, educational qualifications, and location of the participants during the Nepal earthquake), their information verification behaviour (based on their trustworthiness ratings for government information, media organizations, friends and family, among others), and their tweet and retweet behaviour. The demographic information of the participants was collected to analyze if demographic indicators like age, gender and academic qualifications have any impact on judging the trustworthiness of information. However, a pilot survey found that the location of the participants (inside or outside the disaster zone) was also an important indicator for understanding how people access information from various sources and validate its trustworthiness. The survey questions were divided into three categories. The first category (four questions) tried to understand demographic features—age, gender, educational qualifications, and their location during the Nepal earthquake. The second category (three questions) explored the participants' trustworthiness rating on Twitter information only, and their trustworthy ratings on various other information sources. The third category (two questions) examined the tweeting and retweeting behaviour of participants. The categories of trustworthy sources were collected from a pilot project, which is discussed in detail below. The nature of information in a disaster event varies more than in a relatively calm situation (Thomson et al., 2012), which could be due to changes in human behaviour. A survey is a useful research method to explore human behaviour, so it is frequently used in social and psychological research (Singleton Jr & Straits, 1999). However, this research focuses on how people (receivers) perceive information as trustworthy or not based on various factors. Each individual is highly likely to have different factors or indicators for making judgements about trustworthiness (based on pilot survey responses). It is thus important to understand the factors that affect these judgements. Thus, the interview is an important approach to explore these factors to better understand how these judgements about trustworthiness are made.

Secondly, based on the survey's respondents, the researcher selected 16 participants divided into four categories (four participants for each category) based on their location during the Nepal earthquake, to ensure the representativeness of the sample. The researcher believes that the information sharing, accessing and verifying habits of users from different geographical locations will help to give a good understanding of the perceived trustworthiness of information. In addition, the four location parameters provide insights on how the location of receivers may affect the information accessing and verifying process, i.e. people inside and outside the disaster zone may perceive the disaster differently. Their fear and anxiety may

influence the information verification process of people directly affected by the disaster as they have been in an uncertain situation. Meanwhile, people outside the disaster zone may experience the earthquake and so the information around it differently (as Twitter could be only one source of information and it is important to understand the factors that influence the information verification process) to that perceived by people inside the disaster zone. This is why the researcher adopted the In/Out/Seeker/Provider (IOSP) disaster framework designed by Varda et al., (2009), with some modifications. The four categories of location (based on the participants' locations during the Nepal earthquake, i.e. from 25 April to 1 May 2015) adopted by the researcher are:

1. Category A: Participants who were outside Nepal's territory (could be in any part of the world)
2. Category B: Participants who were outside the Kathmandu valley (Kathmandu, Lalitpur and Bhaktapur districts) but not affected by Nepal earthquake directly, i.e. not in the districts severely affected by the Nepal earthquake as per the Government of Nepal categorization<sup>12</sup>
3. Category C: Participants who were outside Kathmandu valley (Kathmandu, Lalitpur and Bhaktapur districts) but in the districts severely affected by the Nepal earthquake
4. Category D: Participants in the Kathmandu valley (Kathmandu, Lalitpur and Bhaktapur districts).

The researcher has divided the geographical location based on whether it was inside the disaster zone (category C) or outside (category B) the Kathmandu valley. As the country was a federal state constitutionally, these divisions were not practically implemented when the country was struck by the earthquake. Issues such as “heterogeneity of areas, population sizes, economic bases and availability of natural resources” are among the factors that had affected the practical implementation of federalism in Nepal (Shrestha, n.d.). In addition, the access to disaster affected places outside the Kathmandu valley were disrupted due to the “lack of road network, transport resources, and adverse weather condition” (Subedi & Chhetri, 2019, p. 88). This is why interview participants outside the Kathmandu valley shared that they feel neglected as disaster management efforts were Kathmandu valley-centric. The damage caused by the Nepal earthquake thus should be viewed based on both inside and outside Kathmandu valley, although both groups of people are in the disaster zone. The experiences shared by disaster affected people inside and outside the Kathmandu valley were different, which has been further

---

<sup>12</sup> 14 districts in Nepal were severely affected by Nepal earthquake while 31 districts were affected to varying extent (Government of Nepal, 2015b)

discussed in successive chapters (4, 5, 6 and 7). Therefore, the researcher has divided the participants in category B and C.

Thirdly, an in-depth interview has been adopted as the third and main method for the generation of data for analysis, which is expected answer all four research questions. There were eight open-ended interview questions to understand the participants' information accessing and verifying processes. The participants were selected based on their country of origin, i.e. Nepal, which made it possible for the researcher to relate easily to the cultural and social contexts based on participants' responses. The researcher has acquired an understanding of the cultural and social contexts of Nepal having worked and lived in this setting for most of his life. Therefore, the selection of participants (samples) for interview were driven by purpose rather than the principle of probability (Jensen, 2012). Turner et al., (2017) have also said that interviews are helpful to understand the behaviour of the participants in an authentic context. In addition, an in-depth interview is expected to reveal the perspective of the participants (Jensen, 2012). Since the research is based on a past event where participants were requested to answer questions based on their memory, an in-depth interview is adopted for a deeper understanding of their information and knowledge. It is accepted that all participants might not recall the past event correctly (Golden, 1992), which might make it difficult for the researcher to seek deeper knowledge and information based on participants' personal matters, experiences, values and perspectives, among others (Gubrium, 2012). Therefore, the researcher accessed information from multiple participants to get different perspectives (De Massis & Kotlar, 2014) and accessed tweets of the participants to understand their tweeting and retweeting behaviours. This provided in-depth information which helped the researcher to understand participants' Twitter experience during the Nepal earthquake.

Fourthly, the researcher analyzed tweets and retweets of the interview participants to cross-examine their tweeting and retweeting behaviour after the Nepal earthquake. This method of cross-examining responses of the participants has been adopted because "people do not always say what they mean, or mean what they say" (Jensen, 2012, p. 30). The tweets of the participants were collected prior to their interviews, exported in a portable document format (pdf), and they were analyzed as documents after the interviews. This approach was adopted to understand and differentiate between the expression of the participants (what they expressed during the interview) and their real actions in the post disaster event (how they actually acted in the disaster event). The tweets from participants were accessed through an advanced search option in Twitter, and the Nepal earthquake data was downloaded from the Crisis Natural



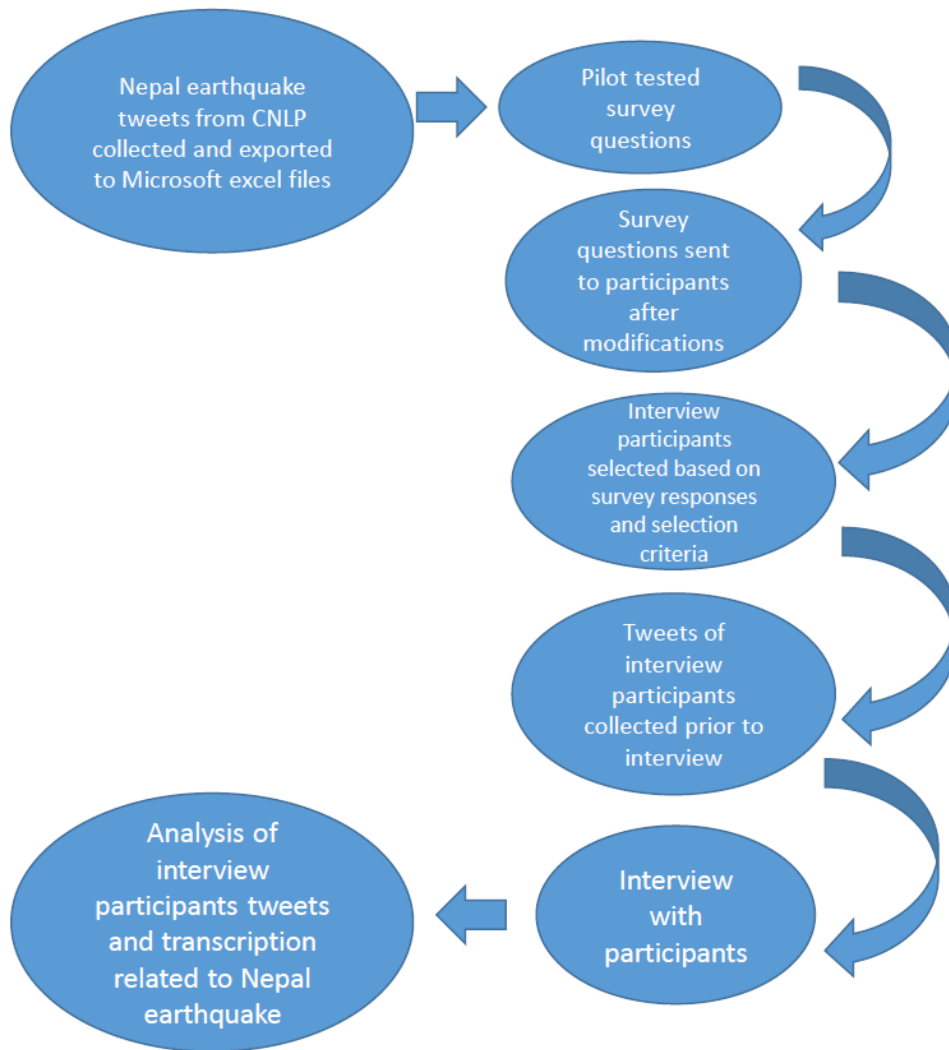
Language Processing (CNLP) website<sup>13</sup> as provided by Imran et al., (2016), prior to conducting the interviews. The researcher used Twitter's advanced search option to access tweets of the participants between 25 April and 1 May 2015, and the Nepal earthquake related tweets were also downloaded from the CNLP website. The researcher could only access 1,048,576 tweets (in the English language) related to the Nepal earthquake, unlike 4,223,937 tweets mentioned in the CNLP website collected between 25 April and 19 May 2015. This method can be viewed as a document analysis as it involves the study of existing documents (in this case, tweets) which is usually performed to understand deeper meaning (Ritchie & Lewis, 2003). As also stated above, the researcher may not have been able to access all the tweets either through a Twitter advanced search or the CNLP website. As a result, the researcher has not been able to validate the experiences shared by interview participants by cross examining the participants' tweets, due to the limitation of tweets accessed through the advanced search and the CNLP website.

Survey was meant to be a big part of this research however the researcher found that a quantitative approach was not robust enough compared to a qualitative one to understand the meaning of trust and trustworthiness. The research focuses on deeper understanding on how people perceive information as trustworthy and the factors that motivate the users to trust the information. Therefore, the researcher realized that interview was an important method to provide deeper understanding of users' trustworthiness judgment of information while survey enabled confidence on the representativeness of the participants. A flow chart below will explain research design more clearly.

---

<sup>13</sup> Crisis Natural Language Processing website <https://crisisnlp.qcri.org/lrec2016/lrec2016.html#>

## Research design flow chart



**Figure 2 A flow chart explaining the research design**

As stated above too, the research has adopted the interview as a central approach to answering the research questions, while a survey and document (tweet) analysis helped to select interview participants and validate the information shared by them. Each method has been discussed in detail in the following sub-chapters.

### 3.3.1. Survey

A survey allows researchers to understand their own and other individuals' beliefs, values and perceptions (Croucher & Cronn-Mills, 2014; Czaja et al., 2014). It also helps to study the opinions of a large number of people using a relatively small sample (Berger, 2014). A

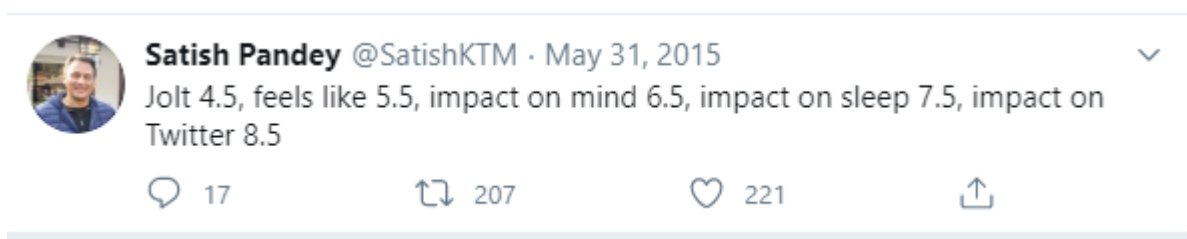
questionnaire as a survey tool enables the researcher to gather the required information from a large population as it is easy to distribute and interpret (Gannon, 1973). In addition, it helps to collect appropriate data for the research, which is easy to compare and analyse. A survey has been adopted to understand user perception in post-disaster communication through Twitter (Acar & Muraki, 2011; Valero et al., 2018).

As the number of internet users is growing day by day, researchers are increasingly using email or web tools to conduct their research. The introduction of random sampling in the 1940s and telephone interviewing in the 1970s made a significant advance in survey methodology (Dillman, 2000). The introduction of technology-based surveys like internet, voice recognition and electronic fax made a significant contribution to survey methodology (Cobanoglu et al., 2001). It is easier and faster to distribute questionnaires and collect the responses in an online survey when compared to face-to-face, telephone or mail surveys (Czaja et al., 2014; Nesbary, 1999). The research is focused on internet users as Twitter can only be accessed through internet-enabled devices, therefore the implementation of an online survey method is beneficial (Couper, 2000) as it covers the population of interest. In addition, the use of an online survey method has been adopted as it allows research that is more visual, interactive and flexible (Taylor, 2000).

The survey research method has many challenges, such as obtaining participants' responses and ensuring a representative sample (Berger, 2014; Couper, 2000). Kaplowitz et al., (2004) have found that online surveys and mail surveys have comparable response rates if the process is carried out with advance notification. They also stressed the importance of reminder notifications to generate better response rates. Barber et al., (2013) have also compared online surveys with face-to-face surveys to determine the possibility of migrating a media tracker from a face-to-face survey to an online survey, and found that they could generate the same results. The availability of the Internet has increased response rates to online surveys (Manzo & Burke, 2012). The other challenge faced by online surveys is regarding the representation of a population, which will be discussed below.

### 3.3.1.a. Population, Sample and Sampling Method

There is no clear way to define the population size on social media, i.e. how large is the population size. Twitter users in Nepal are the target population for the research, however, getting a representative sample for research is more important. A sample is a subset of the larger population (Czaja et al., 2014; Henry, 1990) that is used to gain information about the entire population. A representative sample is the sample that represents characteristics of the entire population (Czaja et al., 2014). It is important to obtain a representative sample in a survey to make the study valid. Greater response rates and statistical weighting procedures can be used to maximize the representativeness of a survey (Krosnick, 1999), but it is also important to consider the sample size to represent the entire population and generate scientific results (McCrum-Gardner, 2010). However, this research employed a survey as a secondary method to select interview participants through a purposive sampling approach. In addition, the survey has been adopted to select participants from four different geographical locations to understand how they perceive information, as it may be perceived differently by people outside and inside the disaster affected area. This could be because people inside and outside the disaster zone sometimes rely on third party information sources to ascertain the disaster's impact. In addition, people may be making judgements about the disaster's impact based on the information available on social media (in this case, Twitter). Therefore, it is important to understand how information is perceived by people based on various geographical locations.



**Figure 3** A tweet on the impact of the Nepal earthquake<sup>14</sup>

As stated above, there is no readily available Twitter users' dataset for Nepal so the best method to adopt for representativeness is a random selection or another probability sampling method (Augustin & Kapucu, 2009). The online survey was designed and distributed by Qualtrics<sup>15</sup>,

<sup>14</sup> The researcher has sought permission from the author to use this tweet. Retrieved on 10 July, 2020 from <https://twitter.com/SatishKTM/status/604696038612467712>

<sup>15</sup> Qualtrics is University of Canterbury's survey and questionnaire tool (<https://www.canterbury.ac.nz/about/academic-services/qualtrics-survey-support/>)

an external survey tool provided by the University of Canterbury to its students and staff. The selection of participants for the survey was carried out in two ways. Firstly, the survey questionnaire was emailed or messaged to random participants in the researcher's Twitter network. Second, these random participants were requested to forward the survey link to their networks, i.e. adopting a snowball sampling procedure. It is likely that collected responses from these samples might not be a representative because of unequal selection probabilities and non-responses. The weighting adjustment process should be carried out to adjust the population distribution characteristics such as gender, age, marital status and region of the country (Bethlehem, 2009). However, this research tries to explore the use of Twitter based on the geographical location of the participants during the Nepal earthquake. The geographical locations were divided into four parts, as stated above in the research design section. Nepal is divided into seven provinces, however the population distribution in the country is still uneven. Province 3, which comprises 13 districts including Kathmandu, Bhaktapur and Lalitpur districts, is a highly populated province (UNFPA, 2017). The capital city Kathmandu has the highest population density in the country with 4,416 people per square kilometre, and the fastest decadal population growth (CBS, 2012). Therefore, Kathmandu, the most populated and the capital district of the country, has been selected as the centre of the research.

The survey included the following recruitment procedure:

- a. The researcher approached participants by sending messages through an email and social networking sites like Twitter, Facebook, Viber and WhatsApp, asking them if they wanted to participate in a survey. The positive respondents were approached through a formal email from the researcher's University email address between 3 September, 2019 and 15 October, 2019.
- b. The participants were also requested to forward the survey link to their friends in their Twitter network.
- c. A formal survey request was pinned on the researcher's Twitter timeline between 5 September and 25 October, 2019, before starting analysis of the data.

The Twitter profiles of survey participants were manually observed. The Twitter account of each survey participant was checked to ensure that it fell within the inclusion criteria as mentioned below:

- i. The Twitter account mentioned by each survey participant was checked; either it exists or not.
- ii. If the survey had attracted a large number of participants, preference would have been given to those who had a Twitter account prior to the Nepal earthquake and who had participated in Twitter communication during the event.
- iii. Incomplete responses were not included in the survey analysis procedure.
- iv. Only participants aged over 20 and 60+ years were be included. This age group has been made open-ended as it has also been seen that more older adults are joining social networking sites (Greenwood et al., 2016).
- v. The participants were allowed to participate in the survey only once.

### 3.3.1.b. Questionnaire: validity and reliability

A self-administered questionnaire with closed-ended questions has been adopted for this research. A self-administered questionnaire is a questionnaire that has been designed to be completed by a respondent without the researcher's intervention (Wolf, 2008). There was only one set of questions for participants. The survey was divided into three parts. The first part generated demographic information (age, gender, educational qualifications, and location of the participants during the Nepal earthquake event); the second part revealed their information verification behaviour (based on their trustworthiness ratings on government information, media organizations, friends and family, among others), and the third part was dedicated to understand their tweeting and retweeting behaviour.

In order to ensure its validity and reliability, the questionnaire was designed with simple and clear instructions (Nestor & Schutt, 2012). In addition, two other approaches were adopted to ensure validity. Firstly, a four-member expert panel were explored translational or representative validity i.e. how well the theoretical constructs have been implemented in questionnaire (Bolarinwa, 2015). The four-member expert panel consisted of two University of Canterbury PhD graduates, who adopted surveys as a research method in their theses, and two lecturers/professors of the University of Canterbury. Secondly, this questionnaire was pilot tested with around 25 participants to examine if the given measure related to one or more external criterion, based on empirical constructs (ibid). The individuals in the pilot-testing samples which were adopted to fine-tune the questionnaire were also part of the final sample. However, the pilot test responses have not been included in analysing the final sample and the

pilot test samples were invited again to complete the final survey. The suggestions collected from pilot testing samples and the expert panel (see discussion below) were incorporated when constructing the questionnaire for the final sample.

The survey questionnaire was designed in English for all participants. The welcome note that appears on the screen (either on their computer or smartphone) once the participants agree to participate in survey, has the following details:

- Objectives of the survey were clearly mentioned, i.e. to measure the trustworthiness of tweets in post-disaster communication.
- Clear instructions were included on how to participate in the survey process.
- Participants were informed that the survey is voluntary and they can quit at any point without any penalties.
- Participants were informed that no financial support will be provided for participating in survey.
- The participants were assured that their identity will be protected and not made public in any publications. The responses collected will be only accessed by the researcher and his supervisors.
- The participants were advised their responses will be kept secret and will be exported for data analysis, if required.
- The participants were given contact details if they require any psychological consultation. It was suggested they call for free psychological consultation with Transcultural Psychosocial Organization Nepal (TPO Nepal) through toll free number 1660 010 2005 (from Nepal Telecom network only) if they feel distress while participating in the survey.
- The participants were given contact details (email and mail addresses) of the Human Ethics Committee of the University of Canterbury and the researcher's supervisors (email addresses only) if they require any clarification of the research.

### 3.3.1.c. Questionnaire

A set of nine closed-ended questions was designed. They have been divided into three sections with each section answering one research question.

1. Section A: This section includes a questionnaire related to demographics, i.e. age, gender, academic qualifications and location during the time of the Nepal earthquake.

There are four questions related to age, gender, academic qualifications and their location during Nepal earthquake event. Age will be assessed by a scale: 1 (20-24), 2 (25-29), 3 (30-34), 4 (35-39), 5 (40-44), 6 (45-49) and 7 (50+). Gender has been coded as: 1 (male), 2 (female) and 3 (Other). Similarly, academic qualifications have been coded as: school level (1), high school (2), Bachelors (3), Masters (4) and PhD (5). The participants were asked to provide where they were during the earthquake based on four codes: 1. Inside Kathmandu valley (Kathmandu, Lalitpur, Bhaktapur), 2. Outside Kathmandu valley (inside disaster affected area), 3. Outside Kathmandu (outside disaster affected area), and 4. Outside Nepal.

2. Section B: This section was designed to understand the participants' ratings on the trustworthiness of information on Twitter (in general), using a five-point Likert scale, and ratings of trustworthiness of information from various sources (user with verified account, friends/families, government bodies, user with large number of followers, tweet with large number of retweets, and tweet with photo, video or website links of the news).
3. Section C: This section was designed to understand their tweeting and retweeting behaviour after the Nepal earthquake, with a focus on the perceived trustworthiness of sources. There were two questions on how they trusted tweets and how they retweeted in the post disaster event, based on various sources which had to be responded to on a five-point Likert scale.

#### 3.3.1.d. Results of survey

The online survey for the research was conducted between 3 September, 2019, and 15 October, 2019, with 127 participants, where 125 participants agreed and two others did not agree to participate. The survey link was generated through Qualtrics and sent to all participants via Twitter message, Facebook messenger, Viber and WhatsApp, as preferred by the participants. Ten of the survey participants did not provide their real Twitter account (i.e., a search was done by the researcher on each of the survey participant's Twitter accounts to find if the Twitter account name provided by the respondents existed or not) therefore they were not selected for further analysis process. This reduced the number of approved survey participants to 117.



### 3.3.1.e. Pilot study

A pilot study of 32 participants was conducted, which helped to improve the questionnaire and refine variables. The pilot project was conducted using Qualtrics. The flexibility of options, like coding each question with a quantitative value, and sharing the survey, attracted the researcher to choose this online tool for the survey. In addition, the University of Canterbury has a dedicated staff member who can provide support if the researcher encounters any problems with the Qualtrics tool.

Firstly, the pilot study helped the researcher to understand the participation in the survey through the participants' perspectives. The researcher revised the questionnaire based on participants' feedback on the number and nature of the questions. The participants suggested that the number of questions needed to be reduced so that they could give their opinion without losing interest. In addition, the pilot project questions comprised tweets from the Nepal earthquake where participants were advised to judge their trustworthiness using the five-point Likert scale. However, most of the participants were aware of the trustworthiness of tweets based on information currently available. Therefore, they suggested that they were not judging the tweets in an uncertain environment like the Nepal earthquake but based on recently available information, which made the researcher remove these questions from the final project.

Secondly, the researcher identified a number of variables through the pilot project. The four independent variables—verification of Twitter account, number of followers, number of retweets, and tweet with URL (news website link, video, photo)—and four dependent variables—age, gender, academic qualifications, and location of participant during the Nepal earthquake event—were identified. However, the researcher could not ascertain which factors influenced the participants' judgements of trustworthiness. The researcher identified that geographical location was important to understand the accessing and verifying of information in the post disaster situation, which helped him to adopt Varda et al. (2009) disaster framework.

Thirdly, it was important to understand the time differences between Nepal (where participants were based) and New Zealand (the researcher's residence in his PhD research, 2016-2020) when sending the survey. Some pilot project participants suggested that they received survey

questions in the early morning or the late evening when they were least interested in participating. These participants either did not participate or made a random selection of answers without properly reading the questions. Therefore, the time difference among the countries of the participants was considered when launching the final project as it was very important to get a representative sample and a good response rate.

The researcher employed a survey to select participants for the interviews. This was particularly because the researcher is trying to understand how people perceive information as trustworthy or not based on a situation (in this case, the Nepal earthquake). However, although the survey quantified the trustworthiness judgements of the participants (as noticed in the pilot study of this research), it was difficult to understand how they arrived at this judgement, i.e. what were the factors that influenced an individual to conclude that particular information was trustworthy or not. Fensel (1992) has said that “people give situations a special meaning, and their activities are based on this meaning” (p. 79). The interview phase of this research helped to understand their activity (trustworthiness judgement) by understanding how they interpreted and concluded whether particular information was trustworthy or not. The researcher has viewed the participants as “informants because they inform the researcher about key features and process of the scene—what the significant customs and rituals are and how they are done...” (Lindlof & Taylor, 2002, p. 176). The perceptions and experiences of participants helped to understand how the participants interpreted the information. Every tweet (information) may be interpreted differently by each Twitter user based on their own judgement criteria. Therefore, the interview has been employed as the primary method to answer the research questions, as the researcher found (after the survey pilot project) that each individual considers various factors when making the trustworthiness judgement.

### 3.3.2. Interview

The research has adopted the interview as a method to understand people’s perception while judging the trustworthiness of information on Twitter. The participants in the survey process have to answer the questionnaire based on their experience of a disaster event in the past. The interview helps to gain a deeper understanding of the participants’ disaster experiences as it helps to construct multiple realities (Stake, 1995). The interviewer and interviewee relationship can sometimes be viewed as a relationship between student and teacher respectively, where the interviewer (student) is eager to gain a deeper understanding of the issues (Johnson &

Rowlands, 2001). The interview helps to understand a participant's psychological, social and cultural behaviour (Croucher & Cronn-Mills, 2014) and gives an opportunity to the researcher to check and stimulate whether or not their understanding of the issue is similar to the participants with same level of experience (Johnson & Rowlands, 2001). A structured interview with 16 participants through Skype, Facebook messenger, WhatsApp and Viber was conducted with the participants.

An in-depth interview is expected to help understand participants' experiences in a disaster event. It gives an opportunity to understand participants' body language (either through visual and audio responses). The interview also helps the researcher to build a rapport with the participants and allow them the time to shape their ideas about the subject matter (Briggs, 1986). As respondents should be given an opportunity for self-disclosure, it is important for a researcher to develop an intimacy with the participants (Johnson & Rowlands, 2001). The interview is a flexible method of data collection "enabling multi-sensory channels to be used: verbal, non-verbal, seen, spoken, heard and, indeed with online interviews, written" (Cohen, et al., 2011, p.409). An interview can help to gather certain ideas and opinions from the participants that a survey cannot. Hochschild (2009) states an interview helps to understand why people develop certain ideas and how they connect these ideas to certain opinions, events, behaviours etc. Though an interview is also a form of conversation, it is, by its nature, different to usual conversation, as it is important that the objective of the study is kept in mind which is extremely important (Kumar, 2011). Webb and Webb (1932) describe an interview as being a "conversation with a purpose" (as cited in Ritchie & Lewis, 2003, p. 138). A structured interview questionnaire was developed to prevent the conversation diverting from the research objectives.

An in-depth interview has been an effective tool to understand an individual's knowledge and experience of a certain event (Gubrium et al., 2012). It helps in "understanding lived experience of other people and the meaning they make of that experience" (Seidman, 2006, p. 9). It is important to understand that there are limitations when people share their experience about an event. Kitwood (1977) noted that accurate data can only be gathered if the participants are sincere and truthful. There could also be a bias between the interviewer and interviewee as they co-construct the interview process (Walford, 2001). Cicourel (1964) states that the interviewer might not share same level of mutual trust with each of the participants (interviewees) which could make them feel uneasy and avoid telling the truth when pressed with an in-depth

questionnaire (as cited in Cohen et al., 2011). It is important to understand that “in-depth interviews rarely constitute the sole source of data in research” (Johnson & Rowlands, 2001, p. 100). The participants were not interrupted with cross-questioning while they were sharing their experiences. The researcher had decided to follow up with the participants later if it was needed to gain more details for information, as interruption or fact-checking while undergoing the interview may cause discomfort to the participants. It was therefore important to understand the dynamics of the situation and to encourage the participants to discuss their experiences (Cohen et al., 2011).

The depth of information shared by participants about their past experiences is also affected by their capacity to recall it in the present situation. It is often difficult for an interviewer to discover which information a participant finds it hard to recall. Merton (1955) asserts that this is possible through “retrospective introspection” (as cited in as cited in Gorden, 1956, p. 163). In the retrospective introspection approach, the “respondent imaginatively transports himself backward in time to an actual experience” (ibid, p. 160). The participants will be able to recall their experience of specific details through probing by the interviewer. The level of probing can “sometimes feel unnatural or artificial” (Legard et al., 2003, p. 152). However, this level of probing is important as it may uncover information which otherwise would have been neglected. The probing will not always ensure true information for a researcher as sometimes participants might respond that they have forgotten the issue or even manipulate answers based on faded memories (Gorden, 1956). The experience shared by the participants could also be constructed to respond to the particular occasion (Walford, 2001) as they might feel embarrassed if they responded in a different manner, which could lead them to construct the experience. Therefore, it is important the researcher records the interview, transcribes it and even provides the transcribed version to the participants for further clarification. This provides an opportunity for the researcher to understand the situation in a socio-cultural context. As stated above, the researcher has spent most of his life in Nepal and had also experienced the Nepal earthquake, which helped him to easily understand the experiences shared by the participants. As the researcher had experience of both Twitter and the Nepal earthquake, it was important to understand that the participants “may make certain features seem more salient and important than they really are” (Karra & Phillips, 2008, p. 554). The researcher addressed this issue by paying attention to less significant information (as viewed by the researcher based on his experience) shared by the participants, to enhance the reliability of the research (Gibbert & Ruigrok, 2010).

### 3.3.2.a. Sampling and data gathering procedure

The participants of the interview were selected based on positive responses from the survey participants. The survey participants were asked if they were willing to participate in a 40-45 minute interview. Fifty-six participants agreed to participate in the interview, 60 refused, and one participant did not progress to the interview section of the survey (i.e., they quit after completing the survey questions). The participants who agreed to participate in an interview were provided with an information sheet detailing the nature of the interview process. They were again provided with the option to either continue or not with the interview process, after reading the nature of the interview process in the information sheet. Six participants decided not to progress with the interview after reading the information sheet while 50 agreed to go ahead. The participants who agreed were asked to provide their contact details which included name, age, email address, Skype name (preferred method), Facebook name (alternative method) and preferred time of the day for the interview based on their location. The participants who did not have Facebook or Skype were asked to provide an alternative method of contact so that they could participate in the interview process. Forty-nine participants provided the details as requested, while one participant did not complete the details required to progress the interview further. The geographical locations of the 49 participants who were first shortlisted for an interview, were based on the four categories as shown in the table below.

**Table 3. 1 Distributions of participants who agreed to an interview**

Category A (Participants Outside Nepal)  <b>N=4</b>	Category B (Outside Kathmandu valley but not in disaster zone)  <b>N= 7</b>
Category C (Participants Outside Kathmandu but in disaster zone)  <b>N=6</b>	Category D (Participants in Kathmandu Valley)  <b>N=32</b>

N=Number of participants

There are not specific numbers of participants (samples) defined for the interview method as it depends on the purpose and approach of the research adopted. Sandelowski (1995) argued that “a sample size of 10 may be judged adequate for certain kinds of homogeneous or critical case sampling’ (p.179). Creswell (2007) suggested that he has found one to two individuals are useful in narrative research while participants can range from one up to 325 in phenomenology, 20 to 30 in grounded theory, and four or five in case study research in a single study. Some scholars suggest 5-10 participants (Dworkin, 2012) or 6-15 participants (Guest et al., 2006) as a sufficient sample for an interview process. This research has adopted 16 participants (four in each category, that has been adopted from Varda et al. (2009) disaster framework). The 16 out of 49 participants who agreed to participate in the interview were selected based on the following recruitment criteria.

- a. The locations of participants were based on their responses in the survey. (The researcher accessed tweets of the participants through advanced Twitter search but could not access location details of all participants. It could be that either an advanced Twitter search does not allow this or the participants have turned off their location details.)
- b. If a category had more than four participants, the participants were arranged in ascending order based on their number of tweets between the period of 25 April and 1 May, 2015. All the categories except A had more than four participants willing to participate in the interview process.
- c. The four participants who were arranged based on criterion b were each selected from the top (large number of tweets) and bottom (less number of tweets). The number of tweets was used to select the participants because it helped to understand how participants participated in Twitter communication in the disaster event. In addition, the number of tweets helped to understand the participants tweeting and retweeting behaviour in the post disaster situation. None of the participants (two each in the top and the bottom of the ascending order) had an equal number of tweets. Therefore, four participants were selected after implementing criteria c of the recruitment process.

The demographic details of the 16 participants who agreed to participate in the interview process have been mentioned in the table below. The initial of the participants (as mentioned below) are pseudonymous and they are not the actual initials of the participants. Moreover, this approach was not informed to the participants so the participants of this research may not know what initials they were attributed by the researcher.

**Table 3. 2 Geographical distribution of the interview participants**

<p>Category A</p> <p><b>SD</b></p> <p><b>AN</b></p> <p><b>DC</b></p> <p><b>MD</b></p>	<p>Category B</p> <p><b>TB</b></p> <p><b>AD</b></p> <p><b>ND</b></p> <p><b>PP</b></p>
<p>Category C</p> <p><b>SA</b></p> <p><b>PD</b></p> <p><b>RT</b></p> <p><b>RA</b></p>	<p>Category D</p> <p><b>RP</b></p> <p><b>BB</b></p> <p><b>SP</b></p> <p><b>SK</b></p>

**Table 3. 3 Demographic characteristics of interview participants**

S.No.	Participants	Age group	Academic qualification	Profession
1.	SD	35-39	Bachelors	Student
2.	AN	30-34	Masters	Former Journalist
3.	DC	30-34	Masters	Engineer
4.	MD	35-39	Bachelors	Business Owner
5.	TB	25-29	Bachelors	Journalist
6.	AD	25-29	Masters	Student
7.	ND	30-34	Bachelors	Banker
8.	PP	20-24	Bachelors	Student
9.	SA	20-24	Intermediate (10+2)	Student
10.	PD	40-44	PhD	Student
11.	RT	45-49	Bachelors	Chartered Accountant
12.	RA	35-39	Masters	Farmer
13.	RP	50+	PhD	Ex government official
14.	BB	25-29	Masters	Journalist
15.	SP	40-44	Masters	Lecturer
16.	SK	20-24	Intermediate (10+2)	Student

The participants of the research are a particular, non-representative subset of Nepalese public, but represent Nepalese Twitter users better and therefore allow valid conclusions to be reached. There are two key factors that make the researcher cautious about regarding the participants as a representative subset of the Nepalese people. Firstly, Twitter is not popular in Nepal (based on Alexa ranking) and access to and the regular use of internet data services are limited in Nepalese society based on geographical location and the relatively high cost of internet. (Pandey & Regmi, 2020) have also found that geographical barriers, socio-economic inequalities and poor supporting infrastructures are among the factors that has limited use of internet in Nepal. Secondly, the participants of this research are educated (as all have academic qualification above intermediate) and actively participate in Twitter conversation (based on their Nepal earthquake and total number of tweets). However, they represent the wider Nepalese Twitter community better, that is the group of people who are active Twitter users and therefore dominate Twitter conversation. The demographics of the participants, such as profession and academic qualifications, are not analysed as factors in this study and the study cannot make claims about how these factors inter-relate with other factors in shaping trust. The researcher has employed tweet count to understand if the participants were active in Twitter or not between 25 April and 1 May, 2015. Therefore, the reflection of participants' perception on trustworthy information can be generalized to conclude how Nepalese Twitter users perceived



information trustworthiness around the earthquake. The use of English is not a limiting factor in this research. The researcher has also found that the use of Nepali and English language is a common feature of Nepalese Twitter use. This finding is also similar to Bhandari (2019) who has found that ‘hybridity is popular among Nepali tweeters not just in casual expressions, but also in serious communications, such as in formal complaints/notices, advertisements and commentaries on issues of public concern’ (p.149). The participants of this research also suggested that they prefer using both languages together as they sometimes cannot find a perfect word phrase to describe a situation in a single language.

### 3.3.2.b. Validity of the interview data

The validity of the data shared by the participants is an important aspect of this research. It is sometimes difficult to explain whether the participants are telling the truth or manipulating the experience or misremembering it. The research adopts two approaches for establishing the validity of the interview data—checking data with the source (tweets made by the participants during the post disaster event, i.e. the Nepal earthquake), and the experiences shared by other interviewees with some level of consistency, as stated by Denscombe (2010). The backdated tweets made by any Twitter users are publicly available through an advanced search option in Twitter, and these are used as source documents for this research. However, if the researcher was not able to access the participants’ disaster-related backdated tweets due to the profile restrictions or deletions, the participants’ experiences were checked against each other to see if they had some level of consistency.

### 3.3.2.c. Analysis process of interview

A general inductive approach as developed by Thomas (2006) was adopted to analyse data generated by the interview process. The interviews with the participants were recorded as audio records with their prior consent and transcribed into text without any modifications (no grammatical corrections). The transcription process is a very time consuming process, as even a short interview can produce many pages of text. However, this process is very important for this research as this “brings the researcher close to the data” (Denscombe, 2010, p. 276). The researcher undertook the intensive reading of the texts and developed the themes, concepts or models through the interpretation of the data (Cohen et al., 2011; Thomas, 2006). The transcripts were then read multiple times, as Creswell (2012) stated multiple readings of

transcripts will give a deeper understanding of the information provided by the participants. This understanding of the data helped the researcher to explore possible thematic categories and sub-categories as required.

The researcher has treated the participants as ‘informants’ (Lindlof & Taylor, 2002) who reflected their understanding of the trustworthiness of tweets in the Nepal earthquake. The participants of this research are ‘knowledge producers’ who contributed in producing knowledge (Yang, 2015), along with the researcher, on understanding the trustworthiness of tweets. This co-researcher approach provided the researcher with an opportunity to use participants’ experience and knowledge to answer the research questions. The participants were reflexive while responding to interview questions. This reflexivity of the participants provided an “ability to notice our responses to the world around us, other people and events, and to use that knowledge to inform our actions, communications and understandings” (Etherington, 2004, p. 19). The reflexivity of the participants helped the collaboration of researcher and the participants to construct an understanding on whether or not post disaster information is perceived as trustworthy.

### 3.3.3. Document analysis

The document analysis (tweet analysis and disaster related documents of the Nepal government) has been adopted for two purposes in this research. Firstly, to understand the participants’ tweeting and retweeting behaviour after the Nepal earthquake. Secondly, the views expressed by the participants (particularly regarding the government’s disaster response) were analysed using the national disaster framework (acts and policies) of the Nepal government. The tweet (referred as tweet and disaster related documents of the government) analysis adopted in this research is similar to the document analysis process as stated by Bowen (2009). He describes document analysis as “a systematic procedure for reviewing or evaluating documents—both printed and electronic (computer-based and Internet-transmitted) material” (ibid, p.27). The tweet analysis (text, images and videos) from the participants is expected to provide evidence of what the participants have expressed in the interview process without researcher intervention. The tweets required for this purpose have been accessed through an advanced Twitter search and downloaded from the CNLP website, as stated above in the research design section. The tweets were extracted as documents to analyse and interpret tweets (therefore referred to as documents here) so that the researcher can access the meaning and

develop empirical knowledge (Corbin & Strauss, 2014) about the Twitter communications of the participants. Atkinson and Coffey (2004) argue that documents are “social facts, in that they are produced, shared and used in socially organised ways” (p. 79). The collection of tweets can also be referred to as a diary or scrapbook of the participants in digital form, which was reviewed by the researcher after the interview. Bowen (2009) has also said that “researchers typically review prior literature as part of their studies and incorporate that information in their reports” (p. 28). The prior knowledge required to understand the government disaster response was gained through document analysis of disaster related acts, plans and policies of the Nepal government.

The document (tweets and government disaster related documents) analysis helped the researcher to construct ideas and understanding of the participants’ views. Denzin (1970) also argued that “the combination of methodologies in the study of the same phenomenon” (p. 291) can help with triangulation. Bowen (2009) further stated that the qualitative researcher should rely on multiple sources of evidence “to seek convergence and corroboration through the use of different data sources and methods” (p. 28). Therefore, the document analysis helped the researcher to avoid any potential biases by providing evidence of the participants’ views.

#### 3.4. University of Canterbury’s Human Ethics Committee clearance

The clearance to conduct the research was obtained prior to the pilot study for the survey. However, following the pilot project, the researcher realized that the research questions were not properly addressed through the survey method only. Thus, the researcher decided to make changes in the methodology by adding in-depth interviews as another research method. There were also some changes made to the survey questionnaires, which required a separate clearance to be obtained from the human ethics committee of the university. The committee earlier were concerned about the privacy of participants’ responses and the possible experience of distress while participating in the survey. The researcher informed them that participants’ responses were stored only in the researcher’s university computer. These data could only be accessed by the researcher and his supervisors, which was also mentioned in the cover letter (front page) of the survey and pre-informed for in-depth interview participants. Secondly, if the participants felt distress while participating either in survey or interview they could consult the Transcultural Psychosocial Organization Nepal (TPO Nepal) through a toll free number 1660 010 2005 (from Nepal Telecom network only) for any psychosocial support.

## CHAPTER 4

### 4. Is the government a source of trustworthy information in disaster events?

#### 4.1. Introduction

This chapter addresses the research question: Is the government and its information perceived trustworthy in a post disaster event? This research question is particularly important in the context of a disaster event, where people have to face a new environment and sometimes rely on sources which may not have been their sources in a normal situation. The chapter focuses on importance of government information (official sources) and how people evaluate the trustworthiness of this information when the former may not be able to provide timely information and people are exposed to information from unofficial sources. The chapter is divided into three sections. The first section analyses the legislative and institutional framework for disaster management in Nepal focusing on existing government disaster response systems (when Nepal earthquake struck) to evaluate a gap in public understanding of government disaster information. The second section focuses on how the public evaluates government information in disaster event to find out if they consider it a trustworthy source or not. The third section illustrates public trust on government information systems based on their experiences. The section and third sections evaluate trustworthiness of government information in post disaster event based on interviews with the participants.

The formal or official information sources in a disaster event could be the government and its organizations, while informal information sources are family, friends or information from social media (Kirschenbaum et al., 2017). The availability of social media has empowered some people to access information outside traditional information sources like the government and media organizations (Thomson et al., 2012). There is also evidence that people rely on information from online news sources as they provide updated and diverse information in real time (Nguyen, 2010). However, it is important to understand these information sources in the context of disaster events. Though information shared by government and media organizations undergoes a filtering process, people might still be uncertain about the trustworthiness of the information. Therefore, information on a disaster event may be perceived as trustworthy or not based on the receivers' perspectives. This chapter thus analyses the factors that decide people's

perspective for judging the trustworthiness of government information, through in-depth interviews with 16 Twitter users across different geographical locations, based on their information accessing and verifying processes after the Nepal earthquake. The chapter begins with a review of the legal framework that guides Nepal's disaster response and management processes, based on a document analysis. This section has been included as it is highly likely that people may not have a good understanding of how the government and its organizations execute their responses after a disaster. Therefore, the document analysis of the government disaster frameworks will help to understand and correlate the disaster response of the Nepal government and participants' views on the trustworthiness of the information it provided.

#### 4.2. Legislative and institutional framework for disaster management in Nepal

Each country has its own legal and institutional frameworks to guide its disaster management process. The formation of institutional and legal frameworks is important as these frameworks guide policy and legal strategies and allocate institutions to their roles and responsibilities in dealing with disasters (Blaikie et al. 2005). These roles and responsibilities of legal and institutional frameworks come into effect in different phases of the disaster management process. Brand (1997) stated that many institutions, actors, individuals and communities participate in different phases of the disaster management process. The cooperation and coordination among these players will be very difficult if there is a lack of a properly articulated organizational structure (Obeta, 2014). These legal and institutional frameworks will help organizations involved in the disaster management process to allocate their roles and responsibilities. The formulation of policies, legal frameworks and agencies that implement them are equally important for the success of disaster management activities (Wisner et al., 2012).

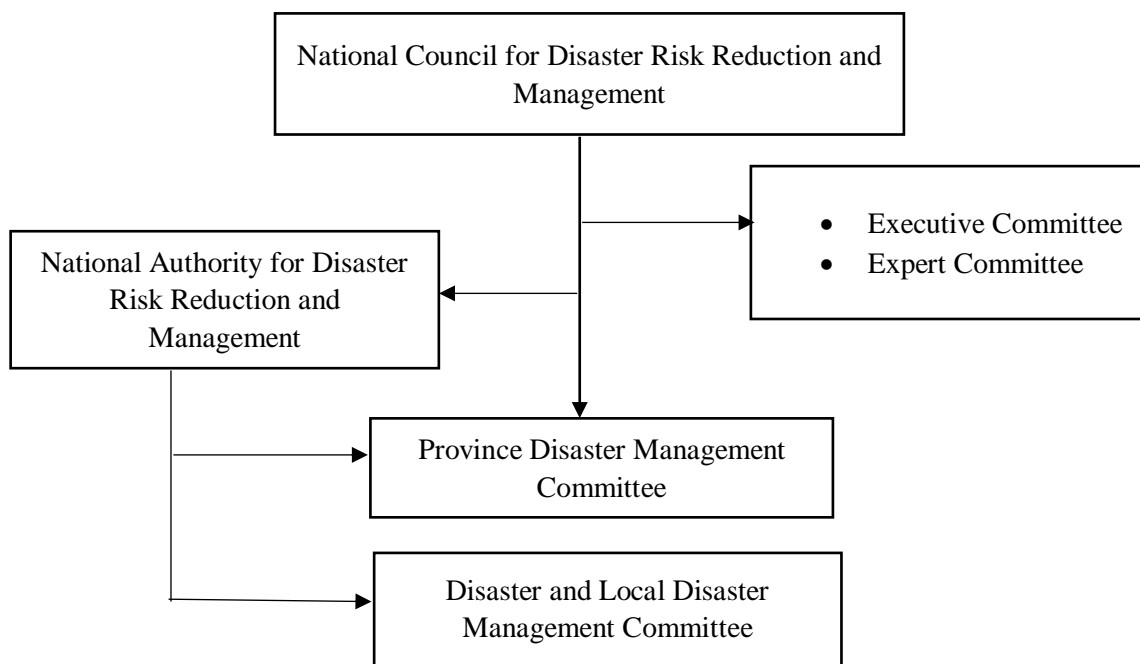
The Constitution of Nepal 2015 has identified disaster management as one of the key priorities in all tiers of government (federal, provincial and local) for disaster warnings, preparedness, rescue, relief and rehabilitation activities, in the list of concurrent powers of federal, provincial and local levels (Schedule 7, Constitution of Nepal 2015). The Disaster Risk and Management Act 2074 (2017) (DRMM) covers the basic legal provisions for disaster risk response, risk reduction, preparedness and management in disaster events in Nepal. This act replaced the Natural Calamity Relief Act 1982 (Kafle, 2019; Save the Children, 2017) which was effective during the Nepal earthquake of 2015. With the Natural Calamity Relief Act 1982, Nepal was

the first country to introduce a “disaster specific act in the South Asia region” (Government of Nepal, 2019, p. 9). The DRMM act enacts a ten-member National Council for Disaster Risk and Management (NCDRM), under the chair of the prime minister, as an apex body to amend, approve, direct and evaluate the disaster management processes in Nepal. The council members, who meet biannually, have been also authorized to form a 13-member executive committee, the ‘National Authority for Disaster Risk Reduction and Management’ (NADRRM), under the home minister as an executive body for disaster-management-related plans and policies in Nepal. The NADRRM acts as a “focal point for disaster management functions in Nepal from the formulation of appropriate strategies and plans to implementation and supervision of disaster management activities” (Nepal et al., 2018, p. 8). The home ministry established a nine-member National Emergency Operations Centre (NEOC) on 17 December, 2010, with an under-secretary as the team leader. “The NEOC is a coordination and communication point for disaster information across Nepal, including government agencies and other response and recovery stakeholders such as Nepal Red Cross Society, UN agencies, INGOS and NGOs” (Government of Nepal, n.d.). Apart from this central set up, Nepal, which is a federal country, has provincial and local arrangements for the disaster management process, in the form of a province disaster management committee under the province chief minister, and a district disaster management committee and local disaster management committee at local levels (Nepal et al., 2018).

In addition to these acts, there are number of acts, regulations and policies that directly or indirectly act as legal and policy frameworks for disaster management activities: “Natural Calamity Relief Act 1982, Local Self Governance Act 1998, Building Act 1998, National Building Code 2004, National Strategy for Disaster Risk Management 2009, Climate Change Policy 2011, Land Use Policy 2012, Water Induced Disaster Management Policy 2015, National Reconstruction and Rehabilitation Policy 2015, National Disaster Response Framework 2013, Basic Guideline related to Settlement Development, Urban Planning and Building Construction 2016, and National Urban Development Strategy 2016” (Government of Nepal, 2018a, p. 2-3). There are many institutional arrangements from national to local level as per the DRMM Act: “National Council, Executive Committee, National Disaster Risk Reduction and Management Authority and Disaster Management Committees” (ibid p. 3) to guide disaster management activities in Nepal. The National Strategy for Disaster Risk

Management (NSDRM), formulated in 2009 under <sup>16</sup>Hyogo Framework for Action 2005-2015 of the United Nations, outlines priority actions to manage the disaster risk in the country. However, NSDRM was not approved when the country was struck by the Nepal earthquake so the strategies (actions) were not implemented (Shrestha & Pathranarakul, 2018). Based on the recent experience of the Nepal earthquake and other recent disaster events, Nepal has adopted the National Disaster Risk Policy 2018 (NDRP) to “build safer, adaptive and resilience nation from disaster risks” (Government of Nepal, 2018b, p. 4).

**Figure 4 Institutional Structure of disaster management in Nepal**



Source: Nepal et al. (2018)

The Nepal government had pre-existing legal frameworks for responding to disaster events during the Nepal earthquake. However, the strategies adopted by the Nepal government prior to this earthquake, to respond the disaster event, “do not seem to be accompanied by a thorough understanding of institutional capacity (strengths and weaknesses)” (Shrestha & Pathranarakul, 2018, p. 22). This could be a reason the government replaced the existing Natural Calamity Relief Act 1982 with the Disaster Risk and Management Act 2074 (2017), to adopt a robust and practical disaster framework as required for the future. As stated in the introduction section of this research, Nepal had not witnessed a large impact disaster in the previous 80 years, as

<sup>16</sup> Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters ([https://www.unisdr.org/files/1037\\_hyogoframeworkforactionenglish.pdf](https://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf))

large scale disaster events are rare. It has to be noted that such events are not only rare but also typically affect even disaster prone countries (like Japan) with different jurisdictions (Holguín-Veras et al., 2014). There is definitely not a single answer to analyse the Nepal government's response to the earthquake event, as Shrestha and Pathranarakul (2018) have found that the government approach to the disaster was significant considering its institutional capacity. Meanwhile, Hall et al. (2017) argued that the government response to the earthquake was affected by supply chain gaps and coordination difficulties between its central and local bodies. The government argued that the disaster response was basically due to geographical difficulties and blockages due to damage on roads and uncleared building debris (Paul et al., 2017). These could have been reasons why there were differences between government delivery and community expectations (Paul et al., 2017; Sheppard & Landry, 2016). In these circumstances, social and community bonding to utilize local resources were also evident among the local members (Prasanna et al., 2018).

Based on this evidence (disparity between government disaster frameworks and community satisfaction), the research focuses on how people perceived information from the government and its organizations. The research produced interesting findings on how people perceive information in a post disaster situation and the factors that guide their judgements.

#### 4.3. Government as a source of information in a post disaster situation

It has been noted above that the government and its organizations are sources of information in a post disaster event. The Nepal government and its home ministry (security organizations like Nepal Police, Nepal Army and Armed Police Force come under this ministry) are the main sources of official information in Nepal. The trust for the source is an important aspect of trust in information, and the disparity in government delivery and public expectation can give rise to different levels of trust. The literature of this research has identified that there are various layers of trust, and institutional trust is an important aspect of trust in the government. However, on Twitter this institutional trust is determined to be impersonal and fiduciary as the level of trust fluctuates over time based on mutual exchange relationships and interpersonal exchanges. The trust in the government is an attitude of trustor towards trustee based on confidence in or expectation of the latter's competence (Giddens, 1991), goodwill (Hardin, 2001) or future actions (Gambetta, 2000). The trust in the government is important to the public for their decision making processes, as individuals are more likely to follow the instructions



from someone (source) they trust (Shore, 2003). The trust between the public and the government is fiduciary (Wray et al., 2006), which means it can be developed through mutual relationships and interpersonal exchanges. A survey of 4,129 people in 42 districts of the country by Sharecast Initiative Nepal<sup>17</sup>, in 2018, found that 41 percent of Nepalese think that the country is heading in the right direction, which is a slight decline from the previous year's 43 percent (Bohora, 2019), so they have trust in the government. Meanwhile, in research carried out by Inter Disciplinary Analysts and Kathmandu University among 7056 Nepalese people of 73 districts, in 2018, 51 percent of people said that the country is heading in right direction (ibid). This dynamics of trust between the public and the government guides how the latter responds to information shared by the former in a post disaster event, as mutual trust is also a component of public trust in the government. People are likely to consider information as trustworthy if they trust the source (Steelman et al., 2015). A survey by Sharecast Initiative Nepal among 1377 Nepalese social media users found that 45 percent of people consider the source and author of the news to validate the authenticity of the material being exposed (Sharecast Initiative Nepal, 2019).

This research tries to answer the research question: 'Is the government and its information perceived as trustworthy in post disaster events?' despite being an official source of information. When people say that they trust the institution or government, people are likely to have certain pre-set criteria to make this judgement of trust. Therefore, it is important to identify these criteria as this could lead to the expression of generic, normative expectations, based on how an institution or the government are working in their interests (Askvik et al., 2011). According to research carried out by Shah (2010) among 95 university students of Kathmandu University in Nepal (the survey was distributed to 100 students but 95 replied), it was found that they have "a relatively low level of trust in government" (p.11), though 67% of the respondents were in favour of Nepalese government organizations' presence on social media. The research found that the "lack of governmental transparency and dishonest dealings practices in the past have contributed to the lower level of relationship trust" (ibid, p.11-12). The trust in the government, in this research, is based on the public's experiences with the government officials and institutions and how the public assesses the implementation of government plans and policies. The main reason for adopting this approach is based on the idea that the public tend to trust information from the government and its organizations only when

---

<sup>17</sup> Sharecast Initiative Nepal is 'a not-for-profit distributing company, founded in 2013, is a new media organization focused on promoting digital content sharing and distribution through online and local radios in Nepal' (<http://www.sharecast.org.np/>)

they trust the institution. This trust in the institutions has to be viewed based on different factors which ultimately affect how people perceive information from the government. The research identified people's past experience, political beliefs, social-political features, social networks (both online and off-line) and information available through social media as deciding factors which guide how people define their trust in the government and perceive its information as trustworthy or not. These findings identified by this research will be analysed under public trust in the government.

#### 4.4. Public trust in the government

There is substantial research on public trust in government (Citrin, 1974; Hardin, 1999; Song & Lee, 2016). There are various perspectives to define the public trust in government. It could be public confidence in the government (Easton, 1957; Job, 2005) with a belief that the government will serve in their best interests (Citrin & Muste, 1999). There can also be congruence between the public's preferences and the functioning of government (Bouckaert & Van de Walle, 2003) that may define the level of public trust in the government. It should thus be noted that citizen's preferences are diverse, and this can affect their level of trust in the government (OECD & OECD, 2013). Christensen and Lægreid (2005) state that trust in government is a multi-faceted and ambiguous concept. There could be different factors to measure trust in government however the actions of political leaders and government performance are often considered as precursors (Keele, 2007). Several scholars have stated economic performance as a precursor of trust, i.e. when the economic condition of the country progresses the public trust increases and vice versa (Chanley et al., 2000; Citrin & Luks, 2001). The public's trust in government is also determined by the evaluations of incumbent government bodies and officials based on their satisfactory execution of public policy (Chanley et al., 2000). Most of the interview participants believed that trust in the government is an important aspect of trusting the information shared by the government and its organizations. Mileti et al. (2006) found that people are seen to trust the information on disaster warnings from the official sources when they considered them trustworthy sources. According to Chavez et al. (2007) study, California residents during the 2003 wildfires were doubtful about information provided by mass media, and expected government organizations to provide them with accurate information. On the other hand, some scholars argue that the trust in government and trust in government information are two different dimensions and they have to be viewed differently. They further state that the trustworthiness of government information is also

situation specific, i.e. it is based on both disaster and non-disaster situations. Six participants argued that the public trust (viewed as impersonal trust by the researcher) in government information could be higher as people believe them to be more accurate. However, the participants who disagreed believed that the government and its organizations do not provide trustworthy information as their words (what do they say) do not match their actions (what do they do). SD below has stated that trustworthiness of the government could be affected by the level of trust in the government and its organizations.

*My trust in government is based on its performance rather than its plans and policies. I believe in execution of policy. Though government claim that they have been performing well however this is often false claims when we experience government service on our daily basis. The government said that they had supplied enough earthquake relief materials to the affected families in 2015 but news media reported many necessities from donor agencies were still in government store houses. (SD)*

The above statement clarifies that the public trust (impersonal trust) in the government is important for trusting the information shared by the government. This public trust in government is characterized more by cognitive complexity than by consistency (Rainey, 1996) as trust is also an important component of social capital along with social networks and connections (Putnam, 2000). Their perception about the government is seen to change among people who participate in civil activities. Keele (2007) believes that people actively participating in civic activities in the community meet more people and develop trust from interacting with them, which will ultimately affect public trust in the government. The opportunities to interact with government officials during civil activities also could lead to greater trust in the government and its organizations (Andrain & Smith, 2006). Each dimension of trust is equally important for understanding the public's trust in the government and its information. The research produced the following findings based on interactions with various participants to determine their trust in the government and its information, as discussed below.

#### 4.4.a. Personal experience

Personal experience of the government and its organizations is found to be one of the determining factors for public trust in the government and its information in the context of

Nepal. The trust in the institution, which is often termed as ‘institutional trust’, could be defined as the expectation of a person that the institution will perform its duties satisfactorily (Mishler & Rose, 2001). The institutional trust in this research is based on a micro-specific approach, i.e. an impersonal trust approach has been adopted to understand institutional trust. The individual’s experience is important for understanding trust in the government as this determines the government’s present performance and its ability to deal with events like disasters in the future too (Khunwishit & McEntire, 2012). The personal experience of government performance can be either in a disaster or non-disaster event. Personal experience is an important aspect in understanding trust in the government because the level of trust between people and government also depends on the geographical location in the context of Nepal. This is because in Nepal, although it had adopted the concept of decentralization and federalism, people across the country had not been able to experience it during the Nepal earthquake event. Adhikari (2018) also found that “there is a lack of human and financial resources at the local level, weak expenditure management and need for improved accountability and transparency arrangements etc. reflect the shortcomings regarding the execution of decentralization in Nepal” (p.114-115). This could be why the participants of this research have different experiences to define their trust in the government and its information, depending on their geographical locations. The participants who had bitter experiences or no experiences in dealing with government organizations and officials were found to be less trusting of the information provided by the government.

#### 4.4.b. Past experience with government organizations and officials

In this section the research focuses on the public’s experiences with government organizations and officials which help them to determine whether or not disaster information is trustworthy. Miller and Listhaug (1999) said that people’s trust in the government is related to their expectations. If people feel that their expectations are fulfilled by a government compared to previously, the trust level increases and vice versa (ibid). These expectations are built based on their experience with government organizations or officials. The public’s expectation of government commitments is based on the plans and policies unveiled by the government. Six of 16 interview participants shared that the public execution of the government’s duties did not meet the latter’s commitments made through annual plans and policies. This made them feel that the government data on its execution of duties are skewed so that political party or parties representing the government can claim they have out-performed previous governments. However, all participants shared that they still trust the information on disaster warnings and

casualties from the government as they believe that the government has the expertise and skilled manpower for these issues.

*I don't believe in government data regarding the execution of its works. The list of the performances presented by the government on execution of disaster work do not match reality on the field work. The government could have acted in an efficient way and on time. The government has enough manpower to work in district level either administrative or rescue operations through security forces. The government could have mobilized them in better way either through political party leaders or social activists to share disaster information. (AN, former journalist).*

As this interview participant mentioned, the timely information from the government is an important aspect during the disaster event. The lack of timely information makes the receivers (public) believe that the government has not been able to perform its duties effectively and efficiently. The timely information should also be viewed both outside and inside the disaster zone, and should also be viewed in different contexts as there also could be disruption to infrastructure, which could further impede information flow. The lack of the proper adoption of e-governance in Nepalese government organizations has also prevented many Nepalese people from receiving an effective and efficient service. There were many recommendations made in the past regarding this issue, however, only a few recommendations seem to have been adopted by the bureaucracy (also known as the civil service). However, the public trust in e-governance is equally important for the effective adoption of the service in Nepal (Giri & Shrestha, 2018). One participant believed that the government even shared false information to the public which did not reflect reality on the ground of the disaster event.

*The government said that it has supplied all necessities to earthquake affected public in 2015 however even I had found that the supplies from donors were still lying in government storehouses. I have reported that multiple times which was later picked up by some television journalists as a follow up news. This generated so much interest in the media that made government officials to either avoid cameras or refuse to talk as they do not have anything to defend this lacklustre performance. (TB, print journalist)*

TB's statement was based on field reports, where people affected by the disaster lamented the poor delivery by the government. Though the government stated that they were supporting disaster affected people, this was questioned by media organizations. This led to a further division in information verifying behaviour by the receivers (inside and outside Kathmandu valley). The disaster affected people outside the Kathmandu valley criticized the government when the relief packages did not arrive to their location on time, while the government blamed geographical hindrance for the poor delivery. However, one of the participants (now retired), who was working in the disaster response team of the government in the Nepal earthquake, argued that the government intentionally delayed providing information in order to maintain its trustworthiness. Retired government official, RP, did not deny that the response times were sometimes deemed as untimely, however, he stressed that the information dissemination process of the government has to follow pre-determined procedures.

*The government sometimes withholds the information to avoid panic among the public. The government also needs to prepare themselves to address the new environment created by the disaster event. The false information can not only tarnish the government image but also lose public trust in future events too. The government should not share untrustworthy messages to the public and create chaos. It is important that the government share trustworthy information as many people rely on information shared by the government to decide their future course. (RP, ex government official)*

Though RP stressed that there are pre-determined procedures and manuals on how government responds to a disaster event, it might not be interpreted in the same manner by receivers. In addition to that the receivers wanted a proper interaction with the government officials with whom they have already connected or questioned about the disaster related information in their personal social network accounts. However, when they were not responded well they expressed dissatisfaction over their poor interaction with government officials, on social media networking sites like Twitter. They said that many government officials, whom they knew in person (through their offline relationship), either did not respond on social networking sites or blocked them for any future conversations when they criticised or commented on their poor performance. In a content analysis of around 60 government agencies in the United States of America, Waters and Williams (2011) also found that the government organizations were primarily focused on one-way communication to inform and educate the public rather than participating in a two-way communication. Though nine interview participants of this research

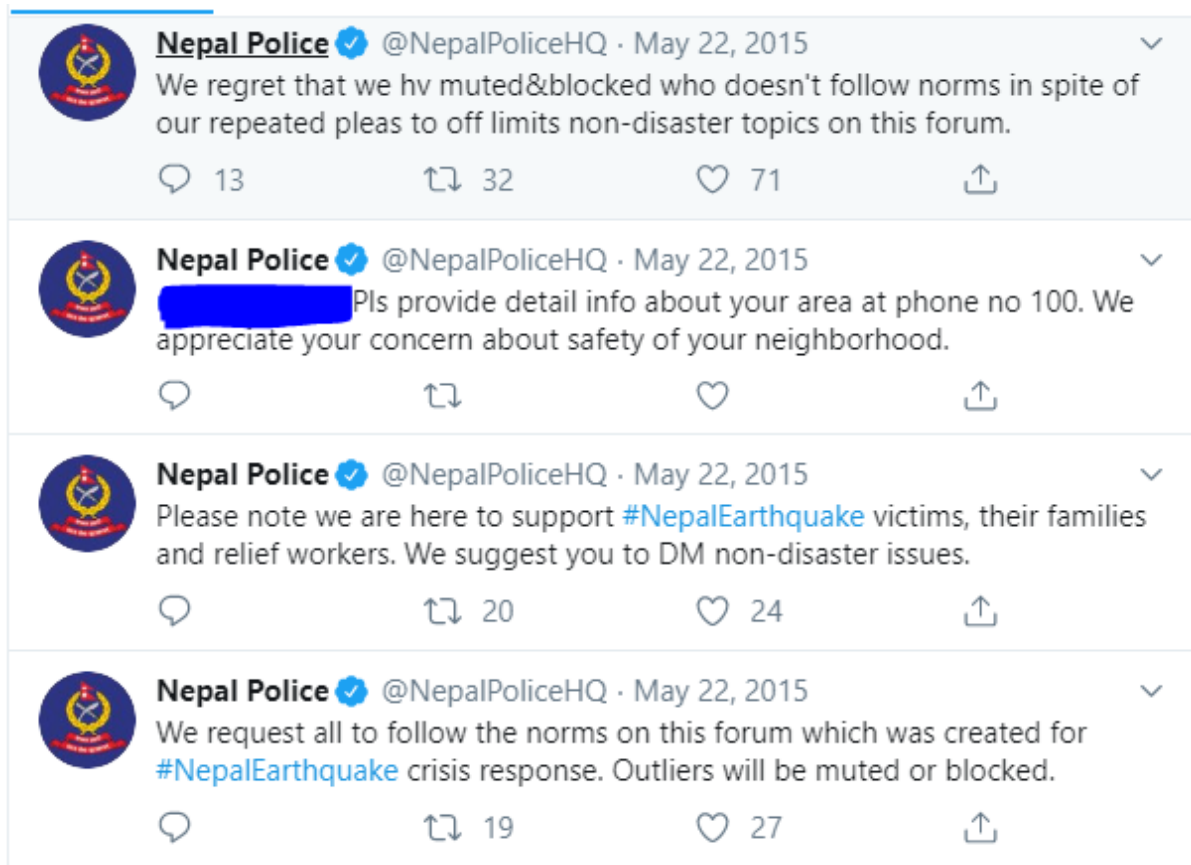
believed that the government organizations or officials should be available for offline or online interaction, the others said that official information should only come through official channels (press conference or press release) of the government organization or through the organization's Twitter account. Stating that the dissemination of disaster information through personal networking sites is not only untrustworthy but also lacks commitment from the government official, a participant added:

*I do not think that the disaster information should be disseminated through personal networking sites as this is not an appropriate approach. The official will have no commitment towards the information shared. However, I believe there has to be two way communication so that we can criticise or comment on their approach to provide them a different perspective of information. But still the question arises are our government officials equipped to respond to all our online queries? Will the social media team of the government organizations be able to respond to technical questions too? (PP)*

The comment made by PP raises the question of whether the government team has the required manpower to address the queries or complaints made by the users. This research has found that though most of the government organizations have a presence on social media, however, this has been not properly adopted by all the organizations equally, in the context of Nepal. Subba and Bui (2017) have found that the Nepal Police effectively operated its Twitter account to deliver messages and receive complaints from the users. The researcher accessed the Twitter account of the Nepal Police (@NepalPoliceHQ) between 25 April and 25 May, 2015, and found that it had effectively engaged in the two-way communication with the users by providing all the details, and even arrested people to maintain peace and order. The information regarding traffic, earthquake rumours, rescue and relief activities, casualty updates, thefts/burglaries etc., were updated through the Nepal Police's Twitter account. The Nepal Police also requested the public to send non-disaster related information through direct message (DM) on Twitter rather than mentioning them on their timeline. The Nepal Police received a large number of notifications in their mention section, with disaster and non-disaster queries. These large numbers of notifications meant they had to put extra efforts into segregating disaster and non-disaster queries, which further delayed their response times. The other government organizations that had Twitter accounts were not involved in two-way communication with users, like Nepal Police, however they maintained one-way communications to share disaster

related information, but they did not maintain the same level of effective communication as the Nepal Police.

**Figure 5 Tweets from Nepal Police**



Yet, it is important that the public should have trust in government officials and organizations to judge the trustworthiness of information. Almost all the interview participants shared that the Nepal Police was an important source of trustworthy information in the post Nepal earthquake situation, more than any other government organizations. One of the participants DC stated below:

*The efforts of Nepal Police in post Nepal earthquake were highly commendable. They helped us to battle rumours and misinformation. They even made some prompt responses to our queries. The two-way communication was really helpful to clear so many confusions. (DC)*



The SA's statement on Nepal Police's performance was echoed by most of the participants of this research. This could be because of the two-way communication approach adopted by the Nepal Police in the initial days after the earthquake engendered a level of trust among Twitter users towards the institution. Research carried out by Askvik et al. (2011) before the Nepal earthquake found that the Nepal Police was not among the most trustworthy institutions in Nepal. However, it should be noted that while it may or may not have been the most trustworthy government institution in Nepal, the two-way communication from Nepal Police, in this post disaster situation, made it a trustworthy government information source for some participants. An interview participant (ND) went a bit further and said that she trusted Nepal Police information more than a ministerial press briefing.

*I had really good experience with Nepal Police Twitter communication. My particular concern was to file a complaint against a group of youths who were announcing that there would be a next big earthquake through a loudspeaker in the mid of the city. I mentioned this to the Nepal Police (others may have too) who later on informed through a tweet that they have arrested the boys who were spreading fake news of next big earthquake and creating panic among the people. I saw them deliver their promise. It is important to understand that the institution like Nepal Police is always there as it is permanent body while ministers are temporary and they are more biased towards their electoral region or people. (ND)*

However, not everyone experienced the same level of cooperation from the Nepal Police after the earthquake event as stated by ND above. Another participant, SA, (outside the Kathmandu valley), informed that he had complained about a bus that charged him a higher fare to travel to his village after the earthquake but this was not punished. The Nepal Police had requested the public to make complaints about any non-disaster related offences to either nearby police or traffic police or to call toll free number 103. These two arguments by the participants suggest that everyone may not have had the same level of trust in government institutions whose performance may have been limited in the post disaster event.

The availability of government agencies on Twitter after the Nepal earthquake helped Twitter users to access information from government organizations efficiently, and they did not have to rely on any other information sources. The public participation in the disaster management process, through two-way communication, made this process more effective. Some scholars

also identified that the two-way communication between disaster managers and people (in disaster affected areas) facilitated authorities and disaster affected people to better understand time-critical situations and helped them to make efficient decisions after the disaster event (Fitriani & Rothkrantz, 2015; Karimi et al., 2015). This type of two-way communication also helps to better understand how receivers (disaster affected people) perceive, interact and understand disaster information from providers (government).

However, some interview participants felt that the government's 'failure' to deliver in the post disaster event should not be judged based on their presence on or effective handling of social media accounts. The interview participant, RP, (the former government official), suggested that the government has to concentrate on its disaster response in the field rather than concentrating on responding to social media concerns. RP further stated that the government organizations may have focused on responding to community concerns rather than on individuals, which might not have been reflected in media or social media coverage equally.

*As we know social media is only a handy tool for a handful of people. If you judge how government performed based on social media discussions you are not covering all the essence of disaster management efforts by the government. As an official who was active in post disaster response I can say that we had concentrated our efforts on a squatters' community living on the banks of Bagmati river. This issue was never covered by media or even social media users as these people (squatters) may not have reach to social media or media. (RP, ex government official)*

The RP statement above clearly states that the government actions might have addressed concerns of its citizens who may not have accessed to internet or social networking sites. As a result these responses from the government might not be reflected in social media feeds. The trust judgement of disaster information may therefore be based on a small proportion of society, i.e. the users who are active on Twitter and who can afford to access the Internet. Since Twitter is accessed (digital accessibility) and afforded (digital affordability) by a limited number of people in Nepal, the majority of people (non-Twitter users) may have a different level of perception of trust in the government. However, this research focuses on factors that affect Twitter users' perceptions of information trustworthiness. In addition, there is disparity among Twitter users themselves, based on digital affordability and digital accessibility, which can

affect Twitter conversations as everyone does not have equal access. Based on access, quality and affordability, Regmi (2017) stated that internet penetration is not equally distributed in Nepal and it might not be effective in the economic development of the country. This could be a reason why the Nepal government's responses were not evenly reflected in Twitter (as mentioned by RP above).

The two-way communication was regarded as an important aspect of the trustworthiness measure of information, as participants living outside Nepal shared how the government should always respond to queries raised by its citizens. These participants argued that the government has responsibilities towards its citizens and it should always respond to its citizens as stated by AN below:

*I left Nepal around 10 years ago before Nepal earthquake 2015 in search of better opportunity. I have experienced that the government of developed countries respond to all queries by its citizens or immigrants. However, I had bitter experience with Nepal government organizations and officials when I tried to inquire about situation in my home town. The government organizations and officials did not participate in two-way communication on Twitter, as a result I had to rely on information from media organizations and my friends. This made me feel that the government organizations and officials may not be providing information based on facts. (AN)*

AN's statement reflects frustration from parts of the Nepalese community (participants) who have been living abroad and wanted to know information about their family and friends. The Nepalese people who are living abroad have experienced how the developed countries respond to queries from their citizens and migrants. They argue that they are still Nepalese citizens even though they live abroad, and they have their roots in Nepal, and they further state that they should not be treated as outsiders. The interview participants (Category A) had different reasons for leaving the country like employment, better education or the decade-long insurgency in Nepal which forced them to flee looking for better opportunities abroad. Two participants had already given up their Nepalese passports while one had a permanent resident's visa and the other was on a student visa in the foreign nation.

#### 4.4.c. Public risk perception and past disaster management performance of government organizations or officials

In this section, I argue that public determine government information as trustworthy or not based on their own risk perception ability. The public arrive at this risk perception ability based on their past disaster experiences and how they perceived the government's functions in those past disasters. This section will be discussed into two parts. Firstly, how do the public perceive a disaster and how is this perception affected by their experience of past disaster events. Secondly, how do the public perceive the government's functions in a disaster based on their experience of the latter in past disaster-related activities, i.e. how the government had performed in the past disaster events.

Firstly, the public perception of government information as trustworthy is also determined by people's risk perception ability. Based on a survey of 873 participants about five large wildfires in the United States between 2009 to 2010, Steelman et al. (2015) argue that the public trust information from the government as being trustworthy, however, the participants of this research shared contrary views. People are also seen to be designing their own disaster risk mitigation strategies based on their past experiences. Many scholars argue that risk perception is an important indicator in risk mitigation. Shaw et al., (2008) found that disaster victims were less likely to adopt mitigation measures than the general public (people outside the disaster zone). Ho et al., (2008) reported that victims' attitudes towards natural disasters is affected by disaster type, gender and previous disaster experience. The discrepancies between the public's risk perception and officials' regulatory attention (Dougall et al., 2008; Lammers, 2011; Nottage et al., 2014) are also seen as determinants of the trustworthiness of government information. The statement below by SD supports the literature above stating that the receivers might not receive the information at the same intensity as disseminated by the government.

*It is important that the government announce disaster warnings in a timely manner. However, this could not be case during Nepal earthquake as these cannot be predicted. Having said that it is also important that the government should understand that some information might cause chaos to public as every person has their own attributes to receive information. I had seen that people were predicting the magnitude of earthquake (aftershocks) based on their past experience, like since they already say 7-magnitude earthquake, anything more than that is not possible now. (SD)*

SD's argument further clarifies that people might have designed their own mitigation and relief activities in the community as they had not been able to access and communicate with the government officials. Bankoff (2004) has also found that "people's actions are influenced by their cultural interpretation of what they are experiencing" (p.91). This cultural adoption can also be noted in Nepal's context as many believed that disaster warnings could be accessed through abnormal animal behaviours, such as dogs barking continuously, a flock of birds flying in the sky and making noises, etc. These animal behaviours were witnessed as warning signs, with some participants stating that animals are able to hear sounds that are not audible to human ears. In the absence of the immediate availability of government information, some people at local levels engaged themselves in designing mitigation and relief activities based on their own interpretation of earthquake magnitudes and their impacts. As the Nepal earthquake witnessed numbers of aftershocks, people were seen contemplating earthquake magnitudes and refusing to comply with government information on warning and mitigation measures. Some even trusted their intuition based on past experiences which were contrary to government disaster warnings. One of the participants stated that some elderly people in a locality refused to leave their shelter despite multiple aftershocks during the earthquake's aftermath. The participant added that the elderly argued that animals and birds can predict earthquakes and warn human beings by barking continuously (dogs) and hovering around the sky (birds).

*An elderly man in my locality stated that he believed his house was strong enough to withstand 10 magnitude on the Richter scale so refused to leave. He went on saying that his house stood tall in the past earthquakes (including 1990 Nepal earthquake) while his neighbours' were severely damaged. The government information has been seen least effective to people who have witnessed past earthquakes as they feel that they have developed an intuition to understand disaster based on their past experience. (SP)*

SP's argument addresses how respondents (people) perceive any government disaster related information and respond to them. The information provided by the government thus could be perceived as less trustworthy based on the risk factor judgement of the receiver. Receivers sometimes ignore information from the government as they believe it is untrustworthy based on their past disaster experience. The information which is considered to be valuable might not always be perceived as trustworthy by the receiver, at the same magnitude (Steelman et al.,

2015). This creates discrepancies between government information and public perception of disaster risk, i.e. the information perceived as risky by the government might not be accepted as risky by some people and vice versa (Sandman, 1993). Consequently, some people are seen to be reluctant to comply with government warnings and recommendations in a disaster situation, stating them to be untrustworthy as they are not convinced by the government information which was not consistent with their past experiences.

Secondly, apart from their personal disaster experiences, people are also seen to evaluate the government information as trustworthy or not based on the latter's past performance in disaster and non-disaster events. The government organizations usually follow a formal structure of information flow, and Lammers (2011) argues that information (messages) from an organization (institution) carry "institutional logics—patterns of beliefs and rules" (p. 174) and it is important that organizations have a formal structure to coordinate and control in complex environments (Douglas, 1986). One of the participants RP who is former government officer too argues that information provided by the government should follow certain procedures or guidelines as they are considered as the most important (official) source of information.

*The government has to follow the proper procedure to disseminate information as this not only avoids unnecessary chaos among public but also maintains public reliability on government information system. Every government has its prescribed rule and guidance to respond in disaster event which has to be followed, I would not say strictly as things change quickly in such a volatile environment. (RP, ex government official)*

However, this argument by RP is not received well by another participant PP who stressed that this adherence to formal structure for coordination and cooperation by the government is an attempt to avoid its responsibilities towards people.

*I think some government officials wanted to adhere to formal structure for relief distribution, [this] was based on their attempt to avoid responsibilities towards the people. There were many people who were living under the open sky while tarpaulins were lying in the government storerooms. Why did not they just distribute to the needy people, after all that is where the tarpaulins belong? (PP)*

PP's statement was made in response to news covered by various media organizations, which stated that the government had not been able to efficiently distribute relief packages received from donor countries. On one hand the government said that they had been providing relief packages to disaster affected people, while news covered by various media organizations stated that the needy people had not yet received the relief packages and they were lying in government storerooms. The experiences of participants outside and inside Kathmandu valley were different. It was highly likely that people inside the Kathmandu valley received logistics support after the disaster event while outside the Kathmandu valley they had to wait for days and sometimes weeks to receive even a tarpaulin. This could be because of the geographical situation, as many roads were damaged by the earthquake, which resulted in varying levels of trust between people inside and outside the Kathmandu valley. During the Nepal Earthquake 2015, media criticised the Nepal government for failing to distribute the relief supplies to the affected people (Harris, 2015; MacAskill & Sharma, 2015). Several international government organizations complained they found it difficult to supply aid to earthquake affected areas as the government was adamant about following official procedures (Harris, 2015). Some international donor agencies even tried to bypass the government by collaborating with local development agencies rather than the government for aid supplies (Chan, 2018). Though international agencies criticized the government for hindering supplies, the World Food Programme (WFP), the United Nations agency, were found to be distributing poor quality rice to earthquake affected people in Nepal (Sapkota, 2015). Some participants also said that they did not trust the information from the media as some television channels were found to be over-sensationalising the issue. The participants recalled a backlash against Indian media channels on Twitter with #GoHomeIndianMedia hashtag trending in the post Nepal earthquake days. The Indian media channels were mocked for over-sensationalising the issue in the post Nepal earthquake event (Biswas, 2015; Sarkar, 2015).

As well as an adherence to formal structure, the interview participants believed that corruption in the bureaucracy, poor experience of disaster events on a large scale, inadequate coordination among the government agencies, and pressure from international donor agencies were among the factors that affected the government's post disaster activities in 2015. Corruption is often considered as a main factor impeding the progress of good governance (Chetwynd et al., 2003; Hopper, 2017; Sindane, 2009). Many interview participants believed that corruption is synonymous with Nepalese bureaucrats despite having a constitutional body like the

Commission for the Investigation of Abuse of Authority (CIAA) and the government body National Vigilance Centre (NVC) under the prime minister's office, mandated to establish good governance and control corruption. There are incidents when the CIAA instilled hope among the public by taking action against bureaucrats including sitting secretaries (Nepali Times, 2015), but there has also been dissatisfaction when no action is taken against high profile corruption cases, often termed 'big fish' (Khanal, n.d.; Onlinekhabar, 2019). This public lack of trust of the government's commitments to good governance has made it difficult for people to trust government information. The lack of good governance thus affected public trust of the government, which further affected the judgement of government information as trustworthy. The participants suggested that the level of trust in government information was thus fiduciary as it was affected by lack of experience and proper coordination. Hall et al. (2017) also found that the government adopted a blanket approach to relief distribution, and as a result the people in greatest need were not properly identified. Therefore, some participants argued that they perceive information from the government as untrustworthy when the claims made by the government have not been validated through action. MD shared an incident where a minister's personal assistant was involved in corruption in the relief distribution process.

*It is hard for people to accept government information regarding relief distribution. If you could recall an incident where even a minister's personal assistant was reported to be involved in selling corrugated sheets meant to be for earthquake affected people. I understand the minister<sup>18</sup> might or might not be directly involved in this process. However, it should be noted that if the minister cannot control or is [not] aware of his personal assistant's activities, it is just a shame. (MD)*

*The disaster-affected people felt that they were not supported by the government. It was particularly because of the lack of coordination among the central and local administration. After all, the people may not understand this as they want the government to look after them. Failing to receive the government's attention will make them feel they are ignored. This was reflected in social media too. (TB, the former journalist)*

---

<sup>18</sup> The then finance minister Dr Ram Sharan Mahat's personal assistant was accused of selling corrugated sheets meant to be for earthquake affected people. The ex-minister denied the accusation. (<http://archive.nepalitimes.com/blogs/thebrief/2015/06/02/mahat-defends-his-ex-pa/>)



These two views expressed by MD and TB reflect how people do not perceive information provided by government as trustworthy when they have already accessed information from somewhere else too. There is evidence of poor coordination among the government organizations at a local and central level during the Nepal earthquake event (Amatya et al., 2017; Malla et al., 2020). This was further affected by corruption and the lack of elected local bodies at the time of the earthquake (Regmi, 2016). It could be why Twitter users criticized the government and its effective disaster response claim when they were actually receiving and experiencing poor coordination and corruption. Cornish and Dhungana (2019) stated that “the Nepali diaspora utilised social media and online campaigns to question the competence and trustworthiness of the GoN (Government of Nepal) in handling the disaster” (p. 3). In summary, public risk perception, government past performance in disaster and non-disaster events, corruption and poor coordination, among others, affected the trustworthiness of government information, which was also judged based on individual experience. There is evidence that the government’s policy regarding disasters is to be blamed for the declining public trust in the government (Robinson et al., 2012). A public poll conducted after the March 2011 Fukushima Daiichi nuclear disaster, suggests that public trust in Japanese institutions has decreased (W.W., 2012), while Nicholls and Picou (2013) found that public trust in local, state and federal governments plummeted after Hurricane Katrina in 2005. The poor coordination and collaboration of the disaster response by the government and the various development agencies (Hall et al., 2017) after the Nepal earthquake were among the factors that affected how people evaluated government tweets related to the disaster.

#### 4.4.d. Socio-political factors and trustworthy government information

As well as the personal experiences mentioned above, this section argues that socio-political factors are also good indicators of trustworthy information in post disaster events. Since prior research has identified that demographic indicators like gender, age, education and education preferences have a direct impact on trust in the government (King, 1997; Norris, 2001; Putnam, 2000), this section will be divided into two parts: political factors and social factors. Van den Bos (2011) argues that there are three types of citizens (people) when we discuss trust of governments: “those with a fundamental predisposition to trust government, those with fundamental distrust, and a group of citizens that do not know whether government is to be trusted” (as cited in Grimmelikhuijsen & Meijer, 2012, p. 142). Therefore, in order to understand the relationship between socio-political factors and the trustworthiness of

government information, it is important to note that people make judgements about government information based on their prior knowledge and general disposition to trust government (ibid). This research takes prior knowledge of the participants as an indicator to understand how they judge government information as trustworthy or not.

It also noted that people who participate in political processes will have a high level of trust of government. This is likely because people associated with political process will have better understandings of the political-administrative system (March & Olsen, 1989). Contrary to this statement, one of the participants SD stated that people will become more frustrated with politics and have less trust in government if they have participation in and understanding of political processes.

*I have seen people who were active in politics being frustrated with [the] system of operation. There could be personal circumstances behind the low trust but I think better understanding of [the] political system will help them to reveal how the government can skew the achievements and why we should not trust what government says. (SD)*

SD's argument tends to support that the political ideology or beliefs are important factors for some people to judge government information i.e. if the government is from a different political party, so they do not tend to support or believe the information. The argument on political engagement can be viewed based on their preferences of political party or beliefs. Christensen & Lægreid (2005) said that leftists in the political spectrum will have more trust in government as they have a tradition of supporting the public sector. This research also identified that political views are an important aspect to understand how people perceive government information. However, the party preferences or beliefs about any political party were seen as factors that could affect the trustworthiness of government and its information. March and Olsen (1989) found that party preference is seen as a major factor for and against the support of the government. Almost all interview participants argued that any criticisms of the government and its policy were protested by some supporters of the government on Twitter. They argued that some people offered their support based on their inclination towards a political ideology or party rather than by evaluating the limitations and effectiveness of government plans and policies, as stated by one participant below:

*Some pro-government Twitter users support all government plans and policies. They do not bear any criticisms against the government and protest if done. It is hard to judge [the] reason behind this, either they have been paid for doing so or they trust the government. They interpret government information in such a way to make us feel that we have understood differently.*  
(DC)

The DC's statement provides evidence that people who voted in favour of a political party or parties in the government tend to show more support and confidence than those who did not vote in favour (Norris, 1999). However, this support is not just limited to political parties, as people may support an individual political leader or minister for his or her achievements or charismatic nature, with expectations that he or she will continue to work in their favour. Therefore, the trust of government based on political aspects has been identified through multiple perspectives after undergoing interviews with participants of this research. The first three findings are similar to Christensen and Læg Reid (2005). Firstly, people tend to trust a political party based on its belief system rather than because of the leaders representing that party. They believe that political leaders do not adhere to political beliefs and are not trustworthy in their commitment towards them. Secondly, people trust the political and administrative system of the country despite poor trust in its political leaders. It is likely that the administrative system is so strong any political parties representing the government will have to adopt or follow the administrative system of the country. Thirdly, people do not trust the political and administrative system nor political leaders based on their past experience. Fourthly, people trust a particular government organization only in a particular situation. For example, an interview participant said the role of Nepal's Police service in the post Nepal earthquake situation was admirable, however their performance has not been overwhelming in non-disaster events.

The trust in government is also affected by social demographic factors like education, and age (variables included in this research). Rose (1999) found that social position and demographic features are also features of trust. Bouckaert and Van de Walle (2001) in their research stated that education plays an important role in trust in government as people with higher education tend to have a greater understanding of political and administrative systems of the country. Contrary to this argument, people with a good understanding of political and administrative systems could also be more critical of the government's plans and policies. However, an

interview participant suggested that accessibility of resources rather than education has a greater role to play in the trust of government information.

*Education [is] often termed as an indicator of trust in government. But it is not guaranteed that academic qualification will lead to better understanding of [the] administrative system and people with higher education might not always have good access to government information.*  
(AN)

As stated by AN, it can be argued that education can play a role in interpretation of government information rather than reliance on a simple trust. This is because educated people are more likely to interpret administrative terms and processes more easily, which can help them to evaluate the trustworthiness of government information. Bouckaert and Van de Walle (2001) found that people with higher levels of education have a greater level of trust in the government, contrary to Kim (2010) and Norris (1999) who found that citizens with higher levels of education had less trust in government. Christensen and Læg Reid (2005) have also cited age as a determining factor for trust in government, as older people tend to be more collectively oriented than the younger ones.

#### 4.4.e. Social media effects on public trust in government information

This section evaluates the role of social media in influencing public opinion of the government and whether or not its information is trustworthy. Interview participants suggested that some social media discussions are initiated by traditional media (print, radio and television). It was found that people on Twitter comment on news reports covered by traditional media as contents are also available online. However, this section will only cover Twitter discussions on media reports about government information.

Firstly, the media is often described as the ‘fourth estate’, which plays a vital role in democratic society. The traditional media has been found to be framing public perception about the government (Im et al., 2014). The presence of media and journalists on Twitter has not only facilitated users to access information but also helped them understand the interpretation of government information online. Some discussions on Twitter can be generated based on news reports covered by media houses or journalists. It is a fact that social media has added new

dynamics to the information sharing process as anyone with internet connectivity and an account can share information. With social media and media being sources of information, it has been found that both influence people's judgement of the trustworthiness of government information. Twitter, thus, is a form of 'ambient' media where users receive information from established media and each other (Hermida, 2010). One of the participants of this research interview, who is also a working journalist, said:

*I browse topics on social media everyday which gives me an idea on what issues need to be covered or missed. Though the question of trustworthiness is always there but I think it is the responsibility of a journalist to find out what is true and false. (BB)*

BB's argument is supported by many scholars who believe that the media plays a critical role in influencing people's perceptions, which will impact on their trust of government and its organizations (public sectors), termed as 'media malaise' (Earl Bennett et al., 1999; Gordon, 2000; Newton, 1999). This is often the case, as most people do not have the access or the capacity to analyse the government and its organizations' performance. They want someone to process and analyse information for them. The trust of media is also an important aspect when we discuss trustworthiness of media information. The media is expected to provide information to people which will help them to make decisions that are consistent with their best interests (Stiglitz, 1999) and to better analyse public policies (Sen, 1999) that match their needs and wants (McCombs & Shaw, 1972). The trust of media is another aspect of discussion and it is not a part of this research, however, it is sometimes true that people trust media information based on which media houses and journalists are covering the news. The public perception of trust of government can thus be influenced by various factors like public sector performance (Keele, 2007), mass media use (Keele, 2007), generalized predisposition of government (Grimmelikhuijsen & Meijer, 2012) and media coverage of government performance (Porumbescu, 2013), among others. The availability of some political leaders (Aharony, 2012) and the government on Twitter or social networking sites for information sharing has helped them to enhance their responsibility, transparency and cooperation (Golbeck et al., 2010) particularly among people who are active in the online environment. However, it can be difficult for political leaders to respond to all queries raised on social media, which ultimately affect users' trust of that political leader.

The availability of social media has driven fundamental changes to the government information diffusion process (Im et al., 2014). Some argue that the availability of the Internet as an information dissemination medium has led to a negative impact on public perception of public sectors (Brainard, 2003; Im et al., 2014) and ultimately on government. Prior (2006) argues that some media even sensationalize issues to attract more readers and maintain competition in the market. This approach is referred to as ‘market logic’ (Porumbescu, 2017), which negatively affects public opinion about the government (Johnston & Bartels, 2010). As stated above, some Twitter discussions are based on media reports, which helps them to reinforce trust in government. However, research carried out by Norris and Curtice (2008) found no significant link between general use of the Internet and public trust in government, while Bailard (2012) argues that internet users are more satisfied with government than non-users, in a democratic political system. The availability of multiple information sources on Twitter allows users to view broad and diverse interpretations of government information. The diversity of information on the Internet (social media) allows users to reinforce their perceptions of government (public sectors) (DiMaggio et al., 2001). The social media discourse has been a good platform for users to understand and clarify any issues related to government information. One participant of the interview said that Twitter discourse on government plans or policies has been helpful for renewing his trust towards the government and its information.

*It is sometimes useful to understand the government information through discourse on Twitter. Everyone has their own opinion on government and its policy. Twitter discourse helps to understand every aspect of it through pros and cons. (DC)*

This statement by DC is also supported by the findings from Lueg & Finney (2007) who found that the interactions on social media will unconsciously influence the public opinion of users. This could be a reason that government organizations have increased their presence on social media platforms like Twitter and engaged themselves in interaction with the public. The public-government interaction helps the former to understand government policy and clear confusion and it can be a good predictor of the public-government relationship. Thus, social media not only provides an opportunity for public-government interaction but also creates a sphere for public opinion (Fuchs, 2014).

Yet, social media users tend to trust the government information more during a disaster event. The inter- and intra-networks of government organizations help in coordination and communication during post disaster events. The collaboration of organizations helps achieve goals (Augustin et al., 2009) which otherwise would not have been possible. Many interview participants believe that the trust in government during disaster and non-disaster events should be viewed from two different perspectives: people who do not trust the government in non-disaster events are found to be trusting during disaster events. They argue that the government is equipped with expertise that can help them to understand disaster events more comprehensively. One of the participants suggested that:

*I have found that people who do not trust government were seen trusting them in disaster event. It is [an] uncertain situation where people have to face new realities. Though this trust level might decrease as time progresses after the government fails to address their concern. Also, asking a question on trust in government depends on time as well. During immediate aftermath the people trust the information provided by the government but this trust level might decrease as government enters into rehabilitation phase. (AN)*

AN argues that the trust in government is thus a complex issue as this trust relationship tends to fluctuate. The government information could be different as they may focus on various stages of disaster development like pre-warning, occurrence and recovery, which can also affect public trust (Wukich, 2016). Emergency information is usually crafted based on operational conditions (Sellnow & Seeger, 2013), situation and audience (Falkheimer & Heide, 2006). The research has identified that almost all participants trust government information related to disaster warning and casualties. One of the participants suggested that,

*The government is embodied with expertise and manpower that provide warning and casualty information particularly in disaster situation. The media or any general public will not have the resources to ascertain this information and often rely on the government. It is highly unlikely that the government may skew the information on this issue as government is also formed of political party or parties who have to be accountable to the people. (SD)*

SD argues that the lack of resources and manpower make media and people rely on the government to receive information related to disaster warning and casualties. However, as also stated above, people have their own perceptions to judge the trustworthiness of disaster information other than for warnings and casualties. However, it is noted that the information about casualties and warnings is perceived as trustworthy by most of the participants, however others believe that the information on casualties may be skewed. They believe that the government can skew this figure so that it can prove itself as better than past governments. The presence of alternative sources of information could be a reason that people's trust in government information can fluctuate. Therefore, there are also challenges to government information as it should be deemed trustworthy by receivers. However, this research is not based on the challenges of government to provide trustworthy information to the public, i.e. this research looks from receivers' perspectives only.

#### 4.4.f. Social networks and trust in government information

This section discusses the role of social networks, particularly weak ties, on people's judgement of the trustworthiness of government information in post disaster events. The role of social networks is one way to understand how people trust the government information, as government and people coexist in a social network (Li et al., 2020). The trustworthiness of information and the source people receive it from, are equally important for the official information provider (government) as they affect the latter's decision making and information sharing processes (McGregor, 2019). The judgement of government information in post disaster events is also affected by how public opinion develops on online social networks and to what extent the offline social network will affect judgement making. The networks of followers and followees are a part of the knowledge sharing process on Twitter. People have their own networks of followers and followees on Twitter, which could be built on different factors like offline relations, influence (based on expertise) and interests, among others. These networks are likely to have an influence on the judgement of trustworthy information. It should be noted that Twitter conversations might not always reflect offline social conversations (Ovadia, 2009). Huberman et al., (2008) found that "a link between any two people does not necessarily imply an interaction between them" (p. 8). Furthermore, the followers and followees networks on Twitter (online) might not always reflect offline social networks. Many Twitter networks of followers and followees are based on common interests too, which are less likely to turn into offline social networks and vice versa. Nevertheless, Twitter is a hub for



gathering diverse viewpoints, leaving the user to decide the trustworthiness of information received.

There are many ways a user forms their network on Twitter. The diversity of networks on Twitter can have an impact on users' judgement of information. Parise et al., (2015) established a relationship between network diversity and ideas. A diverse network of people exposes a user to diverse ideas and knowledge. This link was also acknowledged by an interview participant of this research:

*I usually do not follow a large number of people but I tend to follow those people who differ to my ideas as this helps me to understand my ideas more clearly. If I follow only people who support government information as trustworthy I will not be able to get a critical perspective. (ND)*

This argument by ND has been also identified the literature review of this research which suggest that the diversity of followers and followees on the Twitter network is found to help a user be critical of information provided by the government. Some interview participants suggested that they regularly review their followers list so that they can keep updated with their changing interests. Parise et al. (2015) have described this process in their research as meaning that a "pruning strategy is necessary since people's topic interests change. Pruning also allows employees to eliminate redundancy" (p. 24). This strategy might not always be effective, as one of interview participants suggested this might affect offline social relations with others.

*It is hard to unfollow someone particularly when you have offline social relations. So, I do not unfollow them but simply mute their tweets. I believe unfollowing a person will affect my offline social relations and also I [may] lose my followers. (TB)*

TB supports that the online network also has some influence on the offline network and vice versa. The social relationships established through online networks (weak ties) have been advanced to offline networks (weak ties). Twitter has been found to be a connecting point for many users to establish their offline relationship. The frequent online engagement on Twitter through replies and retweets provides a user with a feeling of closeness even though they have

never met offline. This feeling of closeness is an important factor in Twitter community as illustrated by the comment below:

*With communication on Twitter, I will have a feeling of closeness if we happen to meet someday in future. A bond of trustworthiness is already established based on information exchanged. A face-to-face meeting will endorse my trust of a person who I have been in touch [with] for a long time through online networks. (ND)*

ND supports an argument that the online and offline social ties established between or among users will also help them to evaluate online information. Some interview participants tended to evaluate government information as trustworthy or not based on information shared by their networks on Twitter, as people trust information from someone whom they trust. The trusting of information is thus related to relationships among users in networks too. The weak ties developed among Twitter users on networks enable them to connect to others “outside their habitual social circles, which in disaster circumstances has the benefit of providing intact networks undisturbed by the attendant disruption and dislocation” (Bricout & Baker, 2010, p. 65). In this context, for a better understanding of relationships and resources among the members of a network, which is also known as social capital (McFadyen & Cannella Jr, 2004), they should be divided into three dimensions as mentioned by Nahapiet and Ghoshal (1998), as being structural, relational and cognitive. The relational dimension relates more to social relationships embedded with trust, reciprocity and commitment, while the structural dimension is about an overall connectivity pattern, i.e. “who you reach and how you reach them” (ibid, p. 244). The cognitive dimension is based on shared common interests and ideas, which could be based on common language, games, food, political ideologies, etc. The member of a network is connected to or benefited by either one or all dimensions in the network. Critics question the relational dimension in weak ties, however it should be noted that people in online networks can be viewed as community in an offline environment.

The information shared by a user on Twitter is also judged by their offline social status and relationships. A participant suggested that he does not even judge information shared by some people in the network as the person who shared the information has already worked as a gatekeeper. This suggests that the judgement of trustworthiness of information by a User A is based on personal charisma or relations with User B. These online and offline social

relationships are found to play a role as a gatekeeper of trustworthiness of information on the Twitter network as stated by SA below:

*I simply trust the information shared by some person as I believe he or she has not questioned trustworthiness of information. I lay my trust on [the] person's expertise to make the judgement of the information shared by him or her. This particularly may reflect a Nepali society mind-set that a personal status gained through academic or professional excellence can help judge information shared by that person. Apart from that I have also seen that a few people are very hesitant to write in English language due to [lack] of proficiency and fear of shaming for grammatical errors. (SA)*

As stated by SA it becomes clear that the reputation gained through personal charisma (based on academic or professional excellence) and relationships (offline or online) of a user were found to be also determining factors for the trustworthiness of information on Twitter, as they play role of gatekeepers too. This argument is rooted in a belief that a person with such a good reputation in the society or community will not share or support any untrustworthy information. Apart from reputation, some interview participants identified verification of a Twitter handle and number of followers as other determinants of the trustworthiness of information. Some scholars believe that verification of a Twitter handle strengthens the trustworthiness (credibility) of the information shared (Flanagin & Metzger, 2007; Morris et al., 2012). However, Twitter handle verification was not an indicator of trustworthy information for some interview participants as one participant said that the person who shared information should be trustworthy rather than be judged based on their Twitter verification badge.

*There are many Nepali handles that have been verified by Twitter recently. I don't think this can be an indicator of trustworthy information. However, I believe the person (source) should be trustworthy to trust the information shared by him not merely Twitter verification. (AN)*

AN argues that a verified Twitter account should not be a factor to judge trustworthiness of information. In this regard, the government information can be judged as trustworthy on a Twitter network based on an individual perspective. Individuals may have pre-determined judgement criteria based on their past experience, political beliefs and network, among others.

This may not always apply in post disaster situations as some users might also be emotionally vulnerable. The uncertainty, fear and anxiety could affect the people's judgement of information. As a result, perception of the government information may be affected more by uncertainty rather than by their pre-determined beliefs.

#### 4.5. Conclusion

This chapter explored how people perceive government information in post disaster events, particularly in the context where the government may not be the only source of information, as people are actively engaged in the information seeking process (Brashers et al., 2000). There could be multiple sources of information including media and social media which have also affected people's judgement of government information. Mass media is often seen as a dominant source of information (Burger et al., 2013; Heath et al., 2009). In this context, this chapter concluded that the public have multiple ways to perceive government information as trustworthy or not.

Firstly, people perceive information as trustworthy or not based on their personal experience, which can be either past or present. If the government information has been found to be untrustworthy in the past, people find it hard to believe the information provided by the government in the present. The media and social media can be effective tools for changing people's perception about government information. In addition, people's present experience with the government also effects their perceived trustworthiness of information. As noted above, people are unlikely to trust the information from the government if they have not received enough support in a disaster situation, i.e. when the government's actions do not reach the public. Secondly, political beliefs or ideologies are found to be another determining factor for the government. The people supporting the party or parties in the government were found to be defending the government's information. The perception of government information in this context may be influenced by their beliefs or ideology rather than the reality on the ground. Thirdly, the government information is also perceived as trustworthy or not based on receivers' risk perception ability. This risk perception ability is influenced by the receiver's experience of past disaster events and the government's past performance in a disaster event (as perceived by the receiver). As a result, the essence of government information may not be perceived to the same extent by the receivers as intended by the sender (government). The participants suggested that socio-cultural perspective has a greater influence on how people perceive

disaster warnings. Fourthly, trust in the government is an important aspect of determining the trustworthiness of government information, as identified by the participants too. This trust in government is found to be influenced by various facets of the receivers, such as political beliefs, socio-cultural aspects, past experiences etc. The trustworthiness of government information thus is multi-faceted issue and it has to be viewed from the receivers' perspective. The receivers have their criteria on which they base their perception of government information.

### 5. Retweeting trustworthy information in post disaster events

#### 5.1. Introduction

This chapter analyses the issues related to Twitter users' decision to retweet information in post disaster events as being trustworthy information. The decision making process, including criteria to judge trustworthiness of information before retweeting, is explored to better understand the retweeting behaviour in post disaster events. The chapter begins with an understanding of retweet and retweeting behaviour and motivation, followed by how users judge information as trustworthy before retweeting on their timeline. The retweeting behaviour is considered as a part of this research to measure trustworthiness of information because a user is not owning information in a retweet rather sharing someone else's information on their networks. A good understanding of retweeting (sharing of information) on Twitter is an important aspect to judge trustworthiness of information in a post disaster event as users' capacity to create new content (tweet) may be disrupted due to multiple factors like cellular congestion or power cuts, anxiety, uncertainty and disruption in information flow (i.e. the information sources might also be affected and the users may have to access information outside regular information sources). This could cause users to pass others' information (retweet) to their network in a post disaster event. Rath et al., (2017) have also found that a user's decision (say A) to retweet a tweet from a user (say B) is guided by two factors: the trustworthiness of user B or the trustingness of A, i.e. the propensity of A to trust a user (B) from another network. This states that the receiver (A) has an opportunity to evaluate the trustworthiness of a tweet (from B) as they (A) have access to content (information) and source (B) before sharing or forwarding (retweeting) to his or her (A) network. In such a scenario, the trustworthiness of a network (where A belongs) also depends significantly on people who act as bridges in networks by retweeting material. While trying to understand trustworthiness of information based on origin (source), a retweet can be viewed in a different perspective to a tweet as the source of the retweet may not always be from the receiver's network but also from outside their network. A research carried out by Gul et al. (2018) on the Kashmir floods in India found that 44 percent out of 36,697 tweets were retweeted, which demonstrates that retweeting is also an important component of the information sharing process on Twitter. This chapter therefore explores how senders evaluate trustworthiness of tweets before retweeting them in a post disaster situation.

Retweeting in this chapter should be understood as a process by which a user shares other's information to his or her network on Twitter. It enhances a user's ability to reach multiple people or networks beyond the reach of the original tweeter's followers (Kwak et al., 2010). There are two scenarios when the researcher analysed retweeting behaviour after the Nepal earthquake. Firstly, during the Nepal earthquake event, when Twitter users retweeted with RT as an initial for retweet, they could even modify a tweet and then retweet, limiting themselves to the 140-character restriction. Secondly, Twitter users now (as of 19 February, 2020) have options to either retweet the original tweet or retweet with a comment leaving a tweet in its original state, with a 280-character restriction applicable on retweeting with a comment. The researcher asked his participants to share their experience based on memories of Nepal earthquake retweeting behaviour. However, a few of them (seven out of sixteen) had already forgotten what they did during post Nepal earthquake days and responded based on Twitter's present retweet feature. The researcher had to access backdated tweets (available as of November, 2019) from his 16 participants to understand their retweeting behaviour. Most of the participants had used RT as an initial for a retweet and some popular retweets were even found modified from their original contents, while cross-checking participants' tweets and retweets. Recuero et al., (2011) said that these modifications influence how information diffuses on a person's network. The researcher identified two reasons behind these modifications among his participants. Firstly, some participants were trying to retweet within 140-characters, which forced them to change words like 'the' to 'd', 'one' to '1', 'before' to 'b4' etc. Secondly, some users wanted to remove use of foul language in their retweet, as made by original users in a fit of anger or fear. They indirectly confessed that retweeting with foul words might offend their followers who might end up unfollowing them. This is the reason they removed foul words or modified them with \* based on number of letters for example f\*\*k, a\*\* as stated by ND below:

*I do not know where my retweet ends up in the network. The person who reads my retweet with some foul language might feel that I am endorsing it by retweeting. I do not want my personal and professional image defamed by someone else's tweet. (ND)*

The views expressed by this participant (ND) were also echoed by other participants of this research who admitted that they participated in the information sharing process through

retweeting during the Nepal earthquake event, consciously and deliberately. They also said that they were aware that the retweeted information might not be trustworthy and it might affect their trustworthiness on their network.

*I do understand that my retweet can affect my reputation in the network. However, I am sharing someone else's information in my network for two reasons. Firstly, I believe the information is trustworthy and secondly, it is important to share information though you might not be able to judge its trustworthiness, someone in the wider network will judge. At least my retweet can make someone access information. (PP)*

The statement made by PP above argues that people may deliberately retweet information and might not be acting as a gatekeeper but merely as a spreader. The interview participants suggested that retweeting is an important aspect in post disaster events and modification gives an opportunity to perform a gatekeeper role. Firstly, during the post disaster event they used 'RT' in front of the tweet to ensure their network knew that they were sharing information not endorsing it. The issue related to whether retweeting is equivalent to endorsing it or not is discussed in a separate sub chapter below. Secondly, with the current feature of 'retweet with comment' the users can even express their opinion on tweet and then retweet. However, it is important to understand how people perceived these retweet judgements as trustworthy information in the Nepal earthquake event where the 'retweet with comment' option was not available. This chapter thus focuses on receivers' perspectives, to answer the research question: Do Twitter users retweet trustworthy information in a post disaster event and how do they judge this trustworthiness? This research question will be answered based on interviews with sixteen participants, to understand how they judge the trustworthiness of a tweet before retweeting in a post disaster event. The participants of this research shared their retweeting experience in both disaster and non-disaster contexts. The researcher selected themes that recurred in interviews when participants discussed the disaster event only. The themes that recurred in the interview process were: source of the information, number of retweets, content of the tweet, social network, trustworthy sources, retweeting with or without modification of a tweet, and ignoring a retweet considering it as untrustworthy, in the post Nepal earthquake event.

The decision making process to judge the trustworthiness of a tweet is an important aspect of the research. This decision making process may involve the receiver's judgement of source,



message or intention, to forward information without judging it. Boehmer and Tandoc (2015) have categorized a wide range of literature on retweeting behaviour into three different categories: characteristics of source, message, and receiver. The retweeting process is different than tweeting as users are either sharing someone else's information to their network or networks, as Recuero et al. (2011) believe that retweets play an important part in gaining social capital. This is true in some respects, as many interview participants believed that their Twitter timeline was full of information from their network and networks from their followees, who they do not know personally. They also shared that they followed many Twitter users after the latter's tweets appeared on their Twitter timeline as retweets. This exposure to sources (weak ties) of information outside their network could be an interesting aspect of trustworthiness judgement as stated by RT below:

*I usually retweet the information based on who retweeted it, i.e. source of information is an important aspect for me to judge trustworthiness of information. If someone whom I trust retweeted the information, I trust the information as I believe the person whom I trust has already endorsed it as a trustworthy. My trustworthiness of retweeted information lies in the person who retweeted it rather than original source of the information. (RT)*

RT's statement reflected on an aspect: how people make judgement on the trustworthiness of retweeted information. The person who retweeted (retweeter) could be a measure of the trustworthiness of a tweet rather than who tweeted it (original source of tweet or original author), as RT stated above, the person who retweeted information has already endorsed it as trustworthy by retweeting it. However, DC argued contrary to RT's statement:

*Retweet should not be viewed as endorsement as some users are simply forwarding the information to a diverse audience for judgement when they cannot do it on their own. I have also seen someone commenting on a tweet and retweeting it believing that someone else would validate its authenticity. (DC)*

The statements above (from RT and DC) clarify that trustworthiness of a retweet also depends on networks and people. The trustworthiness judgement of RT depends on a person while DC's relies on the network. Therefore, there are two different aspects to the judgement of a retweet

here: trust in the person and trust in the network. These two aspects of trustworthiness of a retweet have been identified based on trustiness and trustworthiness (as also stated in the Introduction section of this chapter). Roy et al., (2016) and Rath et al. (2017) have argued this as the trustiness of a user and trustworthiness or willingness of a network to accept a new user. This further states that the trustworthiness of a retweet is judged by the person who shares it or who wants their network to judge the trustworthiness of the information. The retweet helps the user to pass the information from one network (group) to their other networks (Israel, 2009) who may judge the information as trustworthy or not. The participants shared their experience of retweeting in the post Nepal earthquake event. They said that the poor cellular network and frequent power cuts not only affected their connectivity but it took a longer than normal time to tweet, mostly a tweet with photo or video. Apart from that, the uncertainty, fear, anxiety and lack of regular sources of information forced users to retweet information despite knowing that the information they were sharing (retweeting) may be untrustworthy and might affect their own trustworthiness in the network. As a result, most of them preferred retweeting (sharing other's contents) rather than tweeting (creating their own content) on their own, believing that it would at least spread to their network. This is why receivers (third persons) were exposed to a high level of risk and variability when they had to judge trustworthiness of information from 'bridge' users rather than their regular information sources on Twitter. However, some participants recalled that the main reason for retweeting after the earthquake was to share information rather than acting as a gatekeeper who was responsible for the trustworthiness of information. They shared that they were trying to make information available to others as they believed that not everyone would have the same network of people and might not have access to the same level of information as themselves. This process identifies that some Twitter users were not judging information's trustworthiness but were spreading it to a larger mass. This approach of retweeting information to a larger mass for the judgement of trustworthiness, or the collaborative approach to the trustworthiness judgement of a tweet through retweeting, has been identified in the interview process. The findings of this aspect based on interviews with participants have been described in following sub-chapters.

## 5.2. Increasing visibility or trusting information

Most of the participants recalled that the main reason behind retweeting post Nepal earthquake was making themselves visible on the Twitter platform. One of the participants recalled an incident where material not related to the earthquake was mistakenly shared. The participant retweeted an iconic photo of Nepal earthquake-affected people, where two young children were

seen hugging each other. The photo was widely circulated on Twitter and Facebook as a Nepal earthquake photo but it turned out to be a photo taken in Vietnam in 2007 (Pham, 2015). An interview participant (SK) who had recently joined Twitter after the Nepal earthquake said that it was important to share anything related to the earthquake so that people outside the disaster zone would be informed about the event.

*I saw a photo of Dharahara turned into debris. I didn't think about trustworthiness of this photo at the moment but shared it in my Twitter. It was really important to make people outside the disaster zone understand the impact as Dharahara was an iconic tower in the heart of Kathmandu and people who had been here must have seen at least once either while flying over to the airport or even visited the place. (SK)*

The tweetpic of iconic Dharahara debris was heart-breaking to participants like SK who believed that it might be a doctored image. Dharahara Tower (also known as Bhimsen Tower), an iconic tower in the centre of Kathmandu valley, was built in 1825 by the first prime minister of Nepal, Bhimsen Thapa (Bindloss, 2018). This was destroyed by the great earthquake of 1934 and was later reconstructed. This nine-storey building collapsed again in the Nepal earthquake.

The previous research by boyd et al., (2010) found that retweeting is a conversational practice in a network as it helps to engage with a diverse audience. This passing of information (retweet) to multiple layers of the audience (networks) will provide an opportunity for a Twitter user to increase his or her visibility, which Van Liere (2010) states as “an attempt to vie for attention from unsubscribed Twitter users and to increase the follower count” (p. 3). People particularly in post disaster events might question or comment on retweets by their followees which could lead to a conversation between two users previously unknown to each other. For example, B retweeted a tweet from A which then appeared in C's Twitter timeline. Now, C can begin a conversation with A and even question or comment on the trustworthiness of A's tweet. A third person can judge the information as trustworthy or not based on the conversation between two or more people. This long conversation among Twitter users is often known as a thread or thread conversation in Twitter. AN suggested that some individuals compete with each other to make their presence felt (visibility) in the Twitter community by retweeting information. This can be true when a user who does not have anything to share but wants their presence felt, sometimes may retweet information. It is interesting that the retweeted information also

sometimes increases the visibility of the original author and the receiver connects with the former for more details or information. This retweeting information (more visibility) further undergoes a gatekeeping process as stated by AN below:

*I have seen receivers of retweeted information questioning the original author regarding trustworthiness of information. The receivers with additional information will engage themselves questioning the trustworthiness of information. This is highly possible if retweet comes from someone who has large number of followers as information penetrates to multiple layers of networks. (AN)*

As stated above too, the receivers of the information will undergo gatekeeping process by questioning information shared by the original author. This is often termed a thread. The thread of tweets is considered as a subset of tweets when Twitter users discuss the same topic as a long conversation (Nallapati, et al., 2004 as cited in Petrović et al., 2010). In addition to the above findings, this research found that retweeting is an important aspect of network building, by making a user's presence felt in the network. One of the participants suggested that retweeting helps to build or maintain his or her position in the network.

*I may not have anything to share everyday as a tweet. However, I maintain my presence felt in the network based on a retweet. This has three benefits. People will still remember you in the network, you can make your presence felt by retweeting information and you can connect your two networks (where you get information and where you share your information) to each other. (PD)*

PD's statement can be understood in the perspective of Nepal earthquake days, too, where people may have maintained their network, fearing that they might lose their followers if they did not make their presence felt. Kwak et al. (2010) also found that a followers' count is an important aspect of popularity. This could be another reason why users prefer to retweet when they do not have anything to tweet, so prefer to share someone else's ideas. This network-building and maintenance aspect of retweeting can be viewed from a perspective that users are exposed to people outside their network which can again lead to the conversational aspect as stated by boyd et al. (2010).

In addition to building or maintaining a network and beginning conversations in the network, the participants suggested that retweeting is also a process of sharing information in a network with an expectation that someone in the network will judge its trustworthiness. This network approach for collective measures of trustworthiness is discussed in following subchapters in detail. The participants believe that retweeting in a post disaster event could make their presence felt and create an opportunity to talk to someone outside their networks rather than judging information as trustworthy.

*It might be sometimes difficult to access information in post disaster event due to lack of poor cellular network, uncertain environment, power cut or any other reasons. The retweet helps users to check trustworthiness of information through conversation. I believe, it is the beauty of Twitter where people are a member of multiple layers of networks, these networks will help to validate trustworthiness of a retweet. (SA)*

SA argued that retweeting will help to judge the trustworthiness of information in post disaster events as it passes through multiple layers of networks, and undergoes a filtering process. SA asserted that the person who retweets should not be viewed as a responsible person to judge trustworthiness of information, rather as a medium for information flow. The retweeted information can thus help the visibility of a user by passing beyond the first layer of friends and families' networks to reach a broader audience. The receivers thus can decide on trusting, understanding, personalizing or acting based on the retweeted information received (Mileti & Fitzpatrick, 1991).

Some participants termed Twitter users with large numbers of followers as 'Twitter celebrities'. It is obvious that if a tweet is retweeted by a user with a large number of followers, it increases the visibility of information to large networks of people. This can be viewed in conjunction with celebrities' fundraising appeals gathering more attention. There is research that suggests celebrity endorsement will have an impact on receivers' behaviour which could be a reason why many celebrities are seen advertising and endorsing products (Na & Kim, 2007; Sliburyte, 2009). Some participants shared that they mentioned (tagged) Twitter celebrities expecting that their tweet would get retweeted, and they got attention (visibility). However, TB agrees that a

tweet or retweet from a large number of followers' status increases visibility but does not guarantee that it will be trusted information.

*The receiver should also trust the source to trust the information rather than content only. I believe even celebrities are not in position to receive trustworthy information in post disaster situation – they could simply share information without validating its trustworthiness. So, I don't think number of followers of a user can be a trusted source of information. (TB)*

As TB stated above, Twitter celebrity retweeting will reach a large number of people but it cannot be seen as a trusted source of information. Many international celebrities shared their love and support after the Nepal earthquake (Vena, 2015). However, their tweets were basically focused on expressing concern, pledging support and extending goodwill (Francis, 2015) or refuting rumours against them (IANS, 2015). Though the celebrities can reach a large audience, they might not be a source of trustworthy information themselves, which could be a reason they prefer sharing support, goodwill or concern. Mustafaraj et al., (2012) also found that influential people (celebrities) could be centres of information based on information “provided by other, anonymous and eponymous citizens” (p. 255). Therefore, it is important to understand that reaching a large mass of people through retweets, and sharing trustworthy information, are two different things. That is to say, the level of trustworthiness of information and the visibility of information are two different aspects. The next sub-chapter of this research will discuss how retweets can be viewed as a display of social networking, not trustworthy information.

### 5.3. Retweet: A display of social networking, not trustworthy information

This section will discuss the retweeting behaviour of Twitter users based on interview results which found that people tend to retweet disaster information to show their network rather than to share trustworthy information. The retweet can be a way to display a Twitter user's social network, which ultimately reflects his or her social capital. The social network is an important aspect of social capital (Putnam et al., 1994). The social network on Twitter can also be seen as a way a user displays their social connectivity and the amount of social capital possessed by them. However, whether the nature of Twitter connection, which is also weak ties, can be viewed as a social network in offline mode is arguable, as stated by Recuero and Zago (2016) (as cited in Recuero et al., 2011) but it has been noted that Twitter connection can be viewed

as a social network when understanding the flow of information. Thus, there could be different motives for a retweet in a post disaster situation as ND argues that some people retweet to display their social network:

*I have seen some people retweeting simply to gain attention and show others about their Twitter network. They might want to share information that they feel is important but may also show others about their network. They believe that display of [this] nature will give them more attention which in turn increases their followers' numbers. The number of followers are always a concern of Twitter user. (ND)*

ND's comments reflect Recuero et al. (2011) and boyd et al. (2010) findings that some people retweet to seek attention on the Twitter network. This could be true that this network display will also help Twitter users display their social capital (Subrahmanyam et al., 2008). AN argues that people can instantly increase their social capital through Twitter as they do not need approval from followees to follow them (provided the followee has not made their Twitter account private so it requires pre-approval to follow) unlike other social networking sites like Facebook.

*The lack of approval from followees will help users to increase their social connectivity. They can connect with anyone they like. I have seen that people were being really cautious on social networks and wanted to receive information only from a particular set of people on Twitter. I particularly know who to follow during post disaster event. People working on disaster management is my first preference but the hardest part is identifying them. Therefore, it is important that people make their network up to date so that they get trustworthy information in post disaster situation. (AD)*

Just as AD stated above, Kaigo (2012) found that Twitter plays a useful role in social capital by creating new ties and maintaining old ones. This process of maintaining or identifying social networks helps users to get information they need in a particular situation. People can easily view sources of retweets of post disaster information, which can help them to judge their trustworthiness. This suggests that the Twitter network is an investment made by a user to gain benefits in a particular situation. SA suggests that a Twitter user sometimes decides on

following or not following other users on Twitter based on the latter's network of followees, i.e. A will decide to follow B based on B's network of followees. The access to B's network will help A to decide whether or not they want to be part of the broader network of B, as this type of connection can be viewed as a process to weave social networks and expand social capital. In addition, it is sometimes easy for users to follow users with common interests by viewing the followees' list of the user who shares a common interest with them.

*I am bit cautious while following some person. I do not follow a person just because someone in my network has retweeted, as retweeted information might not always be trustworthy. A tweet is not enough to judge a person as a source of trustworthy information. I sometimes dig a person's list of followees to find out if the person that I am planning to follow is worthy to be in my social network or not. (SA)*

The social network of the original author of the tweet will sometimes be an important factor to trust the information as stated by SA, particularly when that particular person is outside your network. This is because uncertainty surrounding post disaster events sometimes can create under- and over-loads of information on Twitter. In addition, Recuero et al. (2011) found that people sometimes tend to retweet some information on their network if they believe that it can benefit their network. As everyone is capable of sharing information (provided that internet connectivity is intact after the disaster event), it is highly likely that some people may end up retweeting untrustworthy information in post disaster situations. One of the interview participants (DC) cautioned that people might take less time to judge trustworthiness of information in post disaster situations than in normal situations (non-disaster). As a result some retweets will go unfiltered leaving the judgement of information trustworthiness to receivers, who sometimes might judge the information from a medium (second person) that he or she has received information from rather than the original author (first person). Many scholars have identified different motives behind retweeting, such as follower and followee relationships (Zaman et al., 2010), age, followers, friends, URLs and hashtags (Suh et al., 2010), and features related to the author and their content including whether the author was verified (Petrovic et al., 2011), among others. However, in addition to these mentioned features, similar to Recuero et al. (2011), the interview participants identified that the network display could be an additional motive for a Twitter user to retweet. This network display can benefit the people who retweet to gain followers as the receivers may believe that they will be a good source of information. The participants suggested that they came across different tweets which claim to



be from disaster experts or organizations. The participants noted that people are likely to accept a tweet when cited from a disaster expert or organization, and sometimes may not verify it as trustworthy, but rather forward it on their network as a retweet. The tweets from the Nepal Police were often retweeted, based on this perception. The Nepal Police could present itself as a source of trustworthy information during the Nepal earthquake and people viewed tweets from them as trustworthy based on the expertise, authority or competence of the organization. The Nepal Army was also involved in sharing their rescue efforts through tweets, which were mainly focused on how rescue operations were being carried out. Lin and Spence (2018) have also found that this authority cue affects people's perception about the information. This makes the judgement of trustworthiness of information difficult, as people, on the one hand, are trusting information believing it to be from an expert, but on the other hand it has been forwarded by someone from one's network without judging its trustworthiness. Belonging to a particular network also sometimes affects the trustworthiness judgment about information as stated by MD below:

*I had also found that people share a tweet or retweet from a person who claims to be an expert in disaster related issues. As people were fighting with uncertainty, this further complicated the issue. They tend to believe anything written on a tweet if that mentions it is from an expert. The people who were sharing were just showing his or her network making it feel like they belong to a network of experts. (MD)*

In an attempt to belong to a network as stated by MD, some Twitter users tend to display their network by retweeting information with the view that they could get attention by being in a network of experts. Suh et al. (2010) have found that the number of followees and followers a user has will affect whether or not their tweet will be retweeted. In addition, this research also found that the users tend to retweet a tweet based on a person's network, i.e. If A has a network of disaster related experts then B believes that A belongs to a disaster-expert network. As a result, B tends to retweet A's tweet based on the fact that A is also a disaster expert. This could be because Twitter users might consider A as an expert on disasters, based on their network. However, this is only applicable when one can analyse and understand A's network, but it is nevertheless an aspect of understanding why some users tend to retweet in disaster events.

#### 5.4. Does retweeting mean endorsing it as trustworthy information?

The above sub chapters discussed that Twitter users are likely to display social networks (ultimately social capital) and make themselves visible by retweeting in post disaster situations. This section will evaluate if retweeting an information in such situations is equivalent to endorsing it as trustworthy or not. Three interview participants (SA, SP and AN) had information in their Twitter bio (introduction) stating that ‘RTs not endorsement or RT # endorsement’ which means retweets (RTs) are not equivalent to endorsing or agreeing with the contents of a tweet. Metaxas et al. (2015) found that retweeting means that the retweeter (one who retweets another’s tweet) trusts the content and originator, and is in agreement with the content, while the majority of research participants who were journalists claim otherwise. Three out of eight participants of my research also asserted that they have included an ‘RTs not endorsing’ disclaimer in their Twitter profile to separate their professional and personal lives. This raises a question: will these Twitter users with this disclaimer (identified as ‘D users’ hereafter) be sources of trustworthy information in a post disaster event, particularly with their retweeted information? A Twitter user who follows D users on Twitter may have followed them based on their professional affiliation and they may have overlooked the disclaimer note in D users’ Twitter bio. The followers of D users may trust information from them based on the fact that they have undergone a filtering process, as they trust D users’ expertise over that particular piece of information. Van Liere (2010) argues that retweeting is equivalent to endorsing and acting as a gatekeeper (filter) for that particular piece of information. However, AN, also a working journalist, said that retweeting information does not mean the retweeter owns any responsibility towards the content of information.

*I retweeted information that I think is valuable to my followers rather than to verify information. But I do understand that people may also follow me based on my profession as a journalist. However, as I retweet I have also shared the information on source and I believe receivers should judge its trustworthiness based on their own rather what I retweet. (AN)*

*The receivers should make judgement of information received rather than who trusts it. The receivers will have to face consequences of information received if they have made any arrangements particularly on post disaster situation. Though we work for any organization does not mean that we owe responsibility of judging trustworthiness information of a retweet. (RP, former government official)*

These statements from AN and RP suggest that there were different expectations from different people involved in tweeting information to a wider audience rather than endorsing its trustworthiness in the uncertain post disaster environment. AN suggested that some Nepali journalists have a disclaimer mentioned in their bio as they do not want to create controversy for their news organizations just because of them (what they have tweeted or retweeted). DC argued that journalists or anyone else should not have this disclaimer note on their Twitter bio as this leads to confusion among followers when judging trustworthiness of information.

*I do follow many journalists and government officials because I believe they are and could be source of trustworthy information in post disaster. I also believe that journalists are our first informers and our guard to democratic society. If they do not own the responsibility of trustworthiness of retweet than they should not retweet others. The information shared by journalists and government officials working in disaster management area are trustworthy information for me. (DC)*

Some participants like DC believe that information from journalists can be viewed as trustworthy. However, it is important to understand why some Twitter users do not endorse retweeting. Referring to journalists, Molyneux (2015) states that a disclaimer on a Twitter profile introduction (bio) gives an opportunity for a user to protect themselves if the information they retweeted ever turned out to be false. Opgenhaffen and Scheerlinck (2014) assert that this disclaimer can help them and their organization avoid being poorly represented in society based on the content of retweets. This behaviour can be also noticed in government officials who work in the field of disaster management. They prefer limiting the boundaries of their personal and professional lives. Therefore, it is important to understand from a receiver's perspective whether to trust the retweeted information from D users or not. A more important question here is, did these professionals have access to information in the Nepal earthquake situation or not, as they might sometimes be retweeting information outside their regular sources. However, with a disclaimer on their Twitter profile, they might have not owned the information shared from the third-party, so receivers might view this in a different perspective. The receivers might believe that since information has come from a journalist or someone they trust, the information has gone through some form of gatekeeping process, as BB suggests below:

*The retweeted information should be judged as a tweet. However, I have seen people relying on the second person who has retweeted information as a filtering measure. They believe whoever retweets the information has undergone trustworthiness measure and trust in retweeter is important to trust information. (BB)*

There are contrary arguments to understanding whether the endorsement of retweets is trustworthy information. The uncertainty during disaster events can further make a Twitter user more vulnerable to untrustworthy information. The process of retweeting is also related to social connectivity, as people sometimes judge information based on the retweeter. DC argues that the receiver trusts retweets merely based on the retweeter rather than the content.

*If a person whom I consider an expert on disaster retweets disaster related information, I trust retweet as trustworthy. This is simply because the retweeter has retweeted it after undergoing trustworthy measure. Having said that I do consider my personal judgement too and the process of trusting retweet based on retweeter is purely based on issues that I do not have an expertise to judge. (DC)*

DC's arguments state that people are not experts on every aspect of disaster information therefore they want to trust retweets based on the retweeter, i.e. they believe the retweeter endorses the contents of the retweet. The receivers also might not always visit their followees' Twitter profile (bio) or notice D users' disclaimers. As stated above, retweeting is a process of weaving a social network where people are connected through strong or weak ties. The trusting of post disaster retweets with weak ties is likely to be made based on judgements made about the retweeter, if the receivers cannot make their judgement on their own.

The Twitter users in the Nepal earthquake event were highly dependent on their regular information sources, particularly based in Nepal. Nepalese Twitter users had a high level of trust in their regular sources in the Nepal earthquake event as the trustworthiness of sources was also based on their past experience. In particular, many users were clear about who to follow or who to trust during the Nepal earthquake based on their past experience with that person. Based on participants' responses, the academic qualifications, expertise of the person, affiliation with the organization, and authority of the person, were some of the things that the

users considered when deciding to trust the source of information. Therefore, the information that has been shared by these known sources was considered as trustworthy by the users despite any disclaimer notice. As also stated above, these regular sources may or may not be sources of information in the Nepal earthquake event as they might be accessing information from other sources. However, the users believed that these regular sources were more like gatekeepers rather than trustworthy sources of information, when they received retweets from these people (D users). The disclaimer was either not noticed or ignored by the users as they believed that the content of tweet (information) and source of information (either who shared it or tweeted it) were important aspects for judging a retweet's trustworthiness.

*It is important to understand that journalists or government officials have expertise or access to more information than a general public. It was the same case in Nepal earthquake event. The affiliation of person to various organization, expertise and trust based on their past behaviour were reason we users trusted information from these sources. I believe they might have gone a gatekeeper role or informed us on validity of information before retweeting it. (AD)*

The user-based validation of trustworthiness of information as mentioned by AD plays a gatekeeping role for trustworthiness of the information. Apart from the source, the number of retweets was also considered as an indicator of trustworthiness. Lin and Spence (2018) have also found that number of retweets is also perceived as measure of information's trustworthiness. Based on visual representation of tweets and retweets, Bica et al., (2017) found two retweeting trends after the Nepal earthquake event, based on concerns of the users. They argued that locals' retweeting behaviour focused on images of relief and recovery, and structures damaged by the earthquake, while global retweeters focused on rescue activities and images of people's suffering. However, this research found two aspects of the number of retweets in the Nepal earthquake event. One perspective was that the number of retweets was based on source and content of information, while the other perspective viewed it as an endorsement by multiple users. Based on this finding, the researcher noted that retweeting can be seen as an endorsement of information as trustworthy in the Nepal earthquake event.

## 5.5. Retweets as a form of social capital

This sub chapter argues that retweeting in post disaster situations is also a source of social capital as it helps Twitter users to connect and communicate with multiple layers of audience (receivers). The interview participants believed that retweeting information in a post disaster situation is also a form of expanding social capital, and boyd et al. (2010) found that people engage in conversation if they find a retweet referring to their common interests. The conversation can also be among Twitter users previously not known, which is cited as a weak ties relationship. Kwak et al. (2010) found that a retweet has the capacity to reach an average of 1000 people, irrespective of the number of followers of the original tweet. This finding was supported by one of participants of the interview too:

*During Nepal earthquake, I uploaded a photo of Dharahara wreckage which was retweeted more than 100 times within half an hour of uploading in Twitter. I simply did not believe that my tweet will get this level of popularity. But to my surprise my photo was so popular I felt that I was in the centre of popularity. (AD)*

AD stated that Dharahara wreckage photo was of poor quality because the smartphone used did not have advanced photographic features on it. AD said no hashtags related to Nepal earthquake were used while tweeting but believes that someone popular on Twitter (Twitter celebrity) had first retweeted that photo. AD further shared that the number of Twitter followers increased at an unprecedented rate and was also approached by some international news agencies asking to use that (Dharahara wreckage) photo, providing with proper credit. Bica et al. (2017) also found that foreign Twitter users were more dependent on tweets from Nepalese locals while the Nepalese locals pursued contents from each other, after the earthquake. This unpredictable popularity made AD feel the impact of retweeting on building social capital.

*In addition to number of retweets, I was even approached by many Nepalese living abroad requesting to tweet whereabouts of their relatives particularly people in Dharahara surroundings. I do not have a journalism background and I was just sharing photo because I thought it would be important memory in future. (AD)*

The timely photo upload could be a reason that AD's tweet got many retweets within a short period. The information loses its relevance with the passage of time (Recuero et al., 2011) as many others start sharing more information, and as a result receivers interests shift from one to another. However, it does not mean that everyone shared information on Twitter after the disaster, as SA states:

*I think I tweeted and retweeted [little] information. This is because I was so traumatized that I did not feel [like] sharing anything. The photos and videos would create panic among people who have not been able to connect with their relatives. This creates unnecessary panic as I could not even verify each and every tweet/retweets as trustworthy. (SA)*

These two different statements give rise to a new form of understanding in communication particularly in disaster situations. This form of citizen journalism (Allan, 2007), which has created a horizontal form of interactive communication, has also pushed users into a state of uncertainty. This uncertainty can be viewed in two different perspectives in the context of the Nepal earthquake. The first is what to trust, while the second is how to segregate useful information from large amounts of information. The rise of citizen journalism affected people when trying to judge the first issue of what to trust, while the large amount of information after the Nepal earthquake not only created a state of confusion but also affected people's capacity for judging this information. As a result, even the information that later turned out to be trustworthy was initially viewed as untrustworthy (and vice-versa) because it was from a source that users viewed as being outside of their regular information sources. The large amount of information onn Twitter could even cause an 'infodemic' scenario. (The World Health Organization (WHO) termed the dissemination of fake news on the new corona virus (Covid-19) outbreak in China as an 'infodemic' (Thomas, 2020).) As mentioned by SA, people are pushed into a difficult situation on who to follow for trustworthy information in an uncertain environment. However, people can choose to retweet only tweets related to their interests and share to their networks. As boyd et al. (2010) also found, people retweet not only to share information but also to maintain their relationship with others or even to show solidarity with a person's argument in a tweet.

*I retweeted information from my friend, which was related to government's poor performance. The person who tweeted had shared inside story regarding government's lacklustre response. The people need assistance and support. A little of government criticisms may have made them feel that someone has concern regarding their poor situation. (SD)*

As per SD's statement above, the retweet was a medium to gain solidarity to support people in the difficult post disaster situation. This statement from SD can be viewed as a bonding and bridging aspect of social capital. SD was bonding with friend by retweeting, while acting as a bridge on the network that connected the network to other friend(s). SD wanting the network to join to voice against the "poor performance" of the government clearly states that SD has a feeling of belonging to the Twitter community and believes that this community will come forward with the support. Sharratt and Usoro (2003) have also found that trust, sense of community and belief that information is congruent with their own values make people share information in online communities. SD's argument is a mixture of public anger, fear and uncertainty where people vent their frustrations to the government as they believed that they had not received enough support. They want their networks to be mobilized or express solidarity against the government performance, as being a member of the network has given them a feeling of community. It is likely that Twitter users who have never met in person may develop a bond (though a weak one) through online interaction over that period of time, which also gives a feeling of trust and mutual understanding. Tsai and Ghoshal (1998) found that social interaction has an impact on the strength of ties in a resource exchange. However, RP, the retired government official, said that the government had divided the post Nepal earthquake response period into different phases with the first phase being rescue, and people judging the government's performance might not be aware of this.

*The government was doing what best it could. The government sometimes might not always be prepared to respond to massive disaster. This is why they sought international assistance immediately. However, people were restless in Twitter as every part of the disaster area was not attended immediately and might have felt ignored. (RP)*

RP's statement reflects that people affected by disasters have different requirements and when these are not addressed they want someone to join them to be heard. This could be why some Twitter users even mentioned their friends and relatives in their tweets, requesting retweets in



the post Nepal earthquake situation. The requests to retweet could be an attempt to reach wider networks where people try to mobilize their social capital rather than trusting information. These Twitter users might believe that a retweet can help them strengthen their relationships.

*It is sometimes so hard to accept the requests of retweet as you are in a position that you cannot judge its trustworthiness. I too was mentioned by my friends to retweet but as I could not judge trustworthiness I tried my best not to retweet. This was not always possible as you fear losing connection or support from your Twitter friends in future and this is the reason why I gave in. You can even see some of my retweets made just to maintain my relationship with Twitter friends. (SD)*

The statement made by SD also states that people are sometimes in a difficult situation in a social network and they have to retweet to fulfil other people's needs. Abdullah et al., (2017) have also said that "people spread disaster information mainly to help and fulfil other person's satisfaction, and also to fulfil their own satisfaction and needs" (p. 439). This scenario narrows the gap between weak and strong ties as people invest their time and efforts to build a network. People have a fear of being disconnected in a network even if this is formed on a base of weak ties, or they do not realize the network they are associated with is weak. ND further added to SD's argument that people sometimes might feel that if a retweet can help them to strengthen their relationship, they might not even judge its trustworthiness. In this context, a Twitter user is not retweeting information but maintaining a relationship by the act of retweeting. This aspect of maintaining relationships can be viewed as bonding and bridging of social capital. In a bid to extend a bond (by retweeting as mentioned by SD above) a user is also maintaining a bridge to his or her network. The trust plays a critical role in this context. There is a strong ties trust between friends and families (bonding) while weak ties (impersonal trust as identified by literature review) are formed in the network (bridging).

*In an event of disaster, you might sometimes be in a position that you cannot judge trustworthiness of a tweet. If somebody has requested for a retweet, you might want to retweet to maintain a smooth relationship. You will never know that you might want this person's help in future and he or she will not have obligation to support you in that situation. (ND)*

Furthermore, ND argues that people sometime even risk trust with others in their network when they try to maintain one. Chiu et al., (2006) have found that social ties and reciprocity are among the factors that influence people's information sharing process. In addition, people might not be in a position to judge trustworthiness of a tweet and would not risk their relationship with that person (who requests retweets) by not retweeting it. There could be an aspect that the person who requested a retweet today may not retweet for him or her in future if the request was not addressed. Blau (2017) also found that in order to maintain social exchanges a norm of reciprocity plays an important role as it builds trust. However, if this is viewed from a wider perspective, a Twitter user who retweets untrustworthy information (if that turns out to be in future) is risking his or her trust in broader networks in a bid to maintain one network. This context of retweeting is an important aspect as Bi and Cho (2016) have found that retweeting rather than tweeting new messages is common in users. Therefore, a person who retweets untrustworthy information (if that turns out later) will impact his or her position in the network too, i.e. the person might be a bridge between networks. One participant suggested that she tweeted a video that showed violent waves at a swimming pool in a Kathmandu hotel.

*I tweeted a video which was posted by a friend. I thought this was an important video and my friend needed a due credit so I have to pass this to my network too. However, it turned out to be false. When I see that video today, I feel like how did not I notice it was a fake video? It is so embarrassing. It could be because my anxiety and fear could have affected my judgement capacity. (PP)*

There were the incidents as mentioned by PP where many other participants also shared their experience where they had retweeted information that turned out to be untrustworthy in future. They suggested that the use of images or videos from a friend or family made them feel that the tweet can be trusted and retweeted. BBC had compiled a few images, messages and videos that were circulated in social media after the Nepal earthquake event (Nettikara, 2015). These were accessed by the participants of this research too. However, they said that they had either apologized or deleted those tweets after they turned out to be untrustworthy. The researcher could not verify this from all participants' timelines as they were not accessible at the time of the research.

*I may not be able to give you an exact answer at this moment if I would retweet just to maintain a relationship to one person as I do not know how I would work at that moment. These issues are based on what state of mind that particular person would be at that moment [which] reflects his or her retweeting behaviour. (SA)*

As SA argued, it would be difficult to generalize why people retweet as people might be vulnerable to emotions of fear and anger posed by uncertainty in a post disaster event. Each person tends to respond in a different way in such a scenario and there is no widely accepted perspective to understand this. However, it is interesting that people try to maintain and mobilize social capital to judge the trustworthiness of tweets in post disaster events. A retweet in a post disaster event thus could be just sharing information to wider networks for trustworthiness judgement, solidarity of the situation, or maintaining relationships where people are utilizing their social capital. One may argue that the feeling of trust in a weak tie environment would not be an important aspect as these ties could develop based on social exchange. Chiu et al. (2006) also found that trust did not play a significant role in the quantity of knowledge sharing. They have argued that knowledge sharing in an online context is based on close and frequent interaction among members rather than trusting other members of a community. However, this research has identified that there exists an impersonal trust among people even in an online environment, which can be easily started and easily ended too. Retweeting could be a process of knowledge sharing in the Twitter community. However, it is important to understand that disaster and non-disaster situations are two different scenarios. People require a high level of trust in a disaster situation where there are chances of being exposed to risks. This trust has to be based on source, content or knowledge possessed by the receiver that makes them feel that the information can be passed onto their network. Coleman (1990) argues that people need a level of trust in risky situations, and post-disaster could be one of them. This level of trust can be possible (as seen in Nepal earthquake situation) if the receiver has a high level of trust in the sender, source or his or her trustworthy judgement. However, a high level of certainty is highly unlikely in an event like a disaster. Therefore, a retweet is an important approach adopted by a user where he or she is not sharing someone else's information to his or her network with an understanding that the information may not be trustworthy. This leaves enough room for judgement by the receivers who again use their own judgement criteria to make judgement as made by the retweeter earlier.

## 5.6. Conclusion

This chapter analysed whether retweeting is a process of endorsing a tweet as trustworthy information in post disaster communications. The interview participants expressed their views regarding retweeting behaviour in a post disaster event. Though participants were asked to recall their retweeting behaviour after the Nepal earthquake event, it was difficult for them to remember how they responded at that time. The researcher had to visit their Twitter profile to analyse if they were actually sharing their views based on memories of the past or were reflecting their present retweeting behaviour. Most of them were sharing their views based on past memories however sometimes they got mixed up with present retweeting behaviour.

The participants were aware that retweeting is not only a process to share information but also to maintain their personal trust within their network. The researcher, during interview and analysis processes, found that understanding retweeting behaviour particularly in post disaster events requires a complex approach. The major themes that reoccurred over the interview process (described as subchapters above) coexist with each other. It was particularly hard to identify a theme that could relate to post disaster retweeting behaviour based on trustworthiness as the themes interplay with each other. The motives of retweeting and judging trustworthy information in non-disaster events were found to be different during disaster events. The uncertainty surrounding the new environment posed difficulties to the information accessing and analysing abilities of Twitter users. The accessing of information was affected by poor cellular network communication (internet connectivity) or power cuts, while analysing information as trustworthy was affected by fear and anger about the uncertain immediate future. Therefore, retweeting was the only an option for some Twitter users to share information in the post disaster event as the participants said they wanted a larger audience to analyse information when this could not be done on their own.

Despite using wider networks to analyse trustworthiness of information through retweeting, some participants were cautious as a single retweet could impact their level of trust on their network. Some Twitter users wanted to evaluate the trustworthiness of a tweet before retweeting it as they believe it is a responsibility of every Twitter user in a network. However, after accessing backdated tweets, the researcher found that two participants had retweeted untrustworthy information, contrary to their views expressed in the interview process. The

researcher could not find examples of the eight other participants retweeting untrustworthy information, while accessing their backdated tweets. Yet, the researcher cannot conclude that these eight participants had not retweeted untrustworthy information as backdated tweets could have been deleted after they were found untrustworthy over time.

The participants were found to be trusting the source of a tweet before retweeting it to their network. This source could be a person or an institution or a news organization. Every participant had criteria to judge these sources. This trust was built over time and mostly through non-disaster events. Though some of the participants did not trust government based on their performance, they trusted government organizations working in the field of the disaster management sector. They believed that these government organizations had the expertise and skilled manpower to share trustworthy information in the post disaster situation. As a result, government organizations like Nepal Police were the main source of trustworthy information to retweet in the post disaster event particularly during the days after the earthquake. Therefore, trust in an organization was an important aspect of retweeting in the post disaster event rather than the content of the tweet.

In addition to providing accounts on the judgement process of trustworthy information based on interviews with my 16 participants, I have concluded that retweeting information in post disaster events is different to non-disaster events. The trust in source, network of people (social capital) and visibility of the Twitter user are among the factors that need to be considered while judging why a Twitter user retweets in post disaster events, on his or her network. The participants' comments show that they are aware of the importance of trustworthy information and understand that they are maintaining a level of trust in their network while retweeting in the post disaster event. It is possible these participants may act differently in a disaster situation from what they have expressed during the interview process, which happened in a non-disaster situation. However, this chapter explored retweeting behaviour and the decision making processes of Twitter users while retweeting in a post disaster event. In the next chapter, I will analyse whether Twitter users use hashtags to share trustworthy information in post disaster events.

## CHAPTER 6

### 6. Fake Twitter accounts and trustworthy information in a post disaster situation

#### 6.1.Introduction

This chapter evaluates how users perceive an account as real or fake, and what level of trust they have of these accounts in a post disaster situation. This chapter focuses on interviews with 16 Twitter users to answer the research question: What level of trust do users have of fake Twitter accounts in a post disaster event? The chapter is divided into two sections to answer the research question. The first section discusses features that users perceive as fake Twitter accounts. The second section addresses the research question, whether the users have some level of trustworthiness of an account that they perceive as fake, in a post disaster event. The understanding of how users perceive an account as fake or what level of trust users have in information from some accounts that they perceive as fake, are important aspects of post disaster events. This chapter illustrates that people have different judgement criteria to perceive trustworthiness of accounts and the level of trust in information from those accounts.

This was found to be an important aspect in post disaster events as participants of this research identified fakeness as an important aspect of trustworthy information. There were two aspects to understand this fakeness. Firstly, the participants identified some features that they perceive as being from fake Twitter accounts. Secondly, participants identified a level of trust in information despite identifying it as from a fake Twitter account. The participants suggested that the uncertainty, fear and anxiety in post disaster situations affect the trustworthy judgement of the users, which means people might sometimes identify a real Twitter account as fake. In addition, despite knowing an account is fake, some users may perceive a level of trustworthiness in the information, and because they cannot verify the trustworthiness of the information they can neither accept nor reject it completely. Therefore, this research explores whether users perceive information from fake Twitter accounts as having some level of trustworthiness in the context of post disaster events.

## 6.2. Understanding fake Twitter accounts

This section elaborates how participants of this interview identified and defined a Twitter account as fake or not. The researcher asked the participants to define features of a Twitter account that they perceive as fake or not based on the visual cues (what they see in their Twitter timeline). People are highly likely to be emotionally vulnerable in an uncertain environment, which might limit or redefine their understanding of fake Twitter accounts more than in a normal situation. It is highly likely that people can make wrong judgements of information to design their actions based on information accessed (source) and assessed (judgement) in post disaster events. In this context, the researcher adopted the trustworthiness of tweets shared on Twitter from users that are considered as fake and explored if the information shared by them is likely to possess a level of trustworthiness or not in a post disaster event.

Based on responses from the participants, the researcher identified that there are two categories that users perceive as fake Twitter accounts—those operated through computer programs (applications) and those manually operated by human beings under false identities (some participants suggested them to be impersonated accounts or parody accounts). The common features that reoccur while participants defined their understanding of fake Twitter accounts were: the followees-followers ratio, use of words and sentences (based on grammar and syntax), number of followees, profile photo, use of female photo as profile photo, number of tweets, lack of proper Twitter summary, number of retweets, number of mentions, use of hashtags and absence of profile photo. These features were further divided to better understand two different categories of fake Twitter accounts. The common features that reoccurred while participants defined fake accounts operated by computer applications were: number of URLs (mostly in shortened form), number of hashtags, user profile name and user name, followers-followees ratio and duplicate tweets (including retweets) in a span of time. The use of a female photo as profile photo, profile photo, number of tweets, number of mentions, followers-followees ratio, and tweet content (based on use of grammar and syntax in words or sentences) were features categorized under fake accounts manually operated by human beings under false identities. However, some participants suggested that there is still one middle category of Twitter accounts that they perceive as fake however they cannot be certain about it. They argued that when they view tweets they were viewed based on context and it was hard to perceive them as real or fake, and they believe these accounts should be judged based on each tweet (or information shared every time) rather than on the account as a whole.

The features that the participants perceived to define a fake Twitter account operated by computer programs (referred to as ‘bots’ and ‘spammers’ by some participants) closely match the definition of fake Twitter accounts by (Gurajala et al., 2016). They have referred to bots as ‘Sybils’ which are defined as “automatic/semi-automatic profiles created to mimic human profiles” (p. 2). Makara (2013) has identified 11 features such as default profile photo (egg head), use of stock photo, excessive duplicate tweets and incoherent tweets, among others, to identify fake Twitter accounts. Some of the features mentioned by Makara were also identified by participants of this research under fake Twitter accounts operated by computer programs or applications. The set of attributes proposed by various scholars to identify fake Twitter accounts and features identified by the participants of this research are reported in two separate tables below.

**Table 6. 1 Set of attributes proposed by various researchers**

<b>Benevenuto et al., (2010)</b>	<b>Gurajala et al., (2015)</b>	<b>Stringhini et al., (2010)</b>
<ul style="list-style-type: none"> <li>• Number of followers</li> <li>• Number of followees</li> <li>• Fraction of followers per followees</li> <li>• Age of the user account</li> <li>• Number of times the user was mentioned</li> <li>• Number of times the user was replied to</li> <li>• Number of times the user replied someone</li> <li>• Number of followees of the user’s followers</li> <li>• Number of tweets received from followees</li> </ul>	<ul style="list-style-type: none"> <li>• Followers count</li> <li>• Id, friends count</li> <li>• Verified</li> <li>• Created at</li> <li>• Description</li> <li>• Location</li> <li>• Updated</li> <li>• Profile image URL</li> <li>• Screen name</li> </ul>	<ul style="list-style-type: none"> <li>• FF ratio ( R ): following/followers (where following, in the Twitter jargon, is the number of friend requests sent, and followers is the number of users who accepted the request) large for spammers</li> <li>• URL ration=<math>U</math>=messages containing URLs/total messages</li> <li>• Message similarity</li> <li>• Similarity among the messages sent by a user</li> </ul>



<ul style="list-style-type: none"> <li>• Existence of spam words on the user's screen name</li> <li>• The minimum of the time between tweets</li> <li>• The maximum of the time between tweets</li> <li>• The average of the time between tweets</li> <li>• The median of the time between tweets</li> <li>• Number of tweets posted per day</li> <li>• Number of tweets posted per week</li> </ul>		<ul style="list-style-type: none"> <li>• Friend choice (F)=F=Tn/Dn&gt;1 for spammers, where Tn is the total number of names among the profiles' friend, and Dn is the number of distinct first names</li> <li>• Messages sent (M): We use the number of messages sent by a profile as a feature</li> <li>• Spammers M&lt;20 message</li> <li>• Friend number</li> <li>• Number of friends a profile has=thousands for humans and few for spammers</li> </ul>
---	--	--

Source: Adopted from El Azab et al. (2016) with modification

**Table 6. 2 List of features of fake Twitter accounts based on interview**

S.No.	Features of fake Twitter accounts	Corresponding research findings
1.	Number of followers-follower ratio	Benevenuto et al. (2010)
2.	User profile name and user name <sup>19</sup>	McCoy et al., (2013)
3.	Number of hashtags in a tweet	Benevenuto et al. (2010)
4.	Number of URLs in a tweet	Wang (2010)
5.	Duplicate tweets in short interval of time	Erşahin et al., (2017); Wang (2010)

<sup>19</sup> Twitter users can be identified as unique username name followed by @ symbol. For example: Billionaire Bill Gates username is @BillGates while Bill Gates is his Twitter profile name. The username and profile name can either be same or different with username being unique to each Twitter user (<https://help.twitter.com/en/managing-your-account/twitter-username-rules>).

Based on previous research and participants' responses, the researcher identified that there are two issues regarding fake Twitter accounts. Firstly, identifying the characteristics of accounts that people perceive potentially as fake. Secondly, these characteristics perceived by users continue to change and there is a process to decide on identifying these changes. The participants' understanding of characteristics which they identified as fake Twitter accounts has changed over time. For example, one participant suggested that,

*I used to believe that a person should have real identity or name in their Twitter account as these help others to perceive him or her as real account. This was the minimum criteria that I used to perceive an account as fake or not in Nepal earthquake days. However, I do not use my real name in my Twitter account and these names continue to evolve based on time i.e. I generate a name for my Twitter account based on development around me. Like, when President Trump said 'sh\*thole country' to refer to some developing countries, I used my Twitter name as 'sh\*thole citizen'. (PP)*

PP's judgment of trustworthiness of information here is based on the trustworthiness of the source where the user may be considered as fake if the real name was not used. However, the participants have different characteristics that they believe will help them to perceive an account as fake and these characteristics differ widely with each participant. The researcher has not included fake Twitter accounts operated by computer applications in this research as participants suggested that features mentioned to define this category of fake Twitter users were easily identified. However, the participants were widely divided when they defined fake Twitter accounts manually operated by human beings under false identities. This research analyses Twitter accounts operated by human beings under false identities to define fake Twitter accounts, as participants suggested that information shared by this category of accounts was difficult to judge as trustworthy or not in both disaster and non-disaster events. Therefore, the researcher requested the interview participants to identify features of Twitter profiles that help them to distinguish them as fake. The participants were asked to assume that they have just witnessed a disaster (like the Nepal earthquake) and they do not have access to computer applications while replying to interview questions. Based on participants' responses, the researcher could not establish a single definition of fake Twitter accounts as every participant had multiple criteria to distinguish fake and real, with some having common features.

Therefore, the researcher adopted a features-based approach identified through the interview process to define a fake Twitter account. The two definitions of fake Twitter accounts have been adopted as they are close to interview participants' responses. Under its 'Platform manipulation and spam policy', the Twitter website has mentioned operating a fake Twitter account as:

*... using misleading account information to engage in spamming, abusive, or disruptive behavior. Some of the factors that we take into consideration include:*

- *use of stock or stolen profile photos, particularly those depicting other people*
- *use of stolen or copied profile bios; and*
- *use of intentionally misleading profile information, including profile location.'*

*(Twitter, 2019)*

The researcher has also identified some accounts that are operated by some Twitter users under false identities (discussed in detail below as seminar users). The main reason behind these Twitter accounts is to support or argue to generate an agenda or positivity in favour of someone. Interestingly, this operation of Twitter account can be a form of employment, or inclination towards a political ideology or just fun (as discussed in detail below). The main reason behind these Twitters accounts is to deceive people which can be defined as follows:

*A fake Twitter account is considered as one form of deception (i.e., deception in both the content and the personal information of the profiles as well as deception in having the profile follow others not because of personal interest but because they get paid to do so).*

*(Alowibdi et al., 2014, p.385)*

All the participants admitted that their Twitter followers list consists of fake Twitter accounts (either bots/spammers or manually operated by human beings). Despite being aware of this fact, almost all participants decided not to report them as fake accounts for two reasons. Firstly, the number of followers count is considered as a measure of popularity among the Twitter community. Second, the fake accounts had neither affected their ability to access and disseminate information nor had bullied or abused the former for their tweets. Eight

participants suggested that their followers count often fluctuated on a weekly basis and they noticed that bots usually follow them based on use of hashtags on trending topics (usually international rather than domestic). The trending topics on Twitter are determined by algorithms based on location, interests and whom the users follow on Twitter. “This algorithm identifies topics that are popular now, rather than topics that have been popular for a while or on a daily basis, to help you discover the hottest emerging topics of discussion on Twitter” (Twitter, 2020a). The users have an option to report any accounts that they feel are fake or impersonate someone on Twitter, which can suspend the account permanently as stated in its impersonation policy (Twitter, 2020b). Mei et al. (2015) have also found that the number of followers is considered as an important feature to measure a Twitter user’s influence. One participant said:

*I do understand that there are fake accounts in my followers list. However, I do not like to report it as fake because of three reasons. Firstly, it affects my followers count and secondly I cannot be always sure that an account can be real or fake. Thirdly, these fake accounts are sometimes not affecting me as I do not rely on these accounts to trust information. (DC)*

*It is hard to judge an account as real or fake sometimes. Well, unless they are irritating you with irrelevant comments or mentions, I do not think I should report them. It is total waste of time as one has to invest some time to find either that particular account is fake or operated under false identity. (SD)*

These two statements support that the judgement of information as trustworthy or not in post disaster situations was broadly based on two components—content and source of information. This finding is similar to Halse et al., (2016) who stated that misinformation can be judged based on information and source of information. The users rely on these two components to make their trustworthy judgement of any tweets. In addition, the criteria of judgement of fake accounts used by users were different to each other with a few sharing some common features. The researcher thus adopted only those features that the participants repeatedly defined to characterize a fake Twitter account.

The research identified that though content of information is sometimes sufficient for some users to judge its trustworthiness, the users still want to analyse the source to ensure they have accessed trustworthy information. The interview also found that users investigate social networks of source (information provider) to understand its trustworthiness. Therefore, content and social networks are two components of this research to understand trustworthiness of information provided by fake Twitter accounts in post disaster situations.

#### 6.2.a. Content based approach to judge trustworthiness of information

This section evaluates how users judge information from fake Twitter accounts as trustworthy or not based on the content of tweets. The information (content) shared in Twitter is referred to as tweets and retweets. A tweet is a short textual messages created by users, while a retweet is a forwarded tweet. According to boyd et al. (2010) retweeting is “the act of copying and rebroadcasting, the practice contributes to a conversational ecology in which conversations are composed of a public interplay of voices that give rise to an emotional sense of shared conversational context” (p.1). As Krippendorf (2004) stated, messages and symbols differ from observable events or properties, so Twitter users sometime have to interpret or experience an event based on the content of a tweet. The interpretation of information in a disaster event is further complicated as users may be exposed to a tweet for a short span of time. The users have to decide whether the content of the tweet is trustworthy or not and then decide their future actions in a limited time, i.e. users may be exposed to the tweet for just a few seconds. These interpretation and decision making processes can be also referred to as a content analysis process, which Holsti (1969) broadly defines as “any technique for making inferences by objectively and systematically identifying specified characteristics of messages” (p. 14). Therefore, the interpretation of a tweet is also based on receivers’ ability to understand information and make trustworthiness judgements sometimes in a short span of time and in an environment of uncertainty like in a disaster event.

Four participants argued that the judgement of trustworthiness of information in post disaster events can be based only on the content of a tweet, and understanding its source may not be required, i.e. cognitive clues are more important than source of information. The trustworthiness judgement based on tweets (or content of tweets) has been widely studied in the field of high impact environments (like disasters). Gupta et al., (2014) have adopted ‘Tweetcred’, a real-time machine-learning application that provides credibility scores to

contents of tweets on users' timelines. Castillo et al., (2011) adopted automatic methods to measure the credibility of trending topics based on features like user's posting and reposting behaviour, content of texts, and citations of external sources. The research used computer applications (machine learning techniques) however this research focuses on how users perceive accounts as fake without using computer applications. The researcher asked the participants to respond to his questions based on the visual cues and to imagine they are not using computer applications. This approach was adopted because people in a post disaster event may not have access to computer applications and the researcher is trying to understand the features (cognitive clues) of an account that people perceive as fake without using computer applications. The participants suggested that some features of content were sometime helpful to identify a Twitter profile as fake. Therefore, the content of a tweet has not only been helpful in understanding the trustworthiness of tweet but also in identifying the user as fake or not.

*It is sometimes easy to judge information as trustworthy or not based on contents of tweet. The content is an important aspect which might help user to further their investigation on trustworthiness of Twitter profiles. The user can then decide either to trust the information or not as it has come from fake Twitter account. (ND)*

*Accessing information from fake Twitter accounts is very risky because the person who has shared information has no liability towards the receivers. However, it should be understood that some people may use fake Twitter account to share information so that his or her real identity is protected. The information could be true or not and this should be perceived by the users based on content rather than source here. I know some people use fake Twitter account to reveal inside stories on corruption which they cannot express through real identity. (AN)*

The statements from ND and AN above stress content-based or cognitive-clues-based approach is applicable on Twitter to help to perceive a profile as fake or not and then to help decide its trustworthiness. Galán-García et al., (2016) have used features of contents like writing style, language, time and geo-position of the user to judge a profile as fake. Benevenuto et al. (2010) have adopted feature-based approach like number of hashtags per word in each tweet, while Wang (2010) incorporated use of tweet/tweeter characteristics such as 'reputation score', number of duplicate tweets and number of website links to understand a content-based fake profile detection process. These features were similar to features of fake profiles defined by the

participants of this research. In addition, the participants added one more feature, being profile photo (no photo or use of female photo) as they argued that the judgement based on a profile photo is more about instinct rather than logical argument. Hancock & Toma, 2009 and Walther et al., 2008 also found that personality traits like profile photo have been an important factor for the judgement of a person as trustworthy.

However, a fake Twitter account does not necessarily mean that the information provided by it is untrustworthy. Edwards et al., 2014 found that bots are considered credible and interactional in some contexts. However, the fake Twitter profiles differ from bots as the former could be operated by human beings. There are various factors that support the above statement and these are discussed in following sections. One participant said:

*The fake profile does not necessary mean that information is untrustworthy. The definition of untrustworthy information should not be limited to profile as some users may only be able to share information through fake identity to avoid any dire consequences. This could be logical and applicable in non-disaster event which might not be applicable in disaster event. Do you really trust information from fake Twitter account in disaster events? Absolutely not as there are limited resources available to make judgement in such scenario. (DC)*

The judgement of information in post disaster situations is different than in normal conditions as people have to make decisions in a short span of time and an uncertain environment. As DC stated above there could be various factors and contexts that define a tweet as trustworthy or not despite knowing that the tweet is from a fake Twitter account. The factors like uncertain environment, moral norms, instincts, risk factors etc were some components identified by the participants which are likely to make information trustworthy despite knowing that it was from a fake Twitter profile in a post disaster situation. Runyan (2006) characterizes natural disasters as “high consequence, low probability, ambiguity, and decision making pressure” (p. 12) events. Under such circumstances, there could be collaboration and communication which is highly unlikely in normal situations. Even rumour (untrustworthy information) can influence people, who find it to be important information to influence their judgement about future actions. Oh et al., (2010) define rumour as “a collective transaction in which many people offer, evaluate, interpret information, and from which they predict something” (p. 3). Allport and Postman (1947) postulated an equation where they argued that rumour is a multiplicative

function of importance and information ambiguity, i.e. rumour = importance × ambiguity. Anthony (1973) stated that is hard to measure ‘importance’ in the rumour equation above and rather replaced it with ‘anxiety’. This anxiety factor could be a reason that Twitter users are likely to believe a tweet despite knowing that it is from a fake account.

*Everyone is anxious and with lack of proper information flow, it is likely that you end up believing everything you read. The judgement capacity is affected too which makes people decide not to take risk by not believing information. This is how they play safe by believing. However, this judgement factor will [be] subdued once they cope with new environment posed by disaster. (ND)*

The arguments presented by DC and ND above are based on how the anxiety factor may affect users’ judgement capacity and make them believe even untrustworthy information. Some people might prefer to ‘play safe’, as mentioned by ND, by believing and doing something that they might not do in a non-disaster situation. However, this research could not identify the contexts in which people prefer to ‘play safe’ by believing and acting on untrustworthy information. Yet, one of the participants suggested that information shared by fake Twitter accounts can be trustworthy too as trustworthiness of information and source (person) are two different aspects of trustworthiness measurement.

*The people with no or less introduction in their account does not make him or her untrustworthy. It is obvious because some people do not want to disclose their profile information in the Twitter bio. Therefore, not having a profile introduction does not also mean information provided by him or her as less trustworthy. The trustworthiness of information and person are two different factors and this has to be viewed in two different perspectives. (SA)*

As SA stated above, trustworthiness of information and person should be separated into two different perspectives. This could be because the nature of the judgement of trustworthiness of information of tweets in post disaster events is different to under normal conditions. The limited access to networks, time and emotional breakdown due to the uncertain environment suggested that users make judgement of information differently in a post disaster situation. Seven



participants suggested that they trust the information without making any judgement regardless of its authenticity under certain circumstances as stated below:

*I would simply trust information in Twitter regardless of authenticity of source. For example, if someone tweeted that water has been infected with sewage and it is right idea not to drink tap water at this time. I have no objection to not to believe at this point as I do not risk drinking it. I am aware of information provided by official sources but they usually arrive late. My judgement of information in post disaster situation is use of my knowledge rather than looking at visual cues in the tweet. (AN)*

*If someone tweets asking for help to find his or her loved one under rubble, I do not give second thought to go and help him or her. My point here is one has to help in need during disaster rather than waste time in verifying information content or source. What if information turn out to be true and you later find if you have helped the person under rubble would have been saved? You regret all your life. (ND)*

The limited revelation of the user's identity is sometimes perceived as pointing to a fake profile on Twitter. The limited revelation includes no profile photo, default Twitter profile photo (egg head photo), use of stock image (either animated characters or human beings), female stock photo, and irrelevant username. McCoy et al. (2013) have found that irrelevant profile names and usernames are correlated to fake Twitter accounts. However, the participants suggested that the profile photo, username or profile name should not be a basis for the trustworthiness judgement of Twitter users, and the receivers should decide trustworthiness of information based on the content of information rather than visual cues of the source. Four participants shared some Twitter accounts with no proper username and profile photos to endorse their argument.

*The profile photo or username could be judgement of fake Twitter account in context of bots. However, some people may have irrelevant username as this is unique and their preferred ones may have already been taken. As a result they could be using available username. This should not be made mandatory for judgement of account and the information shared by them. (AN)*

There are fundamental differences between how you act differently in disaster and non-disaster situations. The issues of moral values are also found to be a driving factor when understanding trustworthiness of information. Conner and Armitage (1998) found that moral values are among the factors that motivate human actions. Ajzen (1991) states moral values are an individual's perception either to perform certain actions or not. This indicates that actions of some individuals in post disaster events are guided not only by the trustworthiness of tweets but also by the moral values possessed by that particular person. However, the judgement of moral values to perform certain actions is an individual feature. Therefore, interpretation of trustworthiness of tweets here is sometimes an outcome of moral values rather than an interpretation of visual cues available in contents (tweets). Under such circumstances, the visual cues on trustworthiness of tweets have very little influence on human actions. As stated above too, this is an individual feature rather than common.

In addition, some Twitter users are highly unlikely to trust information from a particular category of sources though they follow or like or comment on their tweets. This particular category of Twitter users is termed as 'seminar users' by Darwish et al., (2017). Though the interview participants did not use the term 'seminar users' (before it was introduced by the researcher to them) however they identified two features of a certain category of Twitter user or users that are similar to seminar users. Firstly, they are Twitter users who are not considered as bots, spammers or fake Twitter accounts. Secondly, 'they were consistent in supporting and promoting the actions of a particular political entity' (ibid, p. 91). These Twitter users are highly supportive and defensive of government or a political party or any other entity through their skilled arguments and presentations. They act as an individual or in a group for a certain period time or years based on their political or ideological inclination or type of employment.

*There are some Twitter users who come forward to defend any government policies or plan. For example: if a media reports that government performance in a post disaster management were unfair, these Twitter users come heavily against this particular media house. They present their argument with plenty of examples where previous governments had not performed well. These arguments are always one-sided and untrustworthy unless you support that particular political party or entity. (DC)*

The participants further identified that this category of Twitter users have either identified themselves or have hidden their real identity. The first category of people belong to Twitter users who have identified themselves and have been openly supporting government or a political party or any other entity with their skilled interpretation and argument. While this second category of people have hidden their identity, which participants stated as backup seminar users, however they too have a similar level of interpretation and argument capacities to the first ones. The hidden identity means that the users have not identified themselves professionally, i.e. where they work. The participants suggested that they are highly unlikely to trust information provided by seminar users in a post disaster situation.

*The main role of seminar users are to support some plans, policies or any actions. Though they are propaganda tools designed for social media platforms, the trustworthiness of information provided by them depends whether you subscribe to these arguments or ideologies or political beliefs or not. I believe that if you do not trust them in normal conditions, you do not trust them in disaster situation. (SK)*

The participants were widely divided when arguing on trustworthiness of information from seminar users. The four participants who supported that seminar users (the term was introduced by the researcher to the participants) are trustworthy sources of information stated that the information from these sources come from highly skilled people who should have relevant arguments to support their views. The researcher could not establish whether the participants who support the roles of seminar users are seminar users themselves or if they are making a general argument for seminar users. Based on some examples of seminar users identified by the participants, the research found that the seminar users are usually handpicked based on their expertise, as the person or organization behind them would not make an investment with nothing in return, the interview participants supporting seminar users argue. The opponents stressed that information provided by seminar users is one-sided and designed to support a particular person, group or organization. As a result they are motivated to benefit that particular person, group or organization and they should not be trusted sources, opponents in the interview stated. However, both of the proponents and opponents of seminar users in the interview process were uncertain about information judgement in post disaster situations.

*The post disaster scenario is different. It is an individual feature on what they react. I might be saying that I don't trust information from untrustworthy or seminar users' sources, however, if you went through my past Twitter timeline I would have acted differently. I would though not support seminar users, it would be different scenario in post disaster situation. I will make judgement based on prevalent scenario as judgement of information from seminar users need to first know that particular Twitter user is a seminar user. I think [someone] who has regularly followed Twitter or seminar user will only be able to find that out. (SA)*

This section elaborated that many Twitter users do not judge information based solely on the content of a tweet. There are various components attached to judgement of trustworthiness of tweets in post disaster events. However, this section concluded that the content of a tweet is an initial point of trustworthiness assessment, while other factors like moral values, seminar users, visual cues etc. are referred to when content is not sufficient to reach a conclusion. In addition, a tweet helps the user to experience the severity of a post disaster event, which is solely a receiver's perspective of understanding a tweet. Thus, interpretation of an event based on content of tweets also depends upon the receivers' perspectives, and they have their own assessment criteria to understand the event. This section further added that visual cues like profile photo, username, profile name, number of retweets etc. are some of the features that help to distinguish a fake Twitter account operated by computer application, which may not be applicable to judging information shared by fake account holders under false identities. Therefore, judgement of the trustworthiness of tweets based on content depends on various components and also on the receiver's ability to make the judgement.

#### 6.2.b. Social networks-based approach to fake Twitter accounts

This section elaborates on Twitter users' understanding of trustworthiness of tweets from fake accounts, based on their networks in a post disaster situation. The network based discussions on Twitter can be linked to the public sphere concept. Habermas (1989) postulated the public sphere concept where everyone has the same non-hierarchical position while deliberating. He further elaborated this concept by arguing that the public sphere is a network of various groups and individuals with different views and ideas connected through communication flow (Habermas, 1996). The equal opportunity of all users to make their voice heard is an important aspect of the Twitter network. Social capital is a vital component of social networks, which

sometimes could be built on fake Twitter accounts as they could be an information source too. One of the participants of interview supported this argument as:

*I know a few Twitter users who have been operating fake Twitter accounts. There are two categories of such fake Twitter account. One person is involved in the first category while the second category includes two or more persons who jointly operate a single Twitter account. The users who operate in a group include people with expertise on different fields. Now, if the information that has valid argument though from fake Twitter accounts will it still be considered as untrustworthy in such circumstances? (ND)*

It is highly likely that any social network can be comprised of real and fake Twitter accounts, as a feature of Twitter is that anyone can connect with another (provided that account is not protected and needs user's approval). Yang et al. (2014) found that fake account holders (or Sybils) try to integrate into a group or network by first befriending or following members of the network before sharing information. This can be related to a confidence-building process in an attempt to make their presence known in the network before sharing information. This is, however, a time-consuming process as it might take days, months or years to penetrate a network. The time consumption for integration into the group could be based on the strength (network ties) possessed by that group or network, which can either accept or reject any outside idea. The information accessed by any Twitter user can depend on the network, and sometimes networks, which can overlap with each other, i.e. a tweet from a person that one might not follow is likely to be visible on their timeline as the former could be in the network of the person you follow. This feature of Twitter willingly or unwillingly exposes any user to information irrespective of interests, which leads to the fact that Twitter is a network of networks, which sometimes overlap with each other. This process of connectivity among users in networks can be referred to as bridging, as stated by Bruns and Highfield (2015). The bridges are connections between various groups, which help information flow. The fake Twitter accounts could be bridges to some groups which have the capacity to alter the trustworthiness of information as the identity of these accounts are unknown. Although these bridges can help information flow among the groups, they also risk spreading untrustworthy information. However, the information shared by bridges can sometime be first-hand information which could have been otherwise impossible to access. These information sources are also termed 'backchannel communication' by Sutton et al. (2008).

*The groups of people in your network have the capacity to identify information as trustworthy or not based on whether it is produced within the group or has been accessed through outside the network. These networks which are usually tightly-knitted are formed based on common interests, knowingly or unknowingly. The members of networks are highly likely to trust each other which otherwise would not have been possible. (AN)*

*The judgement of information in post disaster situation can also be based on retweets or liked by members of your networks. The like or retweet can sometimes be viewed as endorsement as people receiving the information may think that the person who shares information has undergone authentication process before sharing that to the network. This can be possible only if you trust the information sharer rather than information provider or content itself. (ND)*

The trustworthiness of information from any sources in a network (as based on above statement) lies in trust among members of a network rather than source only. The central idea of this concept is that information has been endorsed as trustworthy by the person who has shared the information, which makes receivers highly unlikely to further investigate or verify the information. The interview with the participants regarding network aspects focused on two components. Firstly, will fake Twitter accounts (outsiders) easily join a network that has already established a relationship though through online media only? Secondly, will the network members accept information shared by fake Twitter accounts (outsiders) in the context of post disaster events? An excerpt from an interview participant follows:

*The fake Twitter accounts or any outsiders only be accepted (joined) in a network through any existing members only or at least [if they] say his or her information will be considered as trustworthy. There are many people who try to join the conversation in a pre-existing network, however not everyone will have a say or their information accepted as trustworthy unless any member of the networks endorses it. This context could be highly scrutinized in post disaster situation as the members might consider it as a volatile environment. (ND)*

The fake Twitter accounts, if exposed to different networks, can be benefitted in such a way that they can introduce information accessed from one network to another to make themselves

trustworthy. The acceptance of information into that network depends on the social capital possessed by that network, i.e. members of networks have the capacity to either accept or reject the information by judging its trustworthiness. The network of some Twitter users was termed as a 'Twitter syndicate' by interview participants, which means that some groups of Twitter users endorse ideas or information as retweeted by other member of networks. This can be a helpful tool to spread information if the user has a large number of followers, which results in the flow of information to a large mass. Mei et al. (2015) found that some influential people on social networking sites can play an important role in influencing information propagation and public opinion. As stated above too, people have access to multiple networks. The interview participants shared that they came across the same information tweeted by multiple users. This could be because a number of people were panicked and wanted to share information without proper judgement of its trustworthiness. This leads to the fact that misinformation, if shared by multiple users on a network or networks, is highly likely to be seen as trustworthy by some users who view number of retweets as an indicator of the trustworthiness of information. Fazio et al., (2015) have found that repetition of false information from various sources can make people believe that the information is trustworthy. If the information is shared by multiple users of one's network, it is highly likely that it is considered as trustworthy by the users on the network. However, the interview participants argued that they did not share misinformation on Twitter and if they realized that the information that they shared was untrustworthy they immediately retracted it. This general statement claimed by the participants was reviewed by the researcher who found that three participants did indeed share information from fake Twitter accounts and two of them retracted information with an apology tweet (a corrigendum tweet stating that their previous tweet was untrustworthy and has been deleted). The tweeting behaviour of five others regarding sharing information from fake Twitter accounts was not established; either they might not have shared such information or they have deleted the tweet after realizing it was fake information or Twitter account. The researcher thus identified that people do not tend to do (in disaster situations) what they usually say they do (in non-disaster situations). The uncertainty of disaster events can thus be viewed as a reason why the participants tweeted untrustworthy information, or people tended to act differently in disaster events as a result of their trustworthy judgement ability being affected. However, the participants argue that a corrigendum tweet is an acknowledgment by the sender that can serve as an apology for the harm done to receivers.

Four participants of the interview suggested that the process of sharing of information from fake Twitter accounts is sometimes an attempt to create doubt in their network. It was noted

that this could happen for two reasons. Firstly, the person sharing the information cannot decide whether or not the information is trustworthy and thus forwards it to their network for trustworthiness judgement. Secondly, the real idea behind information sharing is to create doubt among the users. The first reason identified here has been already discussed. The second reason, is where the participants believed that some users were involved in creating doubts (knowingly or unknowingly) as though they were undecided and confused themselves, by circulating messages received from other social networking platforms as tweets. Some participants referred to WhatsApp messages that were circulated as tweets (uploaded as images) referring that the National Aeronautics and Space Administration (NASA) identified that a big magnitude earthquake is expected soon (Nettikara, 2015). The WhatsApp messages with the name of NASA created a lot of doubt among people, making them believe that there will be an imminent big earthquake strike.

Yet, the Twitter network is an important aspect of measuring whether or not information shared by any fake Twitter user is trustworthy. The judgement of information, though, lies in the strength or social capital possessed by that network. The strength of ties that the members share in the network can also determine whether or not to accept the information. However, the post disaster scenario could be different when people may not have access to information as in normal conditions. This can also affect the person's position in the network. Despite this, participants suggested that they prefer to access information from their regular sources or networks rather than from outside sources. Therefore, users might apply the trustworthiness measure of source who endorses the information in the network to measure the trustworthiness of a tweet. In addition, the information shared by a fake Twitter user is judged based on categories, i.e. whether the tweet refers to rescue, precautions or any necessary information.

### 6.3. Conclusion

This chapter concluded that the trustworthiness of tweets and users are two different concepts as people make judgements based on various factors, which implies that information shared by fake Twitter accounts can also be trustworthy. This chapter identified two components—content and network—to understand the trustworthiness of tweets from fake Twitter accounts based on various features. Users trust information from a fake Twitter account based on their own judgement criteria, i.e. information can be accepted as trustworthy or not based on their perceived criteria. However, the chapter also noted that all interview participants' responses



about trustworthy information were based on a normal environment, which was different in the post Nepal earthquake event. The researcher had to manually review the tweet activities of the participants by visiting their respective profiles to reach to this conclusion. It is shown that people are more likely to act differently in a disaster than in a non-disaster situation as they encounter a new environment that disrupts their normal routine. The limited access to internet and their disrupted mental state due to stress or anxiety after a disaster can further affect the judgement of trustworthiness of tweets. Therefore, the criteria that they normally set to define fake and real accounts could be reviewed as the users may be exposed to tweets for only a short span of time before they take action.

This chapter also concludes that information shared by fake Twitter accounts should not always be judged as untrustworthy. Various factors were identified to support this argument. Firstly, people who do not prefer disclosing their identity on their Twitter profile (i.e. without profile introduction or profile photo) are termed as fake Twitter accounts. However, there were many Twitter accounts referred to by participants of this research that established the fact: all Twitter accounts without proper identity in a Twitter profile are not fake indeed. People may not like to disclose their identity, and it is argued that the trustworthiness of a person and their information (tweet) should be judged based on content (ideas or arguments) rather than visual cues like profile photo, username or profile name. Though these features mentioned by some participants were not always perceived as indicators of trustworthiness of information, some participants argued they would not trust information from a Twitter account without proper identity, particularly in a disaster situation. They argued that a profile photo was an important way for a user to identify themselves and for determining whether or not the information was trustworthy.

Secondly, the presence of ‘seminar users’ on Twitter made many participants believe that information shared by these Twitter account holders should be considered as fake as their statements are highly biased. Despite presenting with logical tweets, the seminar users (without revelation of identity) are often judged as fake Twitter accounts as they are inclined towards some ideology or opinion. The information shared by them is often considered as biased and motivated by a purpose. Though some participants suggested that they view seminar users as trustworthy sources, they stated that this acceptance can only be judged based on a certain context rather than in general.

Thirdly, the network played an important role in judging information from fake accounts as trustworthy or not. Twitter comprises a network of networks with multiple overlaps, as a result Twitter users are exposed to various networks. The chapter identified two different aspects in this context. Firstly, with exposure to various networks, the user can assess information as trustworthy or not based on strong ties shared in the network, which implies that users can either accept or reject information from fake Twitter accounts based on input from their network. Secondly, the user might not be able to understand that a fake Twitter account would have already been on their network by following the people from his or her network, which creates difficulty in information judgement in a post disaster event. The chapter also identified that the penetration of information in a network will depend upon the strength of the network, which has capacity to either accept or reject it.

## CHAPTER 7

### 7. Media organizations and trustworthiness of tweets in post disaster situations

#### 7.1. Introduction

This chapter explores the trustworthiness of tweets from various media organizations (print, online, radio and television) and journalists in the Nepal earthquake event. The research focuses on whether the receivers have different levels of trust in tweets from media organizations and journalists in a post disaster situation. The media organizations use social media (this research focuses on their Twitter communications only) to disseminate information and engage in public conversation. This chapter elaborates on the role of media organizations in post disaster situations through Twitter communication, particularly in the context of ambient journalism. It is highly likely that a disaster could affect media organizations and disrupt the latter's information accession, verification and distribution capacities. In this context, the chapter elaborates on the concept of ambient journalism and untrustworthy information where people are exposed to various news websites through Twitter in post disaster events. The chapter tries to answer the research question: do people have different levels of trust in tweets from media organizations and journalists in post disaster events? The researcher argues that the issue of fake news also has to be understood when exploring information flow in the context of ambient journalism. Therefore, this chapter is divided into three categories. The first category elaborates on Twitter journalism to understand how users interact and collaborate with Nepalese media organizations in the news-making process. The second section describes the trustworthiness of tweets shared by various media organizations, and the third section illustrates whether journalists have different levels of trust in disaster events. Lastly, the chapter describes issues related to clickbait journalism and fake news during post disaster events.

This chapter tries to establish whether people (receivers) have different levels of trust in tweets from various media organizations or journalists. This is because even media organizations and journalists are affected by the disaster and their information sharing processes may also be affected. The media organizations and journalists may be accessing information from various Twitter users (ambient journalism) and work as gatekeepers rather than information providers. In this context, it is important to understand how people perceive trustworthiness of tweets based on various media organizations or journalists. With the availability of social media,

public access and verification capacity, the traditional information flow cycle has been subverted and sometimes reversed, i.e. information may flow from social media users to media organizations. All the participants suggested that Twitter and Facebook have been a source of accessing and verifying information in a post disaster event. They said that access and verification of information through Twitter are based on two types of tweeting observed in Nepalese media organizations. Firstly, the tweet that contains a text (may or may not be with photo or video) without details of information. The Nepalese media organizations are usually seen doing this when providing a developing story or as breaking news when they do not have details of the story yet. The tweet sometimes clarifies that they will soon provide the link with detailed news. Secondly, a tweet with a website link which directs users to the media organization's website. In this context, the chapter tries to understand whether media organization and journalists can be still be considered as trustworthy sources of information on Twitter. The participants were asked to respond to interview questions based on their experience with Twitter rather than Facebook. However, the participants' access to and verification of information are not limited to one social media platform and their responses often correlate to each other. The researcher had to ask the participants a number of times to respond just based on their information accessing habits on Twitter and in the post Nepal earthquake event.

## 7.2. Twitter journalism in the context of Nepalese media organizations

This section explores Twitter journalism in the context of Nepalese media organizations. It illustrates the general concept of information flow, which has changed with Twitter as a platform for ambient journalism, in the context of Nepal. However, the argument in this section is careful not to overstate Twitter's significance. Twitter is not only the source of information for many. In addition, a section of society (including in Nepal) has never been able to access information through this platform. This is due to the digital divide (Witte & Mannon, 2010), issues of trustworthiness of information (Goolsby, 2009), and preferences for other social networking sites, among other reasons. Yet, it has to be noted that social media sites like Twitter are a popular tool for news gathering in various domains like sports, politics, economics, and social issues (Cozma & Chen, 2013).

*I usually go through Twitter to understand what is happening around us. This is first thing I do as I lie on bed after I awake up for a while and scroll through the feeds. It helps to catch up the developments and keeps you abreast with updates. However, I take the information shared by social media users even media organizations with pinch of salt as they might not always be trustworthy. (DC)*

Firstly, this section explores how Nepalese media organizations disseminate information (news, breaking news, analysis and opinions) through Twitter in disaster and non-disaster events. Based on participants' responses and access to tweets from eleven different Nepalese media organizations (from 25 April to 10 May, 2015), the research found that some users noticed three tweeting behaviours of Nepalese media organizations, both in disaster and non-disaster events. Firstly, tweets as information (like breaking news or flash news) with some general information and not much details. This may or may not contain a photo or video other than general text. Secondly, tweets on developing stories like accidents, ongoing parliamentary debates, political party discussions, etc. This type of tweet has brief information on the issue while media organizations are developing a final (full-fledged) coverage on any particular issue. These tweets may have a website link to the developing story. Thirdly, tweets with a final (full-fledged) coverage of any issue. Most of the Nepalese print media organizations prefer sharing their print edition updates under this category of tweet. The print edition coverage of media organizations are updated on their websites and subsequently tweeted through their Twitter accounts, as well as uploading to e-papers. However, it should be noted that not all interview participants (or any general readers/viewers/listeners) were aware of this tweeting behaviour of media organizations. Therefore, they judged and responded to interview questions based on their experience of any particular tweet rather than on the tweeting behaviour of media organization.

**Table 7. 1 List of Nepalese media organizations 2018**

<b>S.No.</b>	<b>Type of media organization</b>	<b>Number</b>
1.	Broadsheet daily	22
2.	Daily	703
3.	Television	116 <sup>20</sup>
4.	Online news website	1413 <sup>21</sup>

List of media organizations in Nepal based on media directory published by Department of Information and Broadcasting, Government of Nepal (Government of Nepal (2018a))

Many print, radio and television media organizations have respective news websites too, where they regularly update their contents and share through their Twitter accounts. For example: FM stations in Nepal like Radio Kantipur (previously known as Kantipur FM) (<https://radiokantipur.com/>) and Ujjwalo Radio Network (<https://ujyaaloonline.com/>) regularly update their websites and share these contents to their Twitter accounts @KantipurRadio and @Ujyaalo respectively. These regular Twitter updates give an opportunity for media organizations to market their products (contents), their journalists and the organization itself. Canter (2013) also found that news organizations in the United Kingdom have been marketing their contents, developing customer relationships and increasing traffic to their websites by regularly sharing their contents through social media accounts. The researcher accessed the tweets of eleven Nepalese media organizations randomly (the details of the media organizations are given below) and found that they were also involved in marketing their contents by sharing website links, photo and videos through their Twitter accounts. The interactive nature of Twitter allows readers to comment, question and criticise information shared by media organizations immediately. These comments, questions and criticisms can be viewed by any Twitter users (if the tweets are not protected by the user) who can decide on the trustworthiness of the information. This shows that Twitter has been helpful for consumers (readers, viewers and listeners) to get regular updates, while media organizations try to

<sup>20</sup> List of Television broadcasting (<http://doinepal.gov.np/en/downloads>)

<sup>21</sup> List of online news organizations retrieved from <http://doinepal.gov.np/uploads/20200326124418.pdf>

understand public opinion so as to regularly generate and modify information based on demands (public opinion) accessed through social media and other means. There is evidence that the presence of media organizations and journalists on Twitter has helped them to understand public opinion and to decide on their contents (Noguera-Vivo, 2013; Paulussen & Harder, 2014; Rogstad, 2016). Edingo (2014) also found that “Nepali journalists frequently visit social media as a reliable source of information” (p. 1). Research carried out by Tilak et al. (2012) suggests that “many Nepali journalists have Facebook accounts while a few regularly use Twitter for communication, though there has been no study on exact use of social media and utilization of it in journalistic activities” (p. 7). However, the above-mentioned research was before the Nepal earthquake and it may not reflect Nepalese journalists’ Twitter-using habits during the earthquake event and the present day.

Firstly, the participants and the researcher noticed that many Nepalese journalists were (in 2015) and are (in 2020) active on Twitter, and regularly communicate and participate in discussions, many of them even have a verified Twitter account. A survey carried out by BBC Media Action in November, 2015, among 4000 people across the country, found that 77 percent of people trusted journalists while 76 percent believed that the media was relevant for addressing their problems after the earthquake (Bhandari et al., 2016). However, the participants of this research recalled the conversation and confrontation with many journalists when they commented on and criticized the news covered by them. Some media organizations have a brief professional profile about their journalists at the end of every news report written or developed by them, with some providing Twitter account details too. However, this research could not identify how many Nepali journalists were active on Twitter before the Nepal earthquake, but the researcher visited the Twitter accounts of eleven media organizations (details below) to find whether or not they had their Twitter accounts before the Nepal earthquake.

**Table 7. 2 Nepali media organizations and their Twitter accounts**

S. No.	Name of media organization	Type	Twitter account available in Nepal earthquake situation?
1.	Kantipur	Print (Nepali)	Yes
2.	Annapurna Post	Print (Nepali)	Yes
3.	Nayapatrika	Print (Nepali)	No
4.	Nagarik	Print (Nepali)	Yes
5.	The Kathmandu Post	Print (English)	Yes
6.	Republica	Print (English)	Yes
7.	The Himalayan Times	Print (English)	Yes
8.	Onlinekhabar	Online (Nepali and English)	Yes
9.	Ujjwalo Network	FM and Online (Nepali)	Yes
10.	Setopati	Online (Nepali and English)	Yes
11.	Ratopati	Online (Nepali)	Yes

The Twitter accounts of these media organizations, except *The Himalayan Times*, have a verified account. However, *Nayapatrika* joined Twitter only on February, 2016, though it is in the 14<sup>th</sup> year of publication as of May, 2020. This could be because either *Nayapatrika* had not opened its Twitter account or it used a different Twitter name earlier. However, the researcher could not establish this.

Secondly, Twitter has been developed as a platform of ambient journalism. Hermida (2010) defines ambient journalism as a process whereby the “audience are able to become part of the news process” (p. 6). The concept behind ambient journalism is that everyone has the capacity to generate content through Twitter and share it. The Twitter users constantly receive



information through media and other users, which leads to the premise that “news and journalism are ambient ... Twitter are enabling citizens to maintain a mental model of news and events around them” (ibid, p. 3) and news and people are not entirely separated. The participants of this research shared that they participated not only in the news making process of media organizations but also commented and criticized information shared on the latter’s Twitter accounts based on their experiences during the Nepal earthquake. Most of the participants recalled seeing images of the wreckage of the iconic Dharahara tower first on Twitter, and so participated in the news of that event on the platform.

Yet, the trustworthiness of information shared on Twitter in the context of the Nepal earthquake can be identified based on two components. Firstly, the public’s dependency on Twitter to access post Nepal earthquake information, i.e. if Twitter was an important medium to access information. Secondly, there is evidence that Twitter users have reported news prior to various media organizations. Referring to TED Talk by media scholar Clay Shirky, Hermida (2010) stated that the China earthquake of May, 2008, in Sichuan province, was first reported by a social media user rather than a media organization. Similarly, an IT professional ‘unknowingly tweeted details of the US-led operation’ on the then Al Qaeda chief Osama Bin Laden (BBC, 2011). Newman (2009) and Messner et al., (2012) also found that information on the Mumbai terror attacks of 2008 and the Green Revolution Iran in 2009 respectively, was first broken on Twitter. Though information shared by Twitter users does not undergo a gatekeeping process, nevertheless media organizations or journalists may be influenced by information retrieved from outside their sources and may invest limited time on, and research of, the information on their own. As a result, if information appeared on Twitter accounts of media organizations (who had accessed information from Twitter users) it may be perceived to be trustworthy as receivers believe that the information has been processed through a professional gatekeeping process.

**Figure 6. A tweet from a user shows before and after picture of Dharahara**



The participants of this research suggested that even they participated in the news-making process as some of their tweets were accessed by media organizations and used to develop news reports. This is a good example of ambient journalism in a post disaster scenario, where Nepalese media organizations also suffered from uncertainty and their news developing process was affected. The lack of power, cellular congestion and difficulties in accessing information which otherwise would have been possible in a non-disaster situation, were some aspects of the dependency of Nepalese media organizations on Nepali Twitter users. In addition, media organizations played a role as gatekeepers (as one participant suggested below) and distributed news through their Twitter accounts in the Nepal earthquake event. This could be because even media organizations struggled to operate after the earthquake. Though print media organizations continued their publications, the circulations of newspapers were affected after the earthquake event (Fitzgerald et al., 2015).

*There were many incidents where information shared in Twitter appeared as news reports in various media organizations in post Nepal earthquake. The limitation of news accessing and verifying capacity on media organizations or journalists made them rely on information accessed through Twitter without proper research. When this information appeared through Twitter accounts of media organizations, people were found to be trusting them without questioning their veracity. (TB)*

Though trustworthiness of information shared by media organizations can be viewed based on the trustworthiness of media organizations, people may have limited knowledge of how information is processed by media organizations. Therefore, the trustworthiness of a media organization is equally important for understanding the trustworthiness of information shared by that media organization. The trustworthiness of information of media organizations' tweets is an important aspect in the post Nepal earthquake situation.

As the participants have identified three types of tweeting behaviour of Nepalese media organizations (as stated above), it is also important to understand how they functioned in the days after the earthquake. This section will discuss the three components identified through the interview process. Firstly, it is important to understand how Nepalese media organizations covered post Nepal earthquake news and shared it through Twitter. The disruption of movement (as roads and airport operations were suspended) and poor cellular networks not only affected the daily lives of Nepalese people but also affected the publishing and broadcasting capacities of radio, television and print media. However, Nepalese media organizations continued to operate despite the earthquake affecting their infrastructure. The information sharing process was also affected as media organizations not only struggled to understand the impact but also the lack of coordination by government organizations immediately after the earthquake further complicated the process (Fitzgerald et al., 2015). There was no specialized practice of disaster reporting during the Nepal earthquake event as disaster events were reported as daily-affairs news or current-affairs news in Nepal (Uprety et al. 2016). Pokharel (n.d.) has identified the media as the first responder and categorized media coverage of the Nepal earthquake into two categories. Firstly, information was more focused on general earthquake updates and its impact, including number of casualties, injury, damage and destruction, among others. Secondly, the media coverage was expanded to cover rescue

and relief activities, including the public reactions and narrations of survivors, among others. The news covered by the media was also made available through their Twitter accounts. The interview found that people were accessing information mostly through social media (Facebook and Twitter) and radio rather than print and television. This could be because circulation of print media was affected due to obstruction in transport (roads obstructed due to damage), and power outages affected television broadcasting and viewing.

*I was really scared to enter [our] house, as a result my family decided to stay in open field as far as possible. We had built a makeshift tent which was our house for couple of days after the earthquake as aftershocks continue scaring us. The only way to access information in this context was Twitter, radio or talking to people around you who seem equally confused. It was hard to load Twitter image, even tweets without image were taking ages to load. (BB)*

*The media organizations could be secondary source of information in post disaster event in the initial days. As a working journalist during Nepal earthquake, I can confirm that information collection process of our organization were limited to some extent as a result we relied on information from Twitter users and government updates rather than our own reporters. In addition to that, we are family person too and our family wanted us to be with them in the difficult times where even cellular connection were limited. (AN)*

Secondly, the verification of information through government organizations was disrupted, as a result journalists had to rely on alternative sources following the failure to reach their reliable sources. The Ministry of Home Affairs (MoHA) which comprises security and intelligence agencies is the first point of contact during a disaster event in Nepal. The National Emergency Operations Centre (NEOC), under MoHA, is the coordinating body in a disaster event. The limited resources and Nepal's unpreparedness to respond to such a huge-impact disaster affected NEOC's information distribution capacity. The media organizations rely on these official sources in disaster events, provided that the government body has more resources. However, the lack of presence of NEOC on Twitter<sup>22</sup> prior to the Nepal earthquake made users rely on media organizations or journalists for information. In addition, users were not aware that NEOC had later joined Twitter and they were also not certain that the account that claimed

---

<sup>22</sup> NEOC joined Twitter on 26 April, 2015

to be NEOC<sup>23</sup> was indeed an official account. However, Nepal Police (Twitter @NepalPoliceHQ), joined Twitter after the Nepal earthquake (screenshot of the first tweet in figure 8) and was active in information sharing in post-earthquake. All participants recalled their communication with Nepal Police through their Twitter account and stressed that it was the most trustworthy source of information in the Nepal earthquake days. It is a general practice in journalism that media organizations rely on official sources much more than ordinary citizens (Sigal, 1973) particularly in situations like disaster events. This alignment was common after the Nepal earthquake as Nepalese media organizations struggled to access information, and government organizations were official sources. As Perez-Lugo (2004) also found, the media and audience relationship is an important aspect of understanding disaster events as it helps people to connect and to cope with a disaster.

Thirdly, a user's trust of tweets from media organizations was equally reflected in their trust in the organization. The Nepalese media organizations are also criticized for not providing transparent news coverage despite being visibly active in the country. Based on more than 25 interviews with leading members of Nepalese media, government, civil society and international development communities, Bhandari et al. (2016) found that there is "growing politicisation and co-option of media, both at national and local levels, and a climate of declining freedom of expression" (p. 7). The research also found that the mainstream media is "largely failing in its accountability mandate" (p. 10). However, seven participants of this research suggested that they relied on 'big' media organizations (media organizations centralized in Kathmandu valley with regional publication houses) preferably with print editions, as the most trusted sources of information post Nepal earthquake followed by news organizations with online versions only. They argue that organizations with a long history of establishment, efficient manpower (including big names in Nepalese journalism) and coverage through most of Nepalese territory (based on the fact that many print organizations have also regional publication centres) can be trusted sources even in disaster conditions. Almost all participants stressed that the media organizations involved in both online and print editions were found to be the most trustworthy sources of information rather than media organizations with online editions only.

---

<sup>23</sup> NEOC Twitter account @NEOCOfficial has not been verified by Twitter as 18 May, 2020.

*The big media houses have high penetration and resources to access information. It was also seen in Nepal earthquake days based on the news coverage. The big houses were reporting inside stories and I heard that they even gave incentives to their reporters during this period. This could be a reason that I preferred to read newspaper from big media houses rather than small ones as the former has good coverage. I do not want to pay for lousy news reports. (SP)*

*In addition to resources, the big media houses have large number of journalists including big names. These big names help to access information in difficult times as I think the government officials too want to speak with the journalists that they already know rather than new ones. In addition to that, many Nepalese journalists also work for international news agencies. The big impact of earthquake generated interests among the international news agencies too. So, some journalists were covering news for both their local media and international news agencies too. (TB, journalist)*

The participants often mentioned the media organizations as mentioned in Table 7.2 (Nepali media organizations and their Twitter accounts) above as ‘big media’. The researcher asked participants why they referred to them in this way. This was explained in terms of these media being responsible for many issues in Twitter discussion as they have large numbers of subscribers and higher penetration in Nepalese society. The availability and accessibility of all print contents through online editions of these media organizations (newspapers and magazines) for free made some participants use the shorthand ‘big media’ for them. Apart from subscribers and penetration, the participants also argued that the ‘big media’ are often in the ‘Class A+’ among the media classification carried out by Press Council Nepal, a government body. Therefore, the researcher has termed the media organizations as mentioned in Table 7.2 as ‘big media’ in this research and visited Twitter accounts (handles) of these ‘big media’ to understand the follower counts, account verification and trends of tweets. Though the majority of ‘big media’ as mentioned by the participants comprise print media, it was important to understand how people judge and understand information shared through these accounts as Acharya (2014) has found also that “traditional news media and online news portals associated with them are considered more accountable to public and professional stakeholders than online-only news portals” (p. 6) in the context of Nepal. There is definitely not a single answer to why Nepalese Twitter users have high levels of trust in traditional news media and online media rather than only online media, but one factor that likely gave rise to this trust is their longstanding reputations. The established media organizations like *Kantipur*, *Nagarik*, and

*Nayapatrika* in Nepal are trustworthy sources of information, though there were participants who expressed contrary views. The resources, penetration and established names (journalists) of the organizations were some of the features identified by the participants that made them feel that established media organizations are trustworthy sources of information. Meanwhile, some other participants argued that media organizations cannot be trustworthy sources of information and even blamed the big media organizations for running the media industry through syndicates.

*The big houses are running a syndicate of news. They have resources, manpower and reach with government organizations for information. Even the government officials share information to those journalists who have big names but not to new comers. This is why the big media houses have large amounts of information. How did big media houses gather large number of information from government officials not the small ones? It is because they have manpower, infrastructure and, more important, access to government officials who respond to the queries of the journalists from big media houses. Sometimes they do not even pick up our phones and ignore repeated SMS inquiries. (AN, former journalist)*

However, when the researcher accessed the Twitter accounts of these participants and viewed their past tweeting activities, the researcher found that the participants had tweeted news or articles from those media organizations in the past (even though they criticize them today). It could be because those tweets were more related to their political ideology or social beliefs, or they have lost trust in some media organizations based on their experience (as suggested by AN above). The trust relationship between receivers (readers or viewers) and media is important because the media is a link between the public and government authorities, as the latter is expected to safeguard the former in disaster events. Steelman et al. (2015) found that government and federal government sources are more trustworthy in the context of disaster events. Therefore, the link (media) too has to be trustworthy for receivers (public) to trust the information shared by the government in disaster events.

### 7.3. Journalists and trustworthiness of information in Twitter in disaster event

This section tries to establish whether Nepalese journalists were sources of trustworthy information based on journalism practice on Twitter, exploring how gatekeeping and

accountability of information are subverted and reconfigured in the context of a disaster event. All the participants of the interview suggested that they follow many journalists based on their preferences. They further said that they often notice the journalists negotiating the space between personal and professional opinion in tweets. It is evident that journalists are often found tweeting on various political and social issues. This can be viewed as an attempt to brand and make their presence felt on Twitter as sources of information (Hermida, 2013). The process of access to information of journalists can be affected in disaster events. In such scenarios, it is important to understand whether journalists are still following professional gatekeeping processes before tweeting information through their account, as many receivers (readers or listeners) have been following them on Twitter considering them as expert on a particular issue. Hermida et al., (2012) also found that people sometimes follow journalists rather than their media organization, to access information.

*The journalists are divided in their opinion in Twitter. If I do not trust these journalists in Twitter in normal condition, I would better access information from government sources rather than journalists in disaster event. After all journalists are human beings too and they have limited resources to access information which can be affected during disaster event. (SP)*

Most Nepalese journalists have clearly identified their media affiliation on their Twitter accounts, while media organizations have also given details of the social media accounts of their journalists. However, a few have decided not to reveal their professional affiliation to media organizations. It should be also noted that journalists have limitations to accessing information. Based on interviews with three journalists—BB, TB and AN—who are also participants of this research, the researcher noted that Nepalese journalists also have limitations when accessing news. Firstly, journalists from different media organizations are viewed differently by government officials, who sometimes refuse to provide details as they do not entirely trust all the journalists. The participant (as stated by AN above) suggested that the government officials are difficult to approach for information, as a result they may not be able to include their version of statements in the news, which then looks biased. This could be why some Twitter users believe that the information shared by some journalists is biased and one-sided. Secondly, there are also financial limitations among journalists in Nepal. The Nepal government has set a minimum salary criteria for Nepalese journalists as NPR16,500 (US\$160) per month (The Kathmandu Post, 2018). However, two journalists—BB and TB—who are currently working in two media organizations in Nepal suggested that they have not received



their salaries for nearly two months now. They added that their media organizations have not provided salaries to them on time in the past too. Though the researcher could not access any reports that reveal that media organizations have not paid their staff on time, however, a report prepared by the Federation of Nepalese Journalists (FNJ), an umbrella organization of Nepalese journalists, states many Nepalese journalists are facing economic hardships due to non-payment of salaries and job cuts, among other things (International Federation of Journalists, 2020). The report states that the conditions of many Nepalese journalists were same in the past too.

Yet, the researcher noticed that Nepalese journalists are active on Twitter (including during Nepal earthquake event) and many have their profile verified by Twitter (a blue tick next to the profile name). Press Trust of India (2015) found that journalists are among most verified accounts on Twitter. However, interview participants suggested that the verified Twitter account helps them to identify the journalists but they might not always be sources of trustworthy information particularly in post disaster events. Vaidya et al., (2019) found that a verified Twitter account does not affect the receivers' perspectives on credibility and they are not important indicators of influencing credibility. The low level of trust of receivers in journalists is sometimes based on perceived unethical. Adhikary and Pant (2016) also found that "the possibility of bodily harm, including death, and threats against journalists and media institutions, is very low if journalists would abide by code of ethics" (p. 38). The lack of ethical practices makes for untrustworthy sources of information. Kharel (2010) argued that media credibility in Nepal is affected by "several factors such as partisanship, overt commercialization, suspect editorial independence, 'envelope' journalism, unverified information, dubious ownership, anonymous or unidentified sources, among others" (as cited in Media Foundation-Nepal, 2012, p. 29).

The regular process of how journalists access information and verify it from their sources could also be affected in a disaster event. This is why they might have to rely on alternative sources rather than regular sources in a disaster event. The gatekeeping process adhered to by journalists helps them to decide which information can be accepted as news and passed to their consumers. It is also evident that traditionally journalists turn to official sources to verify information (Berkowitz, 2009), which is also applicable on Twitter, although journalists may participate in discussions through Twitter on how information has been accessed, verified and disseminated. This transparency of the news-making process by journalists may make them

trustworthy but it should be understood that not all journalists reveal how they process information to make news. Hermida (2013) also found that a small section of journalists provide glimpses of newsroom functioning to their consumers.

The collaboration of journalists and other people was very common on Twitter during Nepal's earthquake event as the former had limited access to information. Murthy (2013) has also found that this collaborative approach "has augmented the information available in their reporting (i.e. being much more timely and far-reaching in their reports)" (p. 89) particularly in disaster events. One of the participants of the research, who was a journalist, recalled Nepal's earthquake days and news reporting as:

*We had been accessing information from Twitter from across the affected area. I was cautious that many information could be not verified just based on information. In addition to that, even photo or video was not sufficient to judge information as trustworthy. I had to collaborate with not only users in Twitter but also journalists from other media organizations to access and verify information. We too had set up a temporary work station in an open space. (AN, former journalist)*

The question of trustworthiness of information shared by journalists is viewed based on their expertise on that particular issue. Though participants of this interview were dependent on information shared by journalists in the Nepal earthquake, they argued that this dependency was not limited to this particular sector, which led them to access information from other sources as well. They particularly believed that the government is the most important source of information in the immediate aftermath of a disaster event, while the researcher noticed a shift in dependency to media organizations and journalists as time progressed. The participants suggested that government could be a source of information on casualties and for warnings in a disaster, whereas they felt that media organizations and other Twitter users can provide them with updates on general information about the disaster. The media organizations also access information from Twitter users to understand the situation, when they have limitations in functioning. With the availability of information through Twitter, one of the participants suggested that this is why a few new media organizations (online) emerged after Nepal earthquake.

*I could see many news media emerging after Nepal earthquake. As the contents required for them were already available through social media and all they need was sensationalized headlines. These online news media generated traffic in their website with these sensationalized headlines. However, a reader could find this out only after clicking the link and reading the content. (BB)*

The BB statement argues that many new media organizations were clickbait strategy to generate the traffic to their website. The clickbait strategy is thus discussed in the next section of this chapter.

#### 7.4. 'Clickbait' journalism, fake news and Twitter in post disaster events

This section of the chapter focuses on issues related to 'clickbait' journalism where users were exposed to fake news on Twitter in the post disaster event. As stated above by BB, many new media organizations (particularly online) emerged after the Nepal earthquake. The main idea behind this clickbait strategy is to create a misleading headline (Silverman, 2015) so that the readers or viewers can click the news and the publisher can generate views on their website. Clickbait is sometimes referred to as 'attention grabbing' headlines (Chen & Rubin, 2017). Almost all participants argued that clickbait is sowing untrustworthy information through social media platforms like Twitter where users can share website links (also referred to as URLs). This feature of Twitter made some media organizations adopt a clickbait strategy by seeking attention and encouraging readers to click on links with misleading and low quality news (Kwak et al., 2018). One participant shared clickbait experience as:

*It was hard to understand [the difference between] news and a fiction by reading news articles provided through Twitter. Firstly, because I was new to this platform (joined after Nepal earthquake) and secondly the news articles shared from Twitter were often termed as untrustworthy. The 140-character limitation back in Nepal earthquake days prompted many Twitter users to use URL shortened links, as a result users like me were unsure either the link was from media organizations or a spam. (SA)*

The URL shortened options available through various websites were also adopted by some media organizations, as Twitter had a 140-character limitation in the Nepal earthquake days. This led to confusion among various users as they were not sure if they were accessing information from a reliable media organization or a random website that generated traffic based on number of clicks on the website. In addition, the Nepal earthquake generated a large amount of international attention, and people were exposed to various international media organizations that were not known before. The news coverage by these international organizations, particularly Indian news organizations, was also questioned, prompting a backlash from Nepalese Twitter users. Many participants remembered #GoHomeIndianMedia hashtag trending in Nepal in post-earthquake days as Twitter users complained that Indian media news coverage was insensitive and jingoistic (Biswas, 2015; DNA Web Team, 2015). However, it should be noted that even disaster efforts can generate negative sentiments among people when they are not accompanied by an understanding of local culture (Radianti et al., 2016).

The participants recalled that URL links available in some tweets were actually not related to the Nepal earthquake but to different issues. This trend is often known as ‘hashtag hijack’ in Twitter research. VanDam and Tan (2016) identified that “hashtag hijacking occurs when a group of users start using one of these trending hashtags to promote a different message” (p. 370). Thapa (2016) also found that only 22 percent of Twitter users were using different hashtags and all these tweets were not related to the Nepal earthquake event. The trend was also identified as spreading untrustworthy information, as people were directed to information of a different context when they were trying to access Nepal earthquake related information. This made some participants view URL-shortened links (like goo.gl, ow.ly, bitly.com etc), used by many media organizations, as untrustworthy when they actually might have regarded them as trustworthy if they had seen the full URL. This uncertainty affected public trust of media organizations too, as the latter failed to cover the news, only that which was already available on Twitter. However, some media organizations decided not to cover news without verifying the information.

*Some media organizations decided not to report news based on Twitter updates only. My media organization clearly instructed us to not to cover news if the facts could not be checked. However, those new media organization do not have that obligation as they do not have risk of losing trust too. They were new in the market and they were testing the water with nothing to lose. This is why they adopted clickbait strategy with an ease. (TB, journalist)*

Yet, a journalist recalled that many malicious websites had used the hashtags trending (hashtag hijack) after the Nepal earthquake to promote their contents when in reality they did not have any contents related to the earthquake event.

*There was not a single hashtag that was trending at the moment. I remember #Nepalearthquake #NepalQuake #quake etc used as hashtag in Nepal. Many people were either tweeting without using hashtags or without proper use of hashtag. This lead to confusion to new users who had no prior experience of using Twitter hashtag. As a result, they were directed to different information making them feel that information shared in Twitter can be untrustworthy. (BB, journalist)*

One of the participants who had been accessing information from Twitter (outside Nepal) shared their experience as:

*I had been following Twitter updates of some media organizations. I have been living abroad since 2011. I have been following some major media organizations from abroad however mostly it was hard to access all the information from them. They also had been updating very slow [which] increase my impatience. I wanted to know more about my family, my place and whole country. Therefore, I started following every news coming from Nepal irrespective of the sources. (SD)*

The trustworthiness of information on Twitter can be also judged based on where information is being accessed by users. Users outside the disaster zone (outside Nepal or inside Nepal but outside disaster area) were able to access the information. The process of accessing information and verifying information can be viewed from two different aspects. People tend to verify information from the sources that they have been accessing information from in normal

conditions (as SD mentioned above). However, failing to do so, users are exposed to different sources that they would not access in normal conditions. Apart from the URL-shortened option on Twitter, Ma et al., (2009) found that detection of malicious URLs will not be useful as “distribution of features that characterize malicious URLs evolve continually” (p. 687). In addition, users may have to refresh their information-accessing source with new media organizations as this industry continues to evolve in Nepal with online media organizations growing rapidly. According to a list of online news organizations published by Department of Information and Broadcasting, Government of Nepal, there were 429<sup>24</sup> registered online news organizations in Nepal in the fiscal year 2018/19, while the total number of registered ones is 1413. The Press Council Nepal (in its 40<sup>th</sup> annual report) reported that there are 220 media organizations registered as at the end of Nepali year 2071, i.e. April, 2015 (Press Council Nepal, 2015) and according to a media directory report prepared by Department of Information, Government of Nepal, there were 292 online media organizations registered as at April, 2016 (Department of Information, 2016). It is possible that many media organizations may have been considered fake because users (particularly outside Nepal) were not exposed to them before and they were directed to or visited these websites only after their regular sources of information were not available. With the poor circulation of newspapers after the earthquake damage, there was a surge in accessing information through their online news websites (Fitzgerald et al., 2015). In addition, some media organizations may have opened and started their operations after the earthquake when they found that big media organizations failed to cover their local issues making them feel ignored (as stated by BB above). The reports mentioned above also reflect that there was a surge of 72 new online media organizations between 2015 and 2016. The participants outside the Kathmandu valley suggested that they felt ignored by the centralized media organizations in Kathmandu, that their voices remained unheard, i.e. news regarding the earthquake effects outside Kathmandu valley was not equally focused.

*The media concentration lies in Kathmandu valley. Since it was among the hardest hit district, most of the media organizations prefer sharing news on damages in Kathmandu. It was convenient to access information inside Kathmandu too. However, we outsiders felt ignored as our voices and pleas did not find right space in the media organizations. Either they were reported inside main page or section that is often overlooked. (RA)*

---

<sup>24</sup> Online news media registered in Department of Information and Broadcasting accessed on 25 May, 2020. (<http://doinepal.gov.np/uploads/20200326124418.pdf>)

This could be why there was a surge in the number of new media organizations after the earthquake. However, this could not be established by the researcher. The research identified two types of media organization that are involved in sharing untrustworthy information. Firstly, a category of media organizations which share information without verifying it themselves as they lack the expertise to do so, i.e. an unintentional way of sharing misinformation. Jackson (2017) termed this as sharing misinformation which is an unintentional dissemination of false information. This is possible in the context of Nepal too, where some media organizations lack the proper expertise and competent journalists or copy editors to generate trustworthy information (as stated above, the Nepalese media organization lacks a dedicated disaster reporting beat). Secondly, some media organizations were also involved in sharing sensational news headlines without verifying information so that they could generate traffic to their websites. Tandoc Jr, Lim, and Ling (2018) have noted that there are six main definitions of fake news, after reviewing 34 academic papers, as: news satire, news parody, fabrication, manipulation, advertising, and propaganda.

*There are news websites that share sensational headlines, even those rank at the top sites' ranking. This gives adverse pressure on us journalist to follow the suit. It is because online news media has been equally revenue generator for media organization apart from print editions. The hardest part is paper circulations may be accessed by few in the media organization, ranking of the website can be viewed through different websites like Alexa. This makes a competition among media organizations to divert traffic towards their website. (TB, journalist)*

The participants suggested that media organizations and their clickbait journalism strategy should be viewed from different perspectives as many 'big' media organizations were also seen adopting this strategy. However, this was could not be established by the researcher.

## 7.5. Conclusion

This section identified that public trust in media organizations and journalists is different in disaster and non-disaster events, as all Twitter users may not have knowledge of the news making process in media organizations. Apart from that people also have preferred media

organizations to trust information from, as a result some might not trust information from other media organizations apart from their own preferred ones. In addition, a participant (outside Kathmandu valley) suggested that they usually do not trust information from 'big' media organizations as they always feel marginalized as most of their local news and issues are not covered by mainstream media. This also happened on Twitter as most of the reporters from media organizations could not submit photos or videos from outside the Kathmandu valley, as a result news coverage from media organizations was centralized in the first and second day of the Nepal earthquake.

Firstly, the importance of ambient journalism is high in the context of a disaster event, as most of the media organizations relied on information provided from Twitter. Though some preferred verifying information, a few preferred disseminating it but gave credit to the information provider. The collaboration among Twitter users and media organizations was evident in most cases as participants recalled how they participated in the information sharing process, and media organizations worked as gatekeepers and information receivers. All media organizations do not have reporters across Nepal with some covering two or more districts sometimes. There is collaboration between big media organizations and some local media organizations for local issues and vice-versa.

Secondly, people trust journalists more than the media organizations they are affiliated to. The participants suggested that journalists are more reliable as many media organizations may not have editorial freedom, and information shared by them often gets distorted by corporate interests. Media bias was a recurring theme among the participants of this research, however most the examples shared by them were focused on recent events rather than on Nepal earthquake related issues. All participants seemed to be aware of the term 'media bias' or they believed that the media distort information. There were two components that made them decide this: past experience and political beliefs. However, these issues were not noticed in the first few days after the disaster event but became evident after people started feeling some normalcy after the disaster and their information preferences shifted from rescue to recovery. The issue of media bias was thus based on the operation of media organizations in normal conditions rather than during the disaster event.



Thirdly, most participants were not aware of the presence of many online media organizations, thus they felt that the information shared from their Twitter accounts (unknown to them) was untrustworthy and an attempt at clickbait journalism. The research has mentioned (in the clickbait journalism, fake news and Twitter in post-disaster event section) that information can be untrustworthy either intentionally or unintentionally. The participants were reluctant to trust the information accessing process as most of them trust information shared by their trustworthy sources (media organizations and journalists) rather than new sources. However, this might not be always be possible in a disaster event.

Fourthly, not everyone trusts information from big media organizations as some are found to be trusting of lesser known media organizations due to their geographical proximity. The geographical location of the participants played a greater role in this too, as the participants who did not know about local media organizations other than central media organizations (often termed 'big media' organizations by the participants) thought these media organizations were fake. Most of the participants (except journalist participants) suggested that media organizations with lesser known names survived based on clickbait. However, the participants from outside Kathmandu valley, who had been accessing information from their local media organizations, may not like the quality (news coverage, agenda, design of website), but they still trust information shared by them. Eight participants suggested, however, that the small (local) media organizations survive through information shared by big media organizations.

## CHAPTER 8

### 8. Conclusions

#### 8.1. Overview

This chapter explores the summary of findings of this research. The thesis analysed how Twitter users—based on a revised version of the framework designed by Varda et al. (2009, p. 44) as discussed in detail in Chapter 3 of this thesis—trust information in post disaster events with a focus on the Nepal earthquake 2015. The research selected 16 participants from 56 of 117 survey respondents who agreed to participate in in-depth interviews to share how they accessed and verified trustworthy information in a post disaster event without using any computer applications. The research argues that online communication through Twitter (i.e. based on a weak ties environment or momentary connectedness) can guide offline activities in the context of post disaster events because users are connected with each other through impersonal trust. The research explores how impersonal trust among users-to-users, users to media organizations, and users to government are established in different contexts. The research explored how users utilize social capital in their social networks to analyse the trustworthiness of information to guide their post-disaster activities—individually or jointly with other users. Helliwell and Putnam (2004) found that social capital brings positive effects among the users through interaction in their social networks. Lampe et al. (2007) argue that the commitment and ability of users for collective action is affected by the social capital of those users. In this context, the research explored how trust develops in a weak ties network (in an online environment) to understand whether or not tweeted information is trustworthy.

Based on interview responses, the research analysed the public's understanding of the trustworthiness of information in disaster conditions from different perspectives. The research explored three aspects to understand public understanding of trustworthiness of information in a weak-ties environment (Twitter). Firstly, the research identified the sources of trustworthy information in a post disaster environment. Secondly, the research focused on how and why

users identify these sources as trustworthy sources. Thirdly, the research explored how users verify the trustworthiness of tweets and how they reach this conclusion. These three aspects were identified to answer the research questions surrounding trustworthiness of information in post disaster events.

However, the research did not limit the trustworthiness judgement of receivers to source or content of information, but also explored how the trustworthiness of sources evolved over the time. This approach was adopted based on Thomson et al. (2012) who argued that credibility (trustworthiness) of any person or institution can vary over time. The social and psychological factors are aspects to be considered when this trustworthiness varies over time. Based on participants' responses, the research tried to understand the trustworthiness of information not only based on its content or source but also on how the trustworthiness of an institution (either government or private ones like media) varies over time and context. The other concept to affect these social and psychological factors is how platforms like Twitter can be sources of trustworthy information with issues surrounding anonymity (weak ties environment). The research thus explored the basis of persuasive communication in the context of Twitter and weak ties environments, i.e. how users are persuaded that a certain tweet is trustworthy. The research identified that users' perception of information trustworthiness is based on two factors: source and cognitive clues available in the information. This finding is similar to Petty and Cacioppo (1986) who argue that the user can be persuaded by information based on two routes to persuasion. The first route which they define as a 'central route' focuses on how the user is persuaded by information shared by the source in a logical way, i.e. "evaluating the claims of the content of the communication (such as the truthfulness of the information) to determine the credibility of the source" (Thomson et al., 2012, p. 4). The second route, termed a 'peripheral route' "involves turning to other cognitive clues to a source's credibility" (ibid, p. 4). The participants' responses to this research were similar to the peripheral route on the persuasion of information as trustworthy in the context of a weak ties environment.

## 8.2 Key findings

The research identified that source is one of the important components of trustworthiness of information in disaster situations, as shown in the context of Nepal. The interview participants argued that source is an important component of trustworthiness measures, as a result they sometimes decide the trustworthiness of tweets based on source only. In addition, they argued

that the nature of information was another important aspect of trustworthiness judgements. For example, the government is the most trustworthy source of information for disaster warnings and casualties. The research found that though people in disaster situations rely on information provided by official sources—government and its organizations—the level of trustworthiness varies over time when people are able to access information from other sources too. This signifies that government sources are the most trustworthy sources when people discuss disaster information related to casualties and warnings rather than relief and rescue operations. The level of trustworthiness of information is also found to differ between one government organization and another, which is also directly related to trust in organizations, i.e. if the trust in an organization is higher, the trustworthiness of information provided by that organization is also higher and vice versa. Paudel (2016) found that security agencies (Nepal Police, Nepal Army and Armed Police Force) were the most trustworthy government bodies after the Nepal earthquake. This research also found security agencies were considered to be trustworthy sources of information in the Nepal earthquake event, mostly because security agencies were first responders to disaster events. As a result, people believed that they had a better understanding of realities on the ground than other government organizations. In addition, participants often referred to Nepal Police as a trustworthy source of information in the Nepal earthquake, when discussing government information processes. Such factors as providing regular updates, engaging in two-way communication and responding to complaints filed by Twitter users (Subba & Bui, 2017) were among the reasons that made Nepal Police stand out from other security agencies. The research also found that some people were hesitant to write in the English language because of their different levels of English proficiency, however, this was not noted as a major factor in the trustworthiness of tweets. Therefore, demographic factors—age, academic qualifications and profession—were not determining factors of the trustworthiness of tweets of Twitter users (receivers). Interestingly, most of the participants were found to have a good knowledge of how media and government organizations perform after disaster events, which affected how they trusted information from them in the context of ambient journalism. In addition, some participants were sometimes confused about their understanding of ‘government’ as they referred to government as being the prime minister and ministers, and viewed security organizations performing rescue and relief operations as different entities. The student participants of this interview were found to have a better understanding on the use of social media (like use of proper hashtags, third party access of Twitter like Tweetbot, Tweetdeck) and its use in disaster events. However, there is a strong need for the understanding of disaster resilience in the context of Nepal, as it is among the most disaster-prone countries in the world. The participants also emphasized the need for a two-way

communication between government and media organizations with the general public for better understanding of disaster impacts. They argued that timely and two-way communication can clear untrustworthy information in post disaster events.

The research explored the public's understanding of the trustworthiness of information in a post disaster situation by answering following research questions:

*RQ1. How are government and government organizational sources considered to be trustworthy sources of information during disaster events?*

This research question particularly focused on whether Twitter users consider information shared by government and its organizations as trustworthy or not in the context of disaster events and if the level of trustworthiness differs in a non-disaster context. Chapter four addressed this research question which found that Twitter users highly trust information shared by government and its organizations in post disaster events, particularly information regarding disaster casualties and warnings. This research question was answered based on two findings: timing appropriateness and information. Firstly, appropriate timing was an important factor that helped Twitter users to understand the trustworthiness of information from government and its organizations. The research found that people trusted information from government and its organizations in the initial days post disaster, however this trust gradually decreased when people could verify this information from alternative sources like media organizations, journalists or through other Twitter users. The research also found that even media organizations and journalists relied on information from government and its organizations to understand the impact of the disaster after the Nepal earthquake. Simply put, most public and media organizations relied on the National Seismological Centre<sup>25</sup>, a Nepal government body, as the source of information to understand the magnitude of the earthquake and aftershocks. Secondly, government and its organizations were important sources of trustworthy information to access casualty figures, magnitude and warning disaster information. Despite differences in the disaster management processes—rescue and relief operations—the public relied on government and its organizations in the initial days. This was particularly because public

---

<sup>25</sup> National Seismological Centre <https://www.seismonepal.gov.np/>

trusted in the government and in its agencies' expertise and capabilities in disaster warning and casualty information.

The research found that perceptions of the government and its organizations as sources of trustworthy information were also influenced by political beliefs and the government's past activities. Contrary to Paudel (2016) who stated that the past performance of government and its organizations do not have a significant effect on public trust particularly in disaster events, this research found that the past government performance was a determining factor in the trusting of government information. Though people trusted information shared by government in the initial days, however this acceptance gradually shifted as time progressed and people were able to access information from sources other than the government. In addition, the public's trust in information from government can also be viewed based in terms of their different organizations. People suggested that they trust information from security forces (Nepal Police, Nepal Army and Armed Police Force) more than from ministers, as they believe the former have understood the on-the-ground realities of the disaster event as they are first responders. As stated above too, though Nepal Police was a trusted source of information in the Nepal earthquake, a survey conducted by Himal Media found the Nepal Army to be the most trustworthy government organization after the earthquake (Nepali Times, 2015a). The participants of this research believed that Nepal Police was a trustworthy source of information rather than the Nepal Army, based on their involvement in Twitter communication after the earthquake. Despite government being a trustworthy source of information on disaster warning and casualties, people did not trust information on government disaster relief and rescue activities. This was particularly related to their political beliefs or past experiences with the government, or the failure of the government to immediately respond after the earthquake. Though landslides, road conditions (based on geography of the country) or obstruction from building rubble were blamed for poor relief operations (based on comment made by a past government officer of this research), participants suggested that many relief operations were also affected by bureaucratic bottlenecks. Paul et al. (2017) also found that bureaucratic processes, the country's geography and lack of infrastructure for responding to disasters (like machinery equipment to clear building rubbles and road obstruction), were among other factors hindering the response. This is why some participants believed that the government information on relief and rescue operations could not be trusted.

Yet, this thesis concluded that the government information should be viewed based on the content of information, i.e. what is being discussed. As stated above too, the trustworthiness of government information on casualties and warnings was high, while people did not trust information on rescue and relief operations. Every participant had their own perception about government information and it is hard to establish a common argument as time progresses after the disaster event. Paul (2007) and Versluis (2014) also found that corruption, unequal access to relief materials, lack of coordination, and the existence of strong elite-capture distribution channels have impacted on disaster-affected people's ability to receive relief materials. The perception of the trustworthiness of government information was thus affected by time and the experience of participants after the Nepal earthquake event. It should be noted that media organizations and Twitter updates also helped to change people's perception apart from their own experience. It can thus be concluded that a user's social networks and the social capital possessed by those networks affect how they make judgements about trustworthiness of government information. In addition, the receiver's personal experience and political ideology were also determining factors in trusting the government information.

*RQ2: How did participants retrospectively consider their sharing of trustworthy information on Twitter in post disaster events?*

This research question was explored in Chapter 5 to understand if Twitter users only retweet trustworthy information on their social networks and if the information shared by users should be viewed as endorsing it. This chapter tries to answer the research question based on the fact that the number of retweets and the person who retweeted information were identified as indicators of the trustworthiness of information. The research focused on retweeting behaviour in disaster and non-disaster conditions to understand if there are any significant changes to Twitter user's retweeting behaviour. Abdullah et al. (2017) found that people retweet "from people they trust, information with proof (picture or video), and information which is helpful such as early information for safety status checks" (p. 437). The content of a tweet is an important factor that makes users retweet further on their network. However, this research found two reasons people in Nepal retweet post disaster information on their networks. Firstly, the user trusted the information and wanted to share that with their network. The person who retweets has verified information as trustworthy before retweeting it. Secondly, the user retweets the information with a view that someone on their network will undergo a verification process and help them to trust the information. This can be linked directly to visibility where

people want the information to be visible to a wide perspective and they collaborate to verify it. Abdullah et al. (2017) found that Twitter users retweet if they want to share information or find information interesting, or based on trust in the original source who tweeted the information first. Shi et al., (2017) identified the five components of why people retweet as: “information source (e.g. source trustworthiness), information richness of stimuli, information receiver’s topical preference, relationship between the source and the receiver (e.g. social tie strength) and contextual factors (e.g. bandwagon effect)” (p. 844). However, in addition to these five components, this research also identified that some Twitter users retweet information on their network with a belief that it can be verified by someone in the network. The interview participants suggested that there is always at least one or more users on their network who can verify trustworthiness of information, thus retweeting is an important aspect.

Yet, in addition to previous findings, this research also found that retweeting was not only sharing information but also a method of verifying information as trustworthy or not by sharing on the network. The user has trust in his or her network and believes that someone in the network will help to verify information as trustworthy. The research also found that retweeting is not equivalent to endorsing information as trustworthy, as stated in Chapter 5 (retweeting behaviour). Some Twitter users retweet information without judging it as trustworthy, as this research also found that the importance of content was another reason people want to retweet information. Pezzoni et. al., (2013) also highlighted content relevance for retweeting in disaster events. In addition, some Twitter users of this research preferred to retweet based on the source of information, i.e. the trust in the source by the retweeter (person who retweets) makes information trustworthy as well. The retweeting behaviour in disaster events was not found to be different to non-disaster events as the motivations behind retweeting were same, i.e. source credibility, source expertise, value of tweet, and the relationship between source and receiver. However, the research found that retweeting helps users to strengthen and expand the social capital of Twitter users by connecting through different networks as a bridge (through retweets). The users display their network through retweeting to help them further build their social capital.



*RQ3: What level of trust do users have in information from fake Twitter accounts in a post disaster event?*

Chapter 6 answered this research question by exploring how Twitter users perceive an account as fake or not. The chapter was divided into two sections: how people judge an account as fake, and whether information from a fake account is necessarily considered untrustworthy. Firstly, the chapter explored features that they perceive as indicating fake accounts. It was found that it is hard to understand an account as fake or not based on the features mentioned by Twitter participants, as fake accounts are designed in such a way that they can deceive others. In addition, it was hard to identify common features that can define an account as fake as each participant (receivers) had their own criteria. Secondly, this chapter explored whether or not information shared from a fake account (after people identify it as fake) is always considered as untrustworthy. The second section found that people considered some accounts as fake with the aim of subverting a public debate based on trustworthy information. The chapter also found that public debate on the free expression of ideas and arguments is sometime silenced by alleging an account as fake. This further complicated the verification process on trustworthiness of information as people are highly unlikely to trust information from fake accounts. The proponents argue that it is hard to establish trustworthiness of information from an account whose identity cannot be established and this unidentified account has no responsibility towards receivers. Therefore, judgement of trustworthiness of information merely lies in the receiver's confidence in the unidentified source. However, the participants noted that some people prefer to hide their identity so that they can avoid consequences of sharing trustworthy information. This argument was particularly focused on non-disaster situations but people in disaster situations find it difficult to establish an account and information as trustworthy. The research found that trustworthiness of source (Twitter account) was an important aspect of trusting information particularly in disaster events. Though people might act differently to what they usually say in non-disaster events, people prefer to trust information from trustworthy sources in disaster events. This is why many participants of the research suggested that they usually trust information from their network and are extremely cautious when sharing information on their network. However, it was not always true in post disaster events, where the researcher found that uncertainty and fear affected people's information judgement capacity, and as a result information was shared on the network. Meanwhile, the network that possessed more social capital (based on expertise and experience of the network users) and judgement criteria for users of the network was more likely to be

seen as trustworthy, whereas many other Twitter accounts were perceived as untrustworthy and so was the information from those sources.

The trustworthiness of sources was an important component of measuring trustworthiness of information. The research also found that users do not trust information shared by someone who has not identified themselves, however, each individual has their own way of perceiving an account as trustworthy or not. In addition, users tend to trust the information shared by a person on their network even if the source of information cannot be established. This is because the receivers believe the person who shared information on their network has undergone the process of verification, which confirms that the trust in the person who shared information is more important than trust in the source itself. Thus, the strength of a user's network is an important aspect to measure trustworthiness of information from an unidentified source (fake account).

Moreover, the research focuses on how people's perception of information as trustworthy or not depends on context as well. People who did not trust information from fake accounts (untrustworthy accounts) in normal conditions were found to be trusting information in disaster situations. For example, many Twitter users after the Nepal earthquake believed that there would be a major aftershock anytime based on the fact that aftershocks after a major earthquake are common. However, this was circulated in a manner that created panic among users. This condition of anxiety and fear was the main reason that people trusted information which they would not trust in normal conditions. This was reflected in some tweets (accessed by the researcher from Imran et al. (2016) research<sup>26</sup>) that participants believed were based on anxiety and fear of the uncertain environment. The chapter concluded that strength of networks and social capital possessed by networks is an important aspect of perceiving a user as trustworthy or not, and the perception of information shared by that source. The research further found that the tweets were viewed as untrustworthy if they could not be verified by receiver's networks. This uncertain situation thus resulted in low trust among the users outside their social networks.

---

<sup>26</sup> The researcher had approached Muhammad Imran, one of the researchers of the paper, via email who suggested that Nepal Earthquake tweets (in English only) were available in the website: <https://crisisnlp.qcri.org/lrec2016/lrec2016.html#>

*RQ4: What are the different levels of trust in post disaster tweets from different media organizations and journalists?*

This research question was addressed in Chapter 7, exploring whether Twitter accounts of media organizations and journalists have different levels of trust in post disaster events. The media organizations in this chapter comprised print, radio, television and online, and journalists referred to people (photojournalists or reporters) affiliated with these media organizations. The importance of media organizations and journalists is high, particularly in disaster events when even the government and its organizations are affected by the disaster. The chapter addressed whether tweets from media organizations and journalists were a source of trustworthy information in the context of disasters and ambient journalism, and do they have different levels of trust. The chapter also found that many media organizations and journalists in Nepal were found collaborating with Twitter users to share information. Basically this was due to two factors: firstly all media organizations do not have their reporters in all districts of the country, with one reporter sometimes covering one to three districts to report news. Secondly, the relevance and importance of some information are bound by time which loses its relevance as the time progresses. This is why Nepalese media organizations and journalists sometime refer to Twitter users while sharing information when they cannot access information themselves. The participants of this research who were also working journalists, clarified that they do provide credit or sources of information in their tweets, however it was found that (based on responses of non-journalist participants) people who receive information may or may not understand this. As a result, receivers perceived information as trustworthy based on the media organizations or journalists who shared the information rather than on the source itself. People tend to believe that media organizations and journalists undergo a gatekeeping process before presenting information to receivers.

People consider media organizations as trustworthy sources of information both in disaster and non-disaster situations. However, the level of trustworthiness of information depends on the source (media organization). The trustworthiness of information also affects how receivers perceive information. It is therefore important to understand receivers' characteristics (age, academic qualifications and digital literacy) when information from media organizations is judged. This is because many media organizations (in Nepal as well) endorse clickbait strategy to increase traffic to their news website, which has affected public trust in information from online media organizations. The competition among media organizations to deliver

information to the public easily, and to delete or rectify untrustworthy information (after they have found it so later on) when some users might not notice they have done this, has affected the trustworthiness of digital journalism in Nepal, and the information shared by online media organizations. The participants thus suggested that they trust information from media organizations and journalists who work for print media rather than online only. This finding is similar to that of Acharya (2014) who found that public trust in print media is higher than trust in online media. However, participants suggested that if the information is shared by a journalist who has a long journalism history (particularly in print or television or radio) it was found to be trustworthy despite it being on digital media. Therefore, the trustworthiness of information in media organizations and of journalists was based on trust gathered by their past media performances. The research found that people have different levels of trust in media organizations and journalists. The big media organizations were found to be more trustworthy sources of information as they were well equipped in manpower and expertise, which resulted in less dependency outside their reporters for information particularly in disaster situations. The research also noted that journalists and their affiliated media organizations are important factors to judge trustworthiness of information. Many participants outside the disaster zone, particularly Nepalese living abroad during the Nepal earthquake event, wanted to rely on information from sources (media organizations and journalists) that they trusted when they were in Nepal. The journalists who had a long history of journalism in Nepal had high levels of trust from the receivers regarding disaster information.

## 8.2. Contributions of research

This research contributes to a better understanding of the trustworthiness of information in post disaster events, through Twitter. The research is based on an in-depth analysis of interviews with 16 Twitter users from four different categories selected after undergoing a survey. It emphasizes how users trust information, in uncertain environments like disasters, from weak ties networks. Based on social capital theory and social network theory, this research focuses on social network analysis to understand how information flows in the network. Though there are many disaster research studies based on social network analysis, this research has adopted social network analysis for its “ability to address old questions in new ways” (Varda et al., 2009, p. 23). The social media research in disaster research has been an evolving field as many computer applications have been adopted to understand trustworthiness of information. However, this research is based on in-depth interviews which helped to understand how people

trust information on Twitter and how their actions differ from their words in disaster events. The responses of all participants were cross checked through advanced search options on Twitter to understand if their responses reflected their past actions in the Nepal earthquake of 2015 (based on one week time frame, i.e. April 25 to 30). The thesis found that the trustworthiness of tweets (information) in post disaster events relies upon how receivers perceive it. It should be noted that factors such as political ideology, social network and social capital possessed by the receivers affect the trustworthiness judgement of the tweets. However, political ideology and beliefs play a decisive role in non-disaster events or in disaster events when receivers have started accessing and verifying information from other sources (not relying on just one single source). The models and theories adopted by this research provide a basis for a better understanding of disaster events elsewhere too. This thesis adds theoretical and practical knowledge on social networks and social capital understandings in the context of disaster events.

The thesis complements a wide range of previous research on Twitter communication patterns in disaster events, i.e. networked communication patterns (Bruns et al., 2012; Mondal et al., 2018; Potts et al., 2011), and research on the role of Twitter in the Nepal earthquake (Kumar et al., 2020; Radianti et al., 2016; Shepard et al., 2016). However, this research is focused on in-depth interviews and the interpretation of participants' responses through limited Twitter data, based on the fact that receivers of tweets may not have access to computer applications to determine their trustworthiness in post disaster scenarios. Though computer applications are useful to analyse large data sets, they work based on attributes assigned by the programmer. This thesis emphasized the trustworthiness of information based on receivers' perspectives, and in-depth interviews were adopted to understand how users (receivers) analysed information in disaster events. There is a high chance that text can be misinterpreted, as all words can be used in different contexts (based on culture and language preferences) and sometimes the words do not reflect a literal meaning rather a contextual meaning. The researcher strongly believes that a good understanding of socio-psychological dimensions of users and proper interpretation of data based on context will help to understand how receivers interpret trustworthiness of information in disaster events. This is also an attempt to understand whether information can be trustworthy based on the relationship between sender (source) and receiver. However, it is not always possible to establish a relationship between sender and receiver in a weak ties environment.

The thesis has implications for the understanding of tweeting and retweeting behaviour of Nepalese Twitter users, journalists, media and government organizations. The research presents itself as a background study, providing material for those researchers who want to research on Twitter communication, with special focus on the Nepal earthquake, i.e. Twitter communication in the context of a developing country. This research is also expected to provide a guideline to the Nepal government and its organizations for understanding receivers' perspectives of information seeking and verifying processes. This may help the Nepalese government to review its social media strategy in both disaster and non-disaster environments.

The researcher believes that he has addressed four aspects of disaster communication on the Twitter platform. Firstly, it will help the government to understand how opinions are formed on social media platforms and how some opinions are quickly spread as untrustworthy information through social media platforms like Twitter, particularly in disaster events. This will help the government to analyse the types of untrustworthy information that may appear after a disaster and what actions need to be taken immediately after a disaster. Secondly, the research contributes to the understanding of the functioning of media organizations in big disaster events like the Nepal earthquake. This research contributes to understanding the collaboration of media organizations and Twitter users in the news making process in the light of ambient journalism. Thirdly, it helps media organizations to understand what news is to be prioritized in post disaster events and how to help in spreading positive messages not just regular updates on the disaster. This research emphasized this as an important aspect as people are more vulnerable to uncertainty due to fear and anxiety, and as a result they may also trust information from sources outside their network. In this context, the thesis contributes to an understanding of how media organizations and journalists can contribute in post disaster events by sharing trustworthy information and playing an active gatekeeper role. Fourthly, the research contributes to the awareness of disaster communication on Twitter by analysing how the public perceive tweets as trustworthy or not, and how their information judgement processes are affected in post disaster events. In summary, this research particularly contributes to understanding different aspects of receivers' information verification processes in post disaster events.

The research was based on the concept of impersonal trust and how this impacts social networks and the social capital possessed by these networks. The thesis reinforces the understanding of impersonal trust, particularly in disaster events, as there are different aspects

to the trust building process. Moreover, the research reinforces the understanding of impersonal trust in online environments during disaster events, based on Mehta et al. (2017) research, however in the context of developing countries like Nepal. Though Mehta et al. (2017) research contributes to disaster management organizations, this research focuses on receivers' perspectives to understand how trust among users-to-users, users to media organizations, and users to government builds and affects the trustworthy judgement of tweets. The research also contributes to the understanding of trust in the context of Twitter users in Nepal, emphasizing how media organizations and government organizations functioned in past events despite effective frameworks for disaster management. The researcher believes that the research will contribute to identifying the need for a regular disaster reporting beat in media organizations in Nepal, which will further contribute to Nepal's disaster resilience strategies, as the disaster recovery process is a long process and it may take long time for people to recover.

### 8.3. Limitations and future research opportunities

All research has its own limitations and shortcomings. The researcher does not expect this research to be different in this regard. The thesis is based on interviews with 16 Twitter participants in the context of disasters. There are basically three limitations identified in this approach which are described below.

Firstly, the interview responses were based on memory of past disaster events of Twitter users which they often correlate with the present context. It is obvious that people tend to forget past events and it is hard to recall how they performed, particularly in disaster events when people might face anxiety, fear and uncertainty. This was also found while analysing the tweets of each interview participant through advanced Twitter searches. The participants were answering research questions in a comfortable environment, trying to recall from past events how they would perform in a disaster context. The future research can incorporate qualitative and quantitative research methods to better understand the mode of communication and trustworthy measure of tweets, where a separate analysis of both of these contexts can be made.

Secondly, responses of these Twitter users were cross checked with available tweets on their Twitter. The tweets of the participants were accessed through advanced Twitter searches and

data downloaded from the Crisis Natural Language Processing website<sup>27</sup>. There are limitations when accessing Twitter data. The access to Twitter data also depends on which API (Application Programming Interface) was used to download Twitter data, as some users and tweets may not be available (González-Bailón et al., 2014) in this process. As a result, the future research can focus on other APIs which might allow access to more data and help analyse communication or connection between participants' responses and data. A large range of data, often known as firehose data, can also be accessed through commercial data providers, which is ideal for academic research, however this approach is costly. The financial constraints can thus limit the data access between those who can afford and those who cannot (boyd & Crawford, 2012). In addition, many tweets which were deleted by the participants were not accessible in both data sets mentioned above. Therefore, a different method to access and interpret information can be used with the help of computer applications that analyse data in an efficient method.

Thirdly, the research is based on responses of 16 Twitter participants selected from 56 positive responses from 117 survey participants. Though there is no definite rule to select a sample size (Patton, 2002) for qualitative research, Miles et al., (2014) argue that a small number of samples can provide detailed and in-depth information. The responses provided by Twitter users were not only rich in data but also reached a saturation point as the researcher failed to achieve any more new information from the participants. However, this does not undermine the fact that a different group of samples (bases on cultural aspects) could provide different responses which may not reflect these research findings. Therefore, the samples of this research were purposive rather than random ones. The future researchers can thus include cross-cultural responses to better understand the cultural impact on sources and the measurement perspective of trustworthiness of information in disaster scenarios. This is because people with the same culture may show common behavioural patterns and community relationships (Rokeach, 1979). In addition, the participants who were interviewed have at least higher education (Intermediate or 10+2) in the context of Nepal, and were aged between 22 and 62 years with the majority between 25 to 38 years old. Therefore, the research may have different results if was applied to samples with different qualification or age distributions. In addition, most the participants of the interview have regular access to the Internet (and thus Twitter), however, this might be different in the context of Nepalese people where digital affordability and the digital divide vary significantly based on geographical location, age and academic

---

<sup>27</sup> <https://crisisnlp.qcri.org/lrec2016/lrec2016.html#>



qualifications (as also stated above). The researcher used snowball sampling to approach participants of the survey, which were further shortlisted to include in interviews. If the research used a different approach it may have accessed a different representative sample. In addition, some of the participants were quite active on Twitter (participated in tweets, replies and retweets) while others were passive readers who preferred to read and keep themselves updated rather than to participate, termed as ‘Twitter voyeurism’ by Kaplan and Haenlein (2011). The result might not be the same if it observed participants from different groups of people with various Twitter using habits.

Despite these limitations, the research focused on how tweets are judged as trustworthy from receivers’ perspectives based on source and content. The future research can focus on including interviews with participants and analysing their Twitter behaviour through tweets based on recent disaster events. This can help the researcher in two ways: by obtaining access to large amounts of data, and participants responses could be based on fresh memories. The Nepal earthquake was observed on 25 April, 2015, and interviews for this research were carried out from October, 2019 to January, 2020. Both memories and data (tweets) may have been erased, which made it difficult to understand how people acted differently in the past event. In addition, Twitter was not yet popular as a social media platform in Nepal (Alexa, n.d.), therefore it is hard to understand how people would act today where methods of accessing information have changed drastically with the advancement of technology. Nevertheless, this research expects to provide background or a base for future research on Twitter information in disaster events.

# Appendices

## Appendix A: Consent form for participating in survey



Media and Communications Department

School of Language, Social and Political Sciences

Email: bipulendra.adhikari@pg.canterbury.ac.nz

HEC Ref: HEC 2018/77

### **"Trustworthiness of tweets in post-disaster communication in context of Nepal"**

Information sheet for participating in survey

Namaste

My name is Bipulendra Adhikari, a student at the University of Canterbury, New Zealand. I am currently researching on 'Trustworthiness of tweets in post-disaster communication in the context of Nepal'. I am particularly interested in understanding how people trust tweets in post-disaster events like earthquakes and share these information in their social network.

The survey takes approximately 15-20 minutes to complete. If you have already completed this survey please do not complete it again. But please feel free to forward this survey link to your Twitter friends and families. I would very much appreciate their participation and your help in gathering more participants.

Participation is voluntary and you have the right to withdraw at any stage without penalty. You may ask for your raw data to be returned to you or destroyed at any point. If you withdraw, I will remove information relating to you. However, once analysis of raw data starts on October, 2019, it will become increasingly difficult to remove the influence of your data on the results.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public without your prior consent. To ensure anonymity and confidentiality, the information that you enter will be directly imported into the Qualtrics survey tool, kept strictly confidential and will not be traceable to you. The data will only be accessed by the researcher and his supervisors. A thesis is a public document and will be available through the UC Library.

If you find taking part in the research distressing there are people you can talk to. Transcultural Psychosocial Organization Nepal (TPO Nepal) toll free number 1660 010 2005 (from Nepal Telecom network only) can offer practical support, information or advice on psychosocial issues, including counselling.

The project is being carried out as a requirement of PhD degree by Bipulendra Adhikari under the supervision of Dr Donald Matheson (donald.matheson@canterbury.ac.nz) and Dr Zita Joyce (zita.joyce@canterbury.ac.nz). They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, please click 'I agree' at the end of this page. Please use your Twitter name/ID (eg. @bipul100 is my Twitter name/ID) to proceed.

Thank you for your willingness to participate in this study.

**Bipulendra Adhikari**

**PhD Candidate**

**Media and Communication Department**

**School of Language, Social and Political Sciences**

**University of Canterbury | Te Whare Wānanga o Waitaha**

**Private Bag 4800**

**Christchurch 8140**

**New Zealand**

Do you agree to participate in survey?

- I agree.
- I don't agree.

## Appendix B: Consent form to participate in interview

Media and Communication Department  
School of Language, Social and Political Sciences  
Email: bipulendra.adhikari@pg.canterbury.ac.nz  
HEC Ref: HEC 2018/77



### **"Trustworthiness of tweets in post-disaster communication in context of Nepal"**

Information sheet for participating in interview

Namaste

Thank you for accepting to participate in interview for my research 'Trustworthiness of tweets in post-disaster communication in the context of Nepal'. As stated in earlier survey consent form I am particularly interested in understanding how people trust tweets in post-disaster events like earthquakes and share these information in their social network.

This interview takes approximately 40-45 minutes to complete. This interview will be recorded and stored in the researcher's computer provided by the university.

Participation is voluntary and you have the right to withdraw at any stage without penalty. You may ask for your interview recording to be returned to you or destroyed at any point. If you withdraw, I will remove information relating to you. However, once analysis of raw data starts on October, 2019, it will become increasingly difficult to remove the influence of your data on the results.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public without your prior consent. Our conversation will be recorded and kept strictly confidential in university computer provided to me as a PhD student. A thesis is a public document and will be available through the UC Library.

If you find taking part in the research distressing there are people you can talk to. Transcultural Psychosocial Organization Nepal (TPO Nepal) toll free number 1660 010 2005 (from Nepal Telecom network only) can offer practical support, information or advice on psychosocial issues, including counselling.

The project is being carried out as a requirement of PhD degree by Bipulendra Adhikari under the supervision of Dr Donald Matheson (donald.matheson@canterbury.ac.nz) and Dr Zita Joyce (zita.joyce@canterbury.ac.nz). They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, please click 'I agree' at the end of this page and fill the details so that I can contact you.

Thank you for your willingness to participate in this study.

**Bipulendra Adhikari**  
**PhD Candidate**  
**Media and Communication Department**  
**School of Language, Social and Political Sciences**  
**University of Canterbury | Te Whare Wānanga o Waitaha**  
**Private Bag 4800**  
**Christchurch 8140**  
**New Zealand**

Do you agree to participate in interview?

- I agree.
- I don't agree.

If you agree,  
Details to complete by the participants:

Name:

Age:

Email id:

Skype id (preferred):

Facebook (alternative):

If you are not available in Skype or Facebook what is the best method to have this interview conversation:

Preferred time and day of the interview:



**HUMAN ETHICS COMMITTEE**

Secretary, Rebecca Robinson  
Telephone: +64 03 369 4588, Extn 94588  
Email: [human-ethics@canterbury.ac.nz](mailto:human-ethics@canterbury.ac.nz)

Ref: HEC 2018/77 Amendment 1

2 September 2019

Bipulendra Adhikari  
Media and Communication  
UNIVERSITY OF CANTERBURY

Dear Bipulendra

Thank you for your request for an amendment to your research proposal "Trustworthiness of Disaster Communication in Twitter in Nepal and New Zealand" as outlined in your email dated 22<sup>nd</sup> August 2019.

I am pleased to advise that this request has been considered and approved by the Human Ethics Committee.

Yours sincerely

A handwritten signature in black ink, appearing to be 'D. Sutherland', written in a cursive style.

Dr Dean Sutherland  
*Chair, Human Ethics Committee*

## Appendix D: Online survey questions delivered through Qualtrics

1. What is your Twitter name?

.....

2. What is your age?

- a. 20-24
- b. 25-29
- c. 30-34
- d. 35-39
- e. 40-44
- f. 45-49
- g. 50+

3. What is your highest educational qualification?

- a. School level
- b. High school (Intermediate or 10+2)
- c. Bachelors
- d. Masters
- e. PhD

4. What is your gender?

- a. Male
- b. Female
- c. Other

5. Where were you during Nepal earthquake situation?

- a. Outside Nepal territory
- b. Outside Kathmandu valley (not in disaster affected districts)
- c. Outside Kathmandu valley (inside disaster affected districts)
- d. Inside Kathmandu valley

6. How trustworthy are information found in Twitter in post disaster event? (The level of trustworthiness increases from left to right i.e. 1 is highly untrustworthy while 5 is highly trustworthy)

How trustworthy are information found in Twitter in post disaster events? (The level of trustworthiness increases from left to right i.e. 1 is highly untrustworthy while 5 is highly trustworthy)

0                      1                      2                      3                      4                      5

Please slide to your preferred choice

7. Please rate the trustworthiness of information provided by following in post disaster events in Twitter? (Highly Trustworthy 5, Trustworthy 4, Neutral 3, Untrustworthy 2 and Highly Untrustworthy 1)

Please rate the trustworthiness of information provided by following in post disaster events in Twitter? (Highly Trustworthy 5, Trustworthy 4, Neutral 3, Untrustworthy 2 and Highly Untrustworthy 1)

	5	4	3	2	1
User with verified account	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your Friends/Families	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government bodies (Nepal Police, National Emergency Operation Centre, Hello Sarkar)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
User with large number of followers	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tweet with large number of retweets	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tweet with photo, video or URL of news websites	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. How likely are you to retweet an information that you think are trustworthy from the following sources in post disaster events? (Highly Likely 5, Likely 4, Neutral 3, Unlikely 2 and Highly Unlikely 1)

How likely are you to retweet an information that you think are trustworthy from the following sources in post-disaster events? (Highly Likely 5, Likely 4, Neutral 3, Unlikely 2 and Highly Unlikely 1)

	5	4	3	2	1
User with verified account	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friends/Families	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Government bodies (Nepal Police, National Emergency Operation Centre, Hello Sarkar)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
User with large number of followers	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tweet with large number of retweets	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tweet with photo, video or URL of news websites	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



9. How do you trust a tweet in post disaster event?

How do you trust a tweet in post disaster event?

- If the tweet is from user with verified account
- If the tweet is from friends/families
- If the tweet is from government bodies (Nepal Police, National Emergency Operation Center, Hello Sarkar)
- If the tweet is from user with large number of followers
- If the tweet has large number of retweets
- If the tweet has photo/video or URL of news websites

10. Do you retweet a tweet only after trusting it in post disaster event?

Do you retweet a tweet only after trusting it in post disaster event?

- If the tweet is from user with verified account
- If the tweet is from friends/families
- If the tweet is from government bodies (Nepal Police, National Emergency Operation Center, Hello Sarkar)
- If the tweet has large number of retweets
- If the tweet is from user with large number of followers
- If the tweet has photo/video or URL of news websites

## Appendix E: Structured In-depth Interview Questions

1. Do you have experience of natural disaster situation?
2. Have you used Twitter during this disaster situation? Please share your experience.
3. Who do you follow for the trustworthy information in Twitter and does this differ in disaster events?
4. If you have to verify information from a person in Twitter what features do you consider.
5. How do you verify that (refer question 4) information accessed through Twitter as trustworthy or not?
6. Do you think the information shared by the government agencies are trustworthy during disaster event?
7. Do you retweet information after verifying its trustworthiness?
8. Do you trust the tweet from a person you have never meet in life but have been following and communicating in Twitter?

Appendix F: List of past earthquakes in Nepal

<b>Years (in AD)</b>	<b>Epicentre</b>	<b>Magnitude</b>	<b>Deaths</b>	<b>Houses destroyed</b>
1255	-	-	One third of population of Kathmandu valley, including King Abhaya Malla, were killed	A lot of damage to residential buildings and temples
1260	-	-	Many people killed, famine after the earthquake	A lot of damage to residential buildings and temples
1408	-	-	Many people died	A lot damage to residential buildings and temples, fissures developed in the ground
1681	-	-	Many people died	A lot of damage to residential buildings
1767	-	-	No record of death	No records of damage
1810	-	-	Some people died particularly in Bhaktapur	A lot of damage to residential buildings and temples
1823	-	-	No record of death	Some damage to houses
1833	-	7.7 (M <sub>L</sub> )	414 people died in the vicinity of the Kathmandu valley	About 4,000 houses destroyed in Kathmandu, Bhaktapur and Patan valley and

				adjoining Banepa, and a total of 18,000 buildings damaged in the whole country
1834	-	-	No good record available	Many buildings collapsed
1837	-	-	No good record available	No damage in Nepal recorded but greatly affected Patna and other parts of Bihar, India
1869	-	-	No good record available	No good record available
1897	-	-	No good record available	No good record available
1917 (1918?)	-	-	No good record available	No good record available
1934	East Nepal	8.1 (M <sub>w</sub> )	8,519 people died, of which 4,296 died in Kathmandu alone	Over 200,000 buildings and temples etc. damaged, of which nearly 81,000 completely destroyed in the country. About 55,000 buildings affected in Kathmandu Valley (12,397 completely destroyed)
1936	Annapurna	7.0 (M <sub>L</sub> )	No good record available	No good record available

1954	Kaski	6.4 (M <sub>L</sub> )	No good record available	No good record available
1965	Taplejung	6.1 (M <sub>L</sub> )	No good record available	No good record available
1966	Bajhang	6.0 (M <sub>L</sub> )	24	6,544 houses damaged (1,300 collapsed)
1980	Chainpur	6.5 (M <sub>L</sub> )	103	25,086 buildings damaged (12,817 completely destroyed)
1988	Udayapur	6.5 (M <sub>L</sub> )	721	66,382 buildings damaged
2011	Sikkim/Nepal border	6.9 (M <sub>L</sub> )	6 died and 30 injured (2 died in Kathmandu valley alone)	14,544 house damaged (6,435 completely destroyed)

*(M<sub>L</sub> is Richter Magnitude, M<sub>W</sub> is Moment magnitude)*

## References

- Abdullah, N. A., Nishioka, D., Tanaka, Y., & Murayama, Y. (2017). Why I retweet? Exploring user's perspective on decision-making of information spreading during disasters. *Paper presented at the Proceedings of the 50th Hawaii International Conference on System Sciences*, 432-441. <https://doi.org/10.24251/HICSS.2017.053>
- Abu-Taieh, E. (2014). Gender digital divide and social media (Facebook): Female using social media and the effect of literacy rate and GDP (PPP) and country location. In *International journal of social science & interdisciplinary research*. [https://www.researchgate.net/publication/263203200\\_GENDER\\_DIGITAL\\_DIVIDE\\_AND\\_SOCIAL\\_MEDIA\\_FACEBOOK\\_FEMALE\\_USING\\_SOCIAL\\_MEDIA\\_AND\\_THE\\_EFFECT\\_OF\\_LITERACY\\_RATE\\_AND\\_GDP\\_PPP\\_AND\\_COUNTRY\\_LOCATION](https://www.researchgate.net/publication/263203200_GENDER_DIGITAL_DIVIDE_AND_SOCIAL_MEDIA_FACEBOOK_FEMALE_USING_SOCIAL_MEDIA_AND_THE_EFFECT_OF_LITERACY_RATE_AND_GDP_PPP_AND_COUNTRY_LOCATION)
- Acar, A., & Muraki, Y. (2011). Twitter for crisis communication: Lessons learned from Japan's tsunami disaster. In *International journal of web based communities*, 7(3), 392-402. <https://doi.org/10.1504/IJWBC.2011.041206>
- Acharya, B. B. (2014). *Status of accountability in online news media: A case study of Nepal*, [Masters thesis, University of Ottawa, Canada]. <http://hdl.handle.net/10393/31810>
- Acharya, U. (2018). *Nepal Twitter users survey 2017: Summary of the findings*. Center for Media Research-Nepal. Kathmandu.
- Adhikari, H. P. (2018). Policy goals of federalism and decentralization in Nepal. *NUTA Journal*, 5(1-2), 106-116. <https://doi.org/10.3126/nutaj.v5i1-2.23467>
- Adhikari, L., Gautam, U.P., Koirala, B.P., Bhattarai, M., Kandel, T., Gupta, R.M., Timsina, C., Maharjan, N., Maharjan, K., Dahal, T., Hoste-Colomer, R., Cano, Y., Dandine, M., Guilhem, A., Merrer, S., Roudil, P., Bollinger, L. (2015). The aftershock sequence of the 2015 April 25 Gorkha–Nepal earthquake. *Geophysical supplements to the monthly notices of the royal astronomical society*, 203(3), 2119-2124. <https://doi.org/10.1093/gji/ggv412>
- Adhikary, N. M., & Pant, L. D. (2016). *Supporting safety of journalists in Nepal*. UNESCO Digital Library. <http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications/full-list/supporting-safety-of-journalists-in-nepal/>
- Aharony, N. (2012). Twitter use by three political leaders: An exploratory analysis. *Online information review*, 36 (4), 587-603. <https://doi.org/10.1108/14684521211254086>
- Alberts, W. A., & van der Geest, T. M. (2011). Color matters: Color as trustworthiness cue in web sites. *Technical communication*, 58 (2), 149-160.

- Albrecht, F. (2018). Natural hazard events and social capital: The social impact of natural disasters. *Disasters*, 42(2), 336-360. <https://doi.org/10.1111/disa.12246>
- Alexa. (n.d.). Top sites in Nepal. Retrieved 5 June, 2020, from <https://www.alexa.com/topsites/countries/NP>
- Aljazzaf, Z. M., Perry, M., & Capretz, M. A. (2010). Online trust: Definition and principles. *Paper presented at the 2010 Fifth International Multi-conference on Computing in the Global Information Technology*. <https://doi.org/10.1109/ICCGI.2010.17>
- Allan, S. (2007). Citizen journalism and the rise of ‘mass self-communication’: Reporting the London bombings. *Global Media Journal*, 1(1), 1-20.
- Allport, G. W., & Postman, L. (1947). *The psychology of rumor*. Henry Holt.
- Alowibdi, J. S., Buy, U. A., Philip, S. Y., & Stenneth, L. (2014). Detecting deception in online social networks. *Paper presented at the 2014 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2014)*. <https://doi.org/10.1109/ASONAM.2014.6921614>
- Amatya, S., Pal, I., & Chatterjee, R. (2017). Assessment of coordination mechanism in 2015 Nepal Earthquake, Kathmandu District. *UNISDR Cancun conference*. [https://www.researchgate.net/profile/Ranit\\_Chatterjee/publication/317041566\\_Assessment\\_of\\_Coordination\\_Mechanism\\_in\\_2015\\_Nepal\\_Earthquake\\_Kathmandu\\_District/links/59229a7ca6fdcc4443f61940/Assessment-of-Coordination-Mechanism-in-2015-Nepal-Earthquake-Kathmandu-District.pdf](https://www.researchgate.net/profile/Ranit_Chatterjee/publication/317041566_Assessment_of_Coordination_Mechanism_in_2015_Nepal_Earthquake_Kathmandu_District/links/59229a7ca6fdcc4443f61940/Assessment-of-Coordination-Mechanism-in-2015-Nepal-Earthquake-Kathmandu-District.pdf)
- Andrain, C. F., & Smith, J. T. (2006). *Political democracy, trust, and social justice: A comparative overview*. Northeastern University Press.
- Anthony, S. (1973). Anxiety and rumor. *The Journal of social psychology*, 89(1), 91-98. <https://doi.org/10.1080/00224545.1973.9922572>
- Askvik, S., Jamil, I., & Dhakal, T. N. (2011). Citizens’ trust in public and political institutions in Nepal. *International political science review*, 32(4), 417-437. <https://doi.org/10.1177/0192512110377437>
- Atkinson, P., & Coffey, A. (2004). Analysing documentary realities. *Qualitative research*, 3, 77-92. Sage Publication.
- Augustin, M.-E. & Kapucu, N. (2009). Interstate partnerships in emergency management: Emergency management assistance compact (EMAC) in response to catastrophic disasters. <https://doi.org/10.1111/j.1540-6210.2008.01975.x>
- Azungah, T. (2018). Qualitative research: Deductive and inductive approaches to data analysis. *Qualitative research journal*. 18(4), 383-400 <https://doi.org/10.1108/QRJ-D-18-00035>

- Bailard, C. S. (2012). Testing the Internet's effect on democratic satisfaction: A multi-methodological, cross-national approach. *Journal of information technology & politics*, 9(2), 185-204. <https://doi.org/10.1080/19331681.2011.641495>
- Bankoff, G. (2004). In the eye of the storm: the social construction of the forces of nature and the climatic and seismic construction of God in the Philippines. In Lockhart, B.M. (ed.), *Journal of Southeast Asian Studies*, 35(1), 91-111. Cambridge University Press.
- Barber, T., Chilvers, D., & Kaul, S. (2013). Moving an established survey online—or not? *International journal of market research*, 55(2), 187-199. <https://doi.org/10.2501/IJMR-2013-019>
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, 13(4), 544-559. <https://nsuworks.nova.edu/tqr/vol13/iss4/2/>
- BBC. (2011, May 2). Bin Laden raid was revealed on Twitter. *BBC*. <https://www.bbc.com/news/technology-13257940>
- Benevenuto, F., Magno, G., Rodrigues, T., & Almeida, V. (2010). Detecting spammers on Twitter. *Paper presented at the Collaboration, electronic messaging, anti-abuse and spam conference (CEAS)*. <https://homepages.dcc.ufmg.br/~fabricio/download/ceas10.pdf>
- Berger, A. A. (2014). *Media and communication research methods: An introduction to qualitative and quantitative approaches* (Third ed.). Sage.
- Berkowitz, D. A. (2009). Reporters and their sources. In Wahl-Jorgensen, K. & Hanitzsch, T. (Eds.), *The handbook of journalism studies* (pp. 102-115). Routledge.
- Best, S. J., & Krueger, B. S. (2006). Online interactions and social capital: Distinguishing between new and existing ties. *Social science computer review*, 24(4), 395-410. <https://doi.org/10.1177/0894439306286855>
- Bethlehem, J. (2009). *Applied survey methods: A statistical perspective*. Wiley.
- Bhandari, G. L. (2019). Language hybridity among Nepali Twitter users: Trend and possible implications. *Journal of NELTA*, 24(1-2), 149-161. <https://doi.org/10.3126/nelta.v24i1-2.27685>
- Bhandari, K., Bhattarai, D., & Deane, J. (2016, September). Accountability, nation and society: The role of the media in the remaking of Nepal. *BBC*. <https://www.bbc.co.uk/mediaaction/publications-and-resources/policy/briefings/role-of-media-in-remaking-nepal>
- Bi, B., & Cho, J. (2016). Modeling a retweet network via an adaptive bayesian approach. *Paper presented at the proceedings of the 25th International conference on world wide web*, 459-469. <https://doi.org/10.1145/2872427.2882985>



- Bica, M., Palen, L., & Bopp, C. (2017). Visual representations of disaster. *Paper presented at the Proceedings of the 2017 ACM conference on computer supported cooperative work and social computing*. <https://doi.org/10.1145/2998181.2998212>
- Bindloss, J. (2018, February 10). *Nepal's Dharahara tower to rise from the rubble*. Lonely Planet. <https://www.lonelyplanet.com/articles/dharahara-tower-nepal-rebuild>
- Biswas, S. (2015, May 4). *Why is Indian media facing a backlash in Nepal?* BBC. <https://www.bbc.com/news/world-asia-india-32579561>
- Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2005). *At risk: natural hazards, people's vulnerability and disasters*. Routledge.
- Blanchard, A. L. (2007). Developing a sense of virtual community measure. *CyberPsychology & Behavior*, 10(6), 827-830. <https://doi.org/10.1089/cpb.2007.9946>
- Blau, P. (2017). *Exchange and power in social life*. Routledge.
- Blomqvist, K. (1997). The many faces of trust. *Scandinavian Journal of Management*, 13(3), 271-286. [https://doi.org/10.1016/S0956-5221\(97\)84644-1](https://doi.org/10.1016/S0956-5221(97)84644-1)
- Boehmer, J., & Tandoc, E. C. (2015). Why we retweet: Factors influencing intentions to share sport news on Twitter. *International Journal of Sport Communication*, 8(2), 212-232. <https://doi.org/10.1123/ijsc.2015-0011>
- Bohora, R. (2019, May 10). *Survey is wakeup call for Nepal government*. Nepali Times. <https://www.nepalitimes.com/here-now/survey-is-wakeup-call-for-nepal-government/>
- Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*, 22(4), 195-201. <https://doi.org/10.4103/1117-1936.173959>
- Borgatti, S. P., & Ofem, B. (2010). Social network theory and analysis. In Daly, A.J. (ed.) *Social network theory and educational change*, (pp. 17-29). Harvard Education Press.
- Bouckaert, G., & Van de Walle, S. (2001). Government performance and trust in government. *Paper presented at the Ponencia presentada en la Annual Conference of the European Group on Public Administration, Vaasa (Finlandia)*. [https://www.researchgate.net/profile/Steven\\_Van\\_de\\_Walle/publication/228767477\\_Government\\_Performance\\_and\\_Trust\\_in\\_Government/links/02e7e521e026c60989000000.pdf](https://www.researchgate.net/profile/Steven_Van_de_Walle/publication/228767477_Government_Performance_and_Trust_in_Government/links/02e7e521e026c60989000000.pdf)
- Bouckaert, G., & Van de Walle, S. (2003). Comparing measures of citizen trust and user satisfaction as indicators of 'good governance': difficulties in linking trust and satisfaction indicators. *International Review of Administrative Sciences*, 69(3), 329-343. <https://doi.org/10.1177/0020852303693003>
- Bourdieu, P. (1986). The forms of capital. In Szeman, I. & Kaposy, T. (eds.), *Cultural theory: An anthology*, (Vol. 1, pp.81-93). Wiley-Blackwell.

- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40.  
[https://www.researchgate.net/profile/Glenn\\_Bowen/publication/240807798\\_Document\\_Analysis\\_as\\_a\\_Qualitative\\_Research\\_Method/links/59d807d0a6fdcc2aad065377/Document-Analysis-as-a-Qualitative-Research-Method.pdf](https://www.researchgate.net/profile/Glenn_Bowen/publication/240807798_Document_Analysis_as_a_Qualitative_Research_Method/links/59d807d0a6fdcc2aad065377/Document-Analysis-as-a-Qualitative-Research-Method.pdf)
- boyd, D., & Crawford, K. (2012). Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon. *Information, communication & society*, 15(5), 662-679. <https://doi.org/10.1080/1369118X.2012.678878>
- boyd, D., & Donath, J. (2004). Public displays of connection. *BT Technology Journal*, 22(4), 71-82.
- boyd, D., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. In *Journal of Computer-Mediated Communication*, 13(1), 210-230.  
<https://doi.org/10.1111/j.1083-6101.2007.00393.x>
- boyd, D., Golder, S., & Lotan, G. (2010). Tweet, tweet, retweet: Conversational aspects of retweeting on Twitter. *Paper presented at the 2010 43rd Hawaii international conference on system sciences*. <https://doi.org/10.1109/HICSS.2010.412>
- Brainard, L. A. (2003). Citizen organizing in cyberspace: Illustrations from health care and implications for public administration. *The American review of public administration*, 33(4), 384-406. <https://doi.org/10.1177/0275074003257430>
- Brand, N. E. (1997). Reconsidering the Phases of Disaster. *International Journal of Mass Emergencies and Disasters*, 15(2), 239-264.  
<https://digital.library.unt.edu/ark:/67531/metadc993379/>
- Brashers, D. E., Neidig, J. L., Haas, S. M., Dobbs, L. K., Cardillo, L. W., & Russell, J. A. (2000). Communication in the management of uncertainty: The case of persons living with HIV or AIDS. *Communications Monographs*, 67(1), 63-84.  
<https://doi.org/10.1080/03637750009376495>
- Bricout, J. C., & Baker, P. M. (2010). Leveraging online social networks for people with disabilities in emergency communications and recovery. *International journal of emergency management*, 7(1), 59-74. <https://doi.org/10.1504/IJEM.2010.03204499999>
- Briggs, C. L. (1986). *Learning how to ask: A sociolinguistic appraisal of the role of the interview in social science research*. Cambridge University Press.
- Bruns, A. (2008). The active audience: Transforming journalism from gatekeeping to gatewatching. In Domingo, D & Paterson, C (Eds.) *Making online news: The ethnography of new media production*, (pp. 171-184). Peter Lang Publishing.  
<https://eprints.qut.edu.au/13577/>

- Bruns, A. (2015). Gatekeeping, gatewatching, real-time feedback: New challenges for Journalism. *Brazilian journalism research*, 10(2), 224-237.  
<https://doi.org/10.25200/BJR.v7n2.2011.355>
- Bruns, A., & Burgess, J. E. (2012). Local and global responses to disaster: #eqnz and the Christchurch earthquake. In Sugg, P (Ed.) *Proceedings of the 2012 Australian and New Zealand Disaster and Emergency Management Conference*, (pp. 86-103).  
<https://eprints.qut.edu.au/50739/>
- Bruns, A., & Highfield, T. (2015). Is Habermas on Twitter?: Social media and the public sphere. In Bruns, A., Enli, G., Skogerbo, E., Larsson, A.O. & Christensen, C. (Eds.), *The Routledge companion to social media and politics* (pp. 56-73). Routledge.
- Bruns, A., Burgess, J. E., Crawford, K., & Shaw, F. (2012). # qldfloods and @ QPSMedia: Crisis communication on Twitter in the 2011 south east Queensland floods.  
<https://eprints.qut.edu.au/48241/>
- Burford, B., Briggs, P., De Angeli, A., & Lynch, P. (2002). Trust in online advice. *Social science computer review*, 20(3), 321-332. <https://doi.org/10.1177/089443930202000309>
- Burger, J., Gochfeld, M., Jeitner, C., Pittfield, T., & Donio, M. (2013). Trusted information sources used during and after Superstorm Sandy: TV and radio were used more often than social media. *Journal of Toxicology and Environmental Health, Part A*, 76(20), 1138-1150. <https://doi.org/10.1080/15287394.2013.844087>
- Burt, R. S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American journal of sociology*, 92(6), 1287-1335. <https://doi.org/10.1086/228667>
- Burt, R. S. (2000). The network structure of social capital. *Research in organizational behavior*, 22, 345-423. [https://doi.org/10.1016/S0191-3085\(00\)22009-1](https://doi.org/10.1016/S0191-3085(00)22009-1)
- Burt, R. S. (2017). Structural holes versus network closure as social capital. In Lin, N., Cook, Karen & Burt, R.S. (eds), *Social capital: Theory and Research*, (pp.31-56). Routledge.
- Canter, L. (2013). The interactive spectrum: The use of social media in UK regional newspapers. *Convergence*, 19(4), 472-495. <https://doi.org/10.1177/1354856513493698>
- Castells, M. (2000). Materials for an exploratory theory of the network society. In *The British journal of sociology*, 51(1), 5-24. <https://doi.org/10.1111/j.1468-4446.2000.00005.x>
- Castillo, C., Mendoza, M., & Poblete, B. (2011). Information credibility on Twitter. *Paper presented at the Proceedings of the 20th international conference on World wide web*, 675-684. <https://doi.org/10.1145/1963405.1963500>
- CBS. (2012). *National Population and Housing Census 2011 (National Report)*. Central Bureau of Statistics (CBS), Government of Nepal. <https://cbs.gov.np/national-population-and-housing-census-2011national-report/>

- Chaiken, S. (1987). The heuristic model of persuasion. In Zanna, M.P., Olson, J.M. & Herman, C.P. (Ed.), *Social Influence: The Ontario Symposium*. (pp. 3-40). Psychology Press.
- Chan, S. (2018, August 12). *Despite abundant donations, Nepal still has work to be done: Lessons on coordinated disaster response*. ReliefWeb, OCHA Services.  
<https://give2asia.org/casestudynepal/>
- Chanley, V. A., Rudolph, T. J., & Rahn, W. M. (2000). The origins and consequences of public trust in government: A time series analysis. *Public opinion quarterly*, 64(3), 239-256. <https://doi.org/10.1086/317987>
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Sage Publications.
- Chatfield, A. T., Reddick, C. G., Inan, D. I., & Brajawidagda, U. (2014). *E-government, social media, and risk perception communication at the edge of disaster: Findings from the Mt. Sinabung eruption in Indonesia*. <http://dx.doi.org/10.1145/2612733.2612752>
- Chavez, D. J., Taylor, J. G., Gillette, S. C., Hodgson, R. W., Downing, J. L., Burns, M. R., & Hogan, J. T. (2007). Informing the network: improving communication with interface communities during wildland fire. *Human Ecology Review*, 14 (2), 198-211.  
<http://www.jstor.com/stable/24707706>
- Chen, Y., & Rubin, V. L. (2017). Perceptions of Clickbait: A Q-Methodology Approach. *Paper presented at the Proceedings of the 45th Annual Conference of The Canadian Association for Information Science/L'Association canadienne des sciences de l'information (CAIS/ACSI2017)*. <https://ir.lib.uwo.ca/fimpspres/44/>
- Chetwynd, E., Chetwynd, F., & Spector, B. (2003). Corruption and poverty: A review of recent literature. In *Management Systems International*, 600, 5-16.  
<https://www.semanticscholar.org/paper/Corruption-and-Poverty-%3A-A-Review-of-Recent-Chetwynd-Chetwynd/1614ebee8a2931dec5c956bf083683239c98f9f4?p2df>
- Chiu, C.-M., Hsu, M.-H., & Wang, E. T. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision support systems*, 42(3), 1872-1888. <https://doi.org/10.1016/j.dss.2006.04.001>
- Chopra, K., & Wallace, W. A. (2003). *Trust in electronic environments*.  
<https://doi.org/10.1109/HICSS.2003.1174902>
- Christensen, T., & Læg Reid, P. (2005). Trust in government: The relative importance of service satisfaction, political factors, and demography. *Public performance & management review*, 28(4), 487-511.
- Cicourel, A. V. (1964). *Method and measurement in sociology*. Free Press of Glencoe.

- Citrin, J. (1974). Comment: The political relevance of trust in government. *American Political Science Review*, 68(3), 973-988. <https://doi.org/10.2307/1959141>
- Citrin, J., & Luks, S. (2001). Political trust revisited: Déjà vu all over again? In Hibbing, J.R. & Theiss-Morse, E. (eds.), *What is it about government that Americans dislike*, (pp. 9-27).
- Citrin, J., & Muste, C. (1999). Trust in government. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of social psychological attitudes*, Vol. 2. Measures of political attitudes (pp. 465–532). Academic Press.
- Cobanoglu, C., Moreo, P. J., & Warde, B. (2001). A comparison of mail, fax and web-based survey methods. *International journal of market research*, 43(4), 1-15. <https://doi.org/10.1177/147078530104300401>
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education (Seventh ed.)*. Routledge.
- Coleman, J. (1988). Social capital in the creation of human capital. *American journal of sociology*. <https://doi.org/10.1086/228943>
- Coleman, J. (1990). *Foundations of social theory*. Harvard University Press.
- Comfort, L. K., Ko, K., & Zagorecki, A. (2004). Coordination in rapidly evolving disaster response systems: The role of information. *American behavioral scientist* 48(3), 295-313. <https://doi.org/10.1177/0002764204268987>
- Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of applied social psychology*, 28(15), 1429-1464. <https://doi.org/10.1111/j.1559-1816.1998.tb01685.x>
- Corazzini, J. G. (1977). Trust as a complex multi-dimensional construct. *Psychological Reports*, 40(1), 75-80. <https://doi.org/10.2466/pr0.1977.40.1.75>
- Corbin, J., & Strauss, A. (2014). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage publications.
- Cornish, F., & Dhungana, N. (2019). Beyond performance and protocols: Early responders' experiences of multiple accountability demands in the response to the 2015 Nepal earthquake. *Disasters*. <https://doi.org/10.1111/disa.12425>
- Correa, T., Hinsley, A. W., & De Zuniga, H. G. (2010). Who interacts on the Web?: The intersection of users' personality and social media use. *Computers in Human Behavior*, 26(2), 247-253. <https://doi.org/10.1016/j.chb.2009.09.003>
- Corritore, C. L., Kracher, B., & Wiedenbeck, S. (2003). On-line trust: concepts, evolving themes, a model. *International Journal of Human-Computer Studies*, 58(6), 737-758. [https://doi.org/10.1016/S1071-5819\(03\)00041-7](https://doi.org/10.1016/S1071-5819(03)00041-7)

- Couper, M. P. (2000). Web surveys: A review of issues and approaches. In *The public opinion quarterly*, 64(4), 464-494. [www.jstor.org/stable/3078739](http://www.jstor.org/stable/3078739)
- Cozma, R., & Chen, K.-J. (2013). What's in a tweet? Foreign correspondents' use of social media. *Journalism practice*, 7(1), 33-46. <https://doi.org/10.1080/17512786.2012.683340>
- Creswell, J. W. (2007). *Qualitative inquiry & research design: Choosing among five approaches* (2<sup>nd</sup> ed.). Sage Publications.
- Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (4<sup>th</sup> ed.). Pearson.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (Fifth ed.). Sage Publications.
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage Publications.
- Croucher, S. M., & Cronn-Mills, D. (2014). *Understanding communication research methods: A theoretical and practical approach*. Routledge.
- Czaja, R., Blair, J., & Blair, E. (2014). *Designing surveys: A guide to decisions and procedures* (Third ed.). Sage Publications.
- Darwish, K., Alexandrov, D., Nakov, P., & Mejova, Y. (2017). Seminar users in the Arabic Twitter sphere. In Ciampaglia, G.L., Mashhadi, A. & Yasseri, T. (Eds), *Social Informatics 9<sup>th</sup> International Conference, SocInfo 2017*, (pp.91-108). Springer.
- De Massis, A., & Kotlar, J. (2014). The case study method in family business research: Guidelines for qualitative scholarship. *Journal of Family Business Strategy*, 5(1), 15-29. <https://doi.org/10.1016/j.jfbs.2014.01.007>
- Denscombe, M. (2010). *The good research guide: For small-scale social research projects* (4<sup>th</sup> ed.). McGraw-Hill/Open University Press.
- Denzin, N. K. (1970). *The research act: A theoretical introduction to sociological methods*. Transaction publishers.
- Department of Information. (2016). *Media Directory 2073*. Ministry of Communication and Information Technology, Government of Nepal. <http://doinepal.gov.np/media-directory>
- Deutsch, M. (1962). Cooperation and trust: Some theoretical notes. In M. R. Jones (Ed.), *Nebraska symposium on motivation* (pp. 275-319). University of Nebraska Press.
- Devkota, B., & Miyazaki, H. (2018). An exploratory study on the generation and distribution of geotagged tweets in Nepal. *Paper presented at the 2018 IEEE 3rd International conference on computing, communication and security (ICCCS)*. <https://doi.org/10.1109/CCCS.2018.8586827>



- Dhakal, B. (2018). Statistical Trends in Literacy rate in Nepal. *IOSR Journal of Applied Chemistry*, 11(11), 71-77.  
[https://www.researchgate.net/profile/Basanta\\_Dhakal3/publication/335107114\\_Statistical\\_Trends\\_in\\_Literacy\\_Rates\\_in\\_Nepal/links/5d50465f4585153e594e9865/Statistical-Trends-in-Literacy-Rates-in-Nepal.pdf](https://www.researchgate.net/profile/Basanta_Dhakal3/publication/335107114_Statistical_Trends_in_Literacy_Rates_in_Nepal/links/5d50465f4585153e594e9865/Statistical-Trends-in-Literacy-Rates-in-Nepal.pdf)
- Dhungana, S. (2016, April 22). *Corporate houses stand up for quake survivors*. Republica.  
<http://archive.myrepublica.com/2015-16/economy/story/41013/corporate-houses-stand-up-for-quake-survivors.html>
- Dillman, D. (2000). *Mail and internet surveys: The tailored design method*. Wiley.
- DiMaggio, P., Hargittai, E., Neuman, W. R., & Robinson, J. P. (2001). Social implications of the Internet. In *Annual review of sociology*, 27(1), 307-336.  
<https://doi.org/10.1146/annurev.soc.27.1.307>
- Dixit, A. M., Yatabe, R., Dahal, R. K., & Bhandary, N. P. (2013). Initiatives for earthquake disaster risk management in the Kathmandu valley. *Natural Hazards*, 69(1), 631-654.  
<https://doi.org/10.1007/s11069-013-0732-9>
- DNA Web Team. (2015, May 4). *Nepal Earthquake: On world press freedom day, #GoHomeIndianMedia top Twitter trend*. <https://www.dnaindia.com/india/report-nepal-earthquake-on-world-press-freedom-day-gohomeindianmedia-top-twitter-trend-2082781>
- DOFE. (2018). *Labour migration for employment a status report for Nepal: 2015/2016 – 2016/2017*. Department of Foreign Employment (DOFE), Government of Nepal.  
<https://asiafoundation.org/wp-content/uploads/2018/05/Nepal-Labor-Migration-status-report-2015-16-to-2016-17.pdf>
- Dogru, M., & Kalender, S. (2007). Applying the subject" cell" through constructivist approach during science lessons and the teacher's view. *Journal of Environmental & Science Education*, 2(1), 3-13. <https://eric.ed.gov/?id=ED497730>
- Dougall, E. K., Horsley, J. S., & McLisky, C. (2008). Disaster communication: Lessons from Indonesia. *International Journal of Strategic Communication*, 2(2), 75-99.  
<https://doi.org/10.1080/15531180801958188>
- Douglas, M. (1986). *How institutions think (1st ed.)*. Syracuse University Press.
- Dube, S. K. (2015). Earthquake in Nepal: A miserable environmental hazard visited by nature. In *Academic voices: A multidisciplinary journal*, 5, 56-66.  
<https://doi.org/10.3126/av.v5i0.15853>
- Dufty, N. (2012). Using social media to build community disaster resilience. *Australian Journal of Emergency Management*, 27 (1), 40-45.  
<https://knowledge.aidr.org.au/media/2501/ajem-27-01-11.pdf>

- Dworkin, S. L. (2012). Sample size policy for qualitative studies using in-depth interviews. In *Arch Sex Behav* 41, 1319–1320. <https://doi.org/10.1007/s10508-012-0016-6>
- Eagle, S. (1999). The language situation in Nepal. In *Journal of Multilingual and Multicultural Development*, 20(4-5), 272-327. <https://doi.org/10.1080/01434639908666382>
- Earl Bennett, S., Rhine, S. L., Flickinger, R. S., & Bennett, L. L. (1999). "Video Malaise" revisited: Public trust in the media and government. *Harvard International Journal of Press/Politics*, 4(4), 8-23. <https://doi.org/10.1177/1081180X9900400402>
- Easton, D. (1957). An approach to the analysis of political systems. *World politics*, 9(3), 383-400. <https://doi.org/10.2307/2008920>
- Ebers, M. (1997). Explaining inter-organizational network formation. *The formation of inter-organizational networks* (pp. 3-40). [https://www.researchgate.net/profile/Mark\\_Ebers/publication/265406477\\_Explaining\\_Inter-Organizational\\_Network\\_Formation/links/555c492708aec5ac2232b052/Explaining-Inter-Organizational-Network-Formation.pdf](https://www.researchgate.net/profile/Mark_Ebers/publication/265406477_Explaining_Inter-Organizational_Network_Formation/links/555c492708aec5ac2232b052/Explaining-Inter-Organizational-Network-Formation.pdf)
- Edingo, D. B. (2014). Re-evaluation of Nepali media, social networking spaces, and democratic practices in media. In *Digital Arts and Entertainment: Concepts, Methodologies, Tools, and Applications* (pp. 287-304). IGI Global.
- Edwards, C., Edwards, A., Spence, P. R., & Shelton, A. K. (2014). Is that a bot running the social media feed? Testing the differences in perceptions of communication quality for a human agent and a bot agent on Twitter. *Computers in Human Behavior*, 33, 372-376. <https://doi.org/10.1016/j.chb.2013.08.013>
- El Azab, A., Idrees, A. M., Mahmoud, M. A., & Hefny, H. (2016). Fake account detection in twitter based on minimum weighted feature set. *International Scholarly and Scientific Research & Innovation*, 10(1), 13-18. [https://www.researchgate.net/publication/304569053\\_Fake\\_Account\\_Detection\\_in\\_Twitter\\_Based\\_on\\_Minimum\\_Weighted\\_Feature\\_set](https://www.researchgate.net/publication/304569053_Fake_Account_Detection_in_Twitter_Based_on_Minimum_Weighted_Feature_set)
- Erşahin, B., Aktaş, Ö., Kılınc, D., & Akyol, C. (2017). Twitter fake account detection. *Paper presented at the 2017 International Conference on Computer Science and Engineering (UBMK)*. <https://doi.org/10.1109/UBMK.2017.8093420>
- Etherington, K. (2004). *Becoming a reflexive researcher: Using our selves in research*. Jessica Kingsley Publishers.
- Falkheimer, J., & Heide, M. (2006). Multicultural crisis communication: Towards a social constructionist perspective. *Journal of Contingencies and Crisis Management*, 14(4), 180-189. <https://doi.org/10.1111/j.1468-5973.2006.00494.x>



- Fazio, L. K., Brashier, N. M., Payne, B. K., & Marsh, E. J. (2015). Knowledge does not protect against illusory truth. *Journal of experimental psychology: General*, *144*(5), 993–1002. <https://doi.org/10.1037/xge0000098>
- Fensel, D. (1992). Knowledge acquisition and the interpretative paradigm. In *Contemporary Knowledge Engineering and Cognition* (pp. 78-95): Springer.
- Fischer, H. W. (1998). *Response to disaster: Fact versus fiction & its perpetuation: The sociology of disaster (2<sup>nd</sup> edition)*. University Press of America.
- Fisher, R. (2013). ‘A gentleman's handshake’: The role of social capital and trust in transforming information into usable knowledge. *Journal of Rural studies*, *31*, 13-22. <https://doi.org/10.1016/j.jrurstud.2013.02.006>
- Fitrianie, S., & Rothkrantz, L. J. (2015). Dynamic routing during disaster events. *Paper presented at the ISCRAM 2015: Proceedings of the 12th International Conference on Information Systems for Crisis Response and Management Conference*. <http://mmi.tudelft.nl/sites/default/files/Is cram-Dynrouting.pdf>
- Fitzgerald, G., Gurung, A., & Poudel, B. R. (2015, May 5). *How the media struggled in Nepal's earthquake rescue*. The Conversation. <https://theconversation.com/how-the-media-struggled-in-nepals-earthquake-rescue-40970>
- Flanagin, A. J., & Metzger, M. J. (2007). The role of site features, user attributes, and information verification behaviors on the perceived credibility of web-based information. *New media & society*, *9*(2), 319-342. <https://doi.org/10.1177/1461444807075015>
- Flap, H. (2004). Creation and returns of social capital: A new research program. In Flap, H. & Völker, B. (ed.), *Creation and returns of social capital* (pp. 1-17). Routledge.
- Fogg, B., & Tseng, H. (1999). The elements of computer credibility. *Paper presented at the Proceedings of the SIGCHI conference on Human Factors in Computing Systems* (pp.80-87). <https://doi.org/10.1145/302979.303001>
- Francis, A. (2015, April 29). *Stars including One Direction's Harry Styles and Kim Kardashian pay tribute to Nepal earthquake victims*. Celebs Now. <https://www.celebsnow.co.uk/latest-celebrity-news/as-the-death-toll-reaches-a-heartbreaking-5-000-stars-including-one-direction-and-kim-kardashian-pay-tribute-to-nepal-earthquake-victims-3154>
- Fritz, C. (1961). Disaster. In R. K. Merton & R. Nisbet (Eds.), *Contemporary Social Problems* (pp. 651-694). Harcourt.
- Fritz, C., & Mathewson, J. H. (1957). *Convergence behavior in disasters: A problem in social control*. National Academy of Sciences National Research Council.

- Fuchs, C. (2014). Social media and the public sphere. *Journal for a Global Sustainable Information Society*, 12(1), 57-101. <https://doi.org/10.31269/triplec.v12i1.552>
- Galán-García, P., Puerta, J. G. d. l., Gómez, C. L., Santos, I., & Bringas, P. G. (2016). Supervised machine learning for the detection of troll profiles in Twitter social network: Application to a real case of cyberbullying. *Logic Journal of the IGPL*, 24(1), 42-53. <https://doi.org/10.1093/jigpal/jzv048>
- Gambetta, D. (1988). *Trust: Making and breaking cooperative relations*. Blackwell.
- Gambetta, Diego (2000) 'Can We Trust Trust?'. In *Trust: Making and Breaking Cooperative Relations* (pp. 213-237) <https://www.csee.umbc.edu/~msmith27/readings/public/gambetta-1988a.pdf>
- Gannon, M. J. (1973). The proper use of the questionnaire survey. *Business Horizons*, 16(5), 89-94. [https://doi.org/10.1016/0007-6813\(73\)90101-8](https://doi.org/10.1016/0007-6813(73)90101-8)
- Gao, H., Barbier, G., Goolsby, R., & Zeng, D. (2011). *Harnessing the crowdsourcing power of social media for disaster relief*. Arizona State Univ Tempe. <https://doi.org/10.1109/MIS.2011.52>
- Gefen, D. (2002). Reflections on the dimensions of trust and trustworthiness among online consumers. *ACM SIGMIS database: the DATABASE for advances in information systems*, 33(3), 38-53. <https://doi.org/10.1145/569905.569910>
- Gibbert, M., & Ruigrok, W. (2010). The “what” and “how” of case study rigor: Three strategies based on published work. In *Organizational research methods*, 13(4), 710-737. <https://doi.org/10.1177/1094428109351319>
- Giddens, A. (1991). *The Consequences of Modernity*. Stanford University Press.
- Gigerenzer, G. & Todd, P.M. (2000). Precise of Simple heuristics that make us smart. *Behavioral and Brain Sciences*, 23, 727-780. [https://www.researchgate.net/publication/227466812\\_Simple\\_Heuristics\\_That\\_Make\\_Us\\_Smart](https://www.researchgate.net/publication/227466812_Simple_Heuristics_That_Make_Us_Smart)
- Giri, M. S., & Shrestha, M. R. (2018). Reform of civil service of Nepal with e-government practice. *Journal of Personnel Training Academy*, 1(6), 22-36. [https://www.academia.edu/download/62010509/Reform\\_of\\_Civil\\_Service\\_of\\_Nepal\\_with\\_E-Government\\_Practice\\_20200206-19075-1a4s3bq.pdf](https://www.academia.edu/download/62010509/Reform_of_Civil_Service_of_Nepal_with_E-Government_Practice_20200206-19075-1a4s3bq.pdf)
- Giri, R. A. (2014). Changing faces of English: Why English is not a foreign language in Nepal. *Journal of world Languages*, 1(3), 192-209. <https://doi.org/10.1080/21698252.2014.989643>
- Girvan, M., & Newman, M. E. (2004). Finding and evaluating community structure in networks. *Physical review E*, 69(2). <https://doi.org/10.1103/PhysRevE.69.026113>

- Golam, R., Bikash, S., Bhartendu, M., Nilhari, N., Dorji, T., Khadka, M.S., Joshi, S.R., Maharjan, A., Mishra, A., Notarianni, M., Huda, J., Strien, M., Banerjee, S., Mahapatra, B., Hussain, A. Ghate, R., Partap, U. & Goodrich, C.G. (2015). Strategic framework for resilient livelihoods in earthquake-affected areas of Nepal. *ICIMOD Working Paper 2015 (No. 2015/6)*.  
<https://www.cabdirect.org/cabdirect/abstract/20163181488>
- Golbeck, J., Grimes, J. M., & Rogers, A. (2010). Twitter use by the US Congress. *Journal of the American Society for Information Science and Technology*, 61(8), 1612-1621.  
<https://doi.org/10.1002/asi.21344>
- Golden, B. R. (1992). The past is the past—or is it? The use of retrospective accounts as indicators of past strategy. *Academy of management Journal*, 35(4), 848-860.  
<https://doi.org/10.5465/256318>
- González-Bailón, S., Wang, N., Rivero, A., Borge-Holthoefer, J., & Moreno, Y. (2014). Assessing the bias in samples of large online networks. *Social networks*, 38, 16-27.  
<https://doi.org/10.1016/j.socnet.2014.01.004>
- Goolsby, R. (2009). Lifting elephants: Twitter and blogging in global perspective. In Liu, H., Salerno, J.J. & Young, M.J. (Eds.), *Social computing and behavioral modelling*, (pp. 2-6). Springer.
- Gorden, R. L. (1956). Dimensions of the depth interview. In *American Journal of Sociology*, 62 (2), 158-164.
- Gordon, M. T. (2000). Public trust in government: The US media as an agent of accountability? *International Review of Administrative Sciences*, 66(2), 297-310.  
<https://doi.org/10.1177/0020852300662006>
- Government of Nepal. (2015a). *National Emergency Operation Centre: Standard Operating Procedures-SOPs*. Kathmandu: Government of Nepal.  
<http://neoc.gov.np/en/download/Disaster-Related-Document/9/>
- Government of Nepal. (2015b, May 11). *Nepal Earthquake 2072: Situation Update as of 11th May*. Ministry of Home Affairs, Government of Nepal.  
<http://drrportal.gov.np/document/documentdetail/14>
- Government of Nepal. (2016). *Gorkha Bhukampa 2072: Anubhak Ra Sikai*. Ministry of Home Affairs, Government of Nepal.  
<http://www.drrportal.gov.np/uploads/document/gorkha%20eq%20layout%20final%20nov%2020%202016.pdf>
- Government of Nepal. (2018a). *Media Directory 2075*. Ministry of Communication and Information Technology, Government of Nepal. Retrieved from  
<http://doinepal.gov.np/uploads/20180706151107.pdf>

- Government of Nepal. (2018b). *National Policy for Disaster Risk Reduction*. Ministry of Home Affairs, Government of Nepal.  
<http://www.drrportal.gov.np/uploads/document/1476.pdf>
- Government of Nepal. (2019). *Nepal Disaster Report 2019*. Ministry of Home Affairs, Government of Nepal. <http://drrportal.gov.np/document/documentdetail/1594>
- Government of Nepal. (2020). *Nepal Labour Migration Report 2020*. Ministry of Labour, Employment and Social Security, Government of Nepal. <https://moless.gov.np/wp-content/uploads/2020/03/Migration-Report-2020-English.pdf>
- Government of Nepal. (n.d.). *Introduction: National Emergency Operation Center*.  
<http://neoc.gov.np/en/introduction-2.html>
- Granovetter, M. (1977). The strength of weak ties. In *Social networks* (pp. 347-367). Elsevier. <https://doi.org/10.1016/B978-0-12-442450-0.50025-0>
- Greenwood, S., Perrin, A., & Duggan, M. (2016). Social media update 2016. *Pew Research Center*, 11. <https://www.pewresearch.org/internet/2016/11/11/social-media-update-2016/>
- Grimmelikhuijsen, S. G., & Meijer, A. J. (2012). Effects of transparency on the perceived trustworthiness of a government organization: Evidence from an online experiment. In *Journal of Public Administration Research and Theory*, 24(1), 137-157.  
<https://doi.org/10.1093/jopart/mus048>
- Grunig, J. E. (2013). *Excellence in public relations and communication management*. Routledge.
- Guba, E. G., & Lincoln, Y. S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication and Technology Journal*, 30(4), 233-252. <https://link.springer.com/content/pdf/10.1007/BF02765185.pdf>
- Gubrium, J. F., Holstein, J.A., Marvasti, A.B. & McKinney, K.D. (2012). *The Sage handbook of interview research: The complexity of the craft* (2nd ed.). Sage Publications.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1), 59-82.  
<https://doi.org/10.1177/1525822X05279903>
- Gul, S., Shah, T. A., Ahad, M., Mubashir, M., Ahmad, S., Gul, M., & Sheikh, S. (2018). Twitter sentiments related to natural calamities. *The Electronic Library*, 36 (1), 38-54.  
<https://doi.org/10.1108/EL-12-2015-0244>
- Gupta, A., Kumaraguru, P., Castillo, C., & Meier, P. (2014). Tweetcred: Real-time credibility assessment of content on Twitter. In Aiello, L.M. & McFarland, D. (Eds.), *Social Informatics 6th International Conference, SocInfo 2014*, (pp. 228-243). Springer.
- Gurajala, S., White, J. S., Hudson, B., & Matthews, J. N. (2015). Fake Twitter accounts: profile characteristics obtained using an activity-based pattern detection approach.

*Paper presented at the Proceedings of the 2015 International Conference on Social Media & Society.* <https://doi.org/10.1145/2789187.2789206>

- Gurajala, S., White, J. S., Hudson, B., Voter, B. R., & Matthews, J. N. (2016). Profile characteristics of fake Twitter accounts. *Big Data & Society*, 3(2).  
<https://doi.org/10.1177/2053951716674236>
- Gurman, T. A., & Ellenberger, N. (2015). Reaching the global community during disasters: Findings from a content analysis of the organizational use of Twitter after the 2010 Haiti earthquake. *Journal of health communication*, 20(6), 687-696.  
<https://doi.org/10.1080/10810730.2015.1018566>
- Haas, C., & Wearden, S. T. (2003). E-credibility: Building common ground in web environments. *L1-Educational Studies in Language and Literature*, 3(1-2), 169-184.  
<http://dx.doi.org/10.1023/A:1024557422109>
- Habermas, J. r. (1989). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society (translated by Burger, T.)*. The MIT Press.
- Habermas, J. r. (1996). *Contributions to a discourse theory of law and democracy (translated by Rehg, W.)*. Polity Press.
- Haines, V. A., Beggs, J. J., & Hurlbert, J. S. (2002). Exploring the structural contexts of the support process: Social networks, social statuses, social support, and psychological distress. In *Social networks and health* (pp. 269-292). Emerald Group Publishing Limited. [https://doi.org/10.1016/S1057-6290\(02\)80030-4](https://doi.org/10.1016/S1057-6290(02)80030-4)
- Hall, M., Lee, A. C. K., Cartwright, C., Marahatta, S., Karki, J., & Simkhada, P. (2017). The 2015 Nepal earthquake disaster: Lessons learned one year on. *Public health*, 145, 39-44. <https://doi.org/10.1016/j.puhe.2016.12.031>
- Halse, S. E., Tapia, A. H., Squicciarini, A. C., & Caragea, C. (2016). Tweet factors influencing trust and usefulness during both man-made and natural disasters. *Paper presented at the ISCRAM*. <https://www.cs.uic.edu/~cornelia/papers/isgram16d.pdf>
- Hampton, K. (2002). Place-based and IT Mediated 'Community'. *Planning Theory & Practice*, 3(2), 228-231. <https://doi.org/10.1080/14649350220150099>
- Hampton, K., & Wellman, B. (2003). Neighboring in Netville: How the Internet supports community and social capital in a wired suburb. *City & community*, 2(4), 277-311.  
<https://doi.org/10.1046/j.1535-6841.2003.00057.x>
- Hancock, J. T., & Toma, C. L. (2009). Putting your best face forward: The accuracy of online dating photographs. *Journal of communication*, 59(2), 367-386.  
<https://doi.org/10.1111/j.1460-2466.2009.01420.x>
- Hannigan, J. (2014). *Environmental sociology, (Third edition)*. Routledge.

- Hansen, M. T. (1999). The search-transfer problem: The role of weak ties in sharing knowledge across organization subunits. *Administrative science quarterly*, 44(1), 82-111. <https://doi.org/10.2307/2667032>
- Hardin, R. (1999). Do we want trust in government. In Warren, M.E. (ed.). *Democracy and trust*, pp. 22-41. Cambridge University Press.
- Hardin, R. (2001). Conceptions and explanations of trust. In K. S. Cook (Ed.), Russell Sage foundation series on trust, Vol. 2. *Trust in society* (p.3–39). Russell Sage Foundation
- Hardin, R. (2002). *Trust and trustworthiness*. Russell Sage Foundation.
- Hardin, R., Cook, K., & Levi, M. (2005). *Cooperation without trust?*. Russell Sage Foundation.
- Harris, G. (2015, May 3). *Nepal's bureaucracy is blamed as earthquake relief supplies pile up*. The New York Times. <https://www.nytimes.com/2015/05/04/world/asia/nepals-bureaucracy-is-blamed-as-quake-relief-supplies-pile-up.html#:~:text=KATHMANDU%2C%20Nepal%20%E2%80%94%20Relief%20supplies%20for,with%20Western%20governments%20and%20aid>
- Haynes, K., Barclay, J., & Pidgeon, N. (2008). The issue of trust and its influence on risk communication during a volcanic crisis. *Bulletin of Volcanology*, 70(5), 605-621. <https://doi.org/10.1007/s00445-007-0156-z>
- Heath, R. L., Lee, J., & Ni, L. (2009). Crisis and risk approaches to emergency management planning and communication: The role of similarity and sensitivity. *Journal of Public Relations Research*, 21(2), 123-141. <https://doi.org/10.1080/10627260802557415>
- Helliwell, J. F., & Putnam, R. (2004). The social context of well-being. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, 359(1449), 1435-1446. <https://doi.org/10.1098/rstb.2004.1522>
- Henry, G. T. (1990). *Practical sampling* (Vol. 21). Sage Publications.
- Hermida, A. (2010). From TV to Twitter: How ambient news became ambient journalism. *Media/Culture Journal*, 13(2). [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1732603](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1732603)
- Hermida, A. (2013). # Journalism: Reconfiguring journalism research about Twitter, one tweet at a time. *Digital journalism*, 1(3), 295-313. <https://doi.org/10.1080/21670811.2013.808456>
- Hermida, A., Fletcher, F., Korell, D., & Logan, D. (2012). Share, like, recommend: Decoding the social media news consumer. *Journalism Studies*, 13(5-6), 815-824. <https://doi.org/10.1080/1461670X.2012.664430>



- Hills, A. (1998). Seduced by recovery: The consequences of misunderstanding disaster. *Journal of Contingencies and Crisis Management*, 6(3), 162-170.  
<https://doi.org/10.1111/1468-5973.00085>
- Hochschild, J. L. (2009). Conducting intensive interviews and elite interviews. *Workshop on Interdisciplinary Standards for Systematic Qualitative Research [Internet]*.  
<https://scholar.harvard.edu/jlhochschild/publications/conducting-intensive-interviews-and-elite-interviews>
- Hofer, M., & Aubert, V. (2013). Perceived bridging and bonding social capital on Twitter: Differentiating between followers and followees. *Computers in Human Behavior*, 29(6), pp. 2134-2142. <https://doi.org/10.1016/j.chb.2013.04.038>
- Holguín-Veras, J., Taniguchi, E., Jaller, M., Aros-Vera, F., Ferreira, F., & Thompson, R. G. (2014). The Tohoku disasters: Chief lessons concerning the post disaster humanitarian logistics response and policy implications. *Transportation research part A: policy and practice*, 69, pp. 86-104. <https://doi.org/10.1016/j.tra.2014.08.003>
- Holsti, O. R. (1969). *Content Analysis for the Social Sciences and Humanities*. Addison-Wesley Pub Co.
- Honebein, P. C. (1996). Seven goals for the design of constructivist learning environments. In Wilson, B.G. (eds.), *Constructivist learning environments: Case studies in instructional design*, (pp.11-24). Educational Technology Publications, Inc.
- Hopper, T. (2017). Neopatrimonialism, good governance, corruption and accounting in Africa: Idealism vs pragmatism. *Journal of Accounting in Emerging Economies*, 7(2), 225-248. <https://doi.org/10.1108/JAEE-12-2015-0086>
- Huberman, B. A., Romero, D. M., & Wu, F. (2008). *Social networks that matter: Twitter under the microscope*. <https://arxiv.org/abs/0812.1045>
- Hughes, A. L., Palen, L., Sutton, J., Liu, S. B., & Vieweg, S. (2008). *Site-seeing in disaster: An examination of on-line social convergence*.  
[https://www.researchgate.net/publication/228799549\\_Site-seeing\\_in\\_disaster\\_An\\_examination\\_of\\_on-line\\_social\\_convergence](https://www.researchgate.net/publication/228799549_Site-seeing_in_disaster_An_examination_of_on-line_social_convergence)
- Hwang, S. (2013). The effect of Twitter use on politicians' credibility and attitudes toward politicians. *Journal of Public Relations Research*, 25(3), 246-258.  
<https://doi.org/10.1080/1062726X.2013.788445>
- IANS. (2015, April 30). *Donating 'Gabbar is Back' earnings for Nepal quake not my call: Akshay Kumar*. The Indian Express.  
<https://indianexpress.com/article/entertainment/bollywood/donating-gabbar-is-back-earnings-for-nepal-not-my-call-akshay-kumar/>

- Im, T., Cho, W., Porumbescu, G., & Park, J. (2014). Internet, trust in government, and citizen compliance. *Journal of Public Administration Research and Theory*, 24(3), 741-763. <https://doi.org/10.1093/jopart/mus037>
- Imran, M., Mitra, P., & Castillo, C. (2016). Twitter as a lifeline: Human-annotated twitter corpora for NLP of crisis-related messages. <https://arxiv.org/abs/1605.05894>
- International Federation of Journalists. (2020, June 10). *Nepal: Journalists suffer increased economic hardship amid Covid-19*. [https://www.ifj.org/media-centre/news/detail/category/press-releases/article/nepal-journalists-suffer-increased-economic-hardship-amid-covid-19.html?fbclid=IwAR1mHMplSgYY0VH43Stc7CpX05wxokCdsGTm\\_fc-HNU2yHQ-rajou6LhYfE](https://www.ifj.org/media-centre/news/detail/category/press-releases/article/nepal-journalists-suffer-increased-economic-hardship-amid-covid-19.html?fbclid=IwAR1mHMplSgYY0VH43Stc7CpX05wxokCdsGTm_fc-HNU2yHQ-rajou6LhYfE)
- Internet World Stats. (2016). *Internet usage, population statistics and Facebook information 2015*. <http://www.internetworldstats.com/asia.html>
- Israel, S. (2009). *Twiterville: How businesses can thrive in the new global neighborhoods*. Penguin.
- Jackson, D. (2017, October 17). Issue brief: Distinguishing disinformation from propaganda, misinformation, and “fake news.”. *National Endowment for Democracy*. <https://www.ned.org/issue-brief-distinguishing-disinformation-from-propaganda-misinformation-and-fake-news/>
- Jaeger, P. T., Shneiderman, B., Fleischmann, K. R., Preece, J., Qu, Y., & Wu, P. F. (2007). Community response grids: E-government, social networks, and effective emergency management. *Telecommunications Policy*, 31(10-11), pp. 592-604. <https://doi.org/10.1016/j.telpol.2007.07.008>
- Java, A., Song, X., Finin, T., & Tseng, B. (2007). Why we twitter: understanding microblogging usage and communities. *Paper presented at the Proceedings of the 9th WebKDD and 1st SNA-KDD 2007 workshop on Web mining and social network analysis*. <https://doi.org/10.1145/1348549.1348556>
- Jensen, K. B. (2012). *The handbook of media and communication research: Qualitative and quantitative methodologies* (2nd ed.). Routledge.
- Jha, S., & Pandey, S. (2016). Digital divide: Exploring national and international approaches to bridge the digital divide in the perception of developing countries especially in the context of Nepal. *International Journal of Latest Trends in Engineering and Technology (IJLTET)*, 7(3), 368-383. <http://dx.doi.org/10.21172/1.73.549>
- Job, J. (2005). How is trust in government created? It begins at home, but ends in the parliament. *Australian review of public affairs*, 6(1), 1-23. <https://www.australianreview.net/journal/v6/n1/job.pdf>



- Johnson, J., & Rowlands, T. (2012). The Interpersonal Dynamics of In-Depth Interviewing. In J. F. Gubrium, J. A. Holstein, A. B. Marvasti, & K. D. McKinney (Eds.), *Handbook of interview research context and method* (pp. 99-111). Sage Publications
- Johnston, C. D., & Bartels, B. L. (2010). Sensationalism and sobriety differential media exposure and attitudes toward American courts. *Public opinion quarterly*, 74(2), 260-285. <https://doi.org/10.1093/poq/nfp096>
- Jurgens, M., & Helsloot, I. (2018). The effect of social media on the dynamics of (self) resilience during disasters: A literature review. *Journal of Contingencies and Crisis Management*, 26(1), 79-88. <https://doi.org/10.1111/1468-5973.12212>
- Kafle, S. (2019, June 27). *Disaster Management: The way forward in Nepal*. Khabarhub. <https://english.khabarhub.com/2019/27/28648/>
- Kaigo, M. (2012). Social media usage during disasters and social capital: Twitter and the Great East Japan earthquake. *Keio Communication Review*, 34(1), 19-35. [http://www.mediacom.keio.ac.jp/publication/pdf2012/KCR34\\_02KAIGO.pdf](http://www.mediacom.keio.ac.jp/publication/pdf2012/KCR34_02KAIGO.pdf)
- Kaplan, A. M., & Haenlein, M. (2011). The early bird catches the news: Nine things you should know about micro-blogging. *Business Horizons*, 54(2), 105-113. <https://doi.org/10.1016/j.bushor.2010.09.004>
- Kaplowitz, M. D., Hadlock, T. D., & Levine, R. (2004). A comparison of web and mail survey response rates. *Public opinion quarterly*, 68(1), 94-101. <https://doi.org/10.1093/poq/nfh006>
- Kapucu, N. (2005). Interorganizational coordination in dynamic context: Networks in emergency response management. *Connections*, 26(2), 33-48.
- Kapucu, N., Augustin, M. E., & Garayev, V. (2009). Interstate partnerships in emergency management: Emergency management assistance compact in response to catastrophic disasters. *Public administration review*, 69(2), 297-313. <https://doi.org/10.1111/j.1540-6210.2008.01975.x>
- Karra, N., & Phillips, N. (2008). Researching “back home” international management research as autoethnography. *Organizational research methods*, 11(3), 541-561. <https://doi.org/10.1177/1094428106295496>
- Kavanaugh, A., Reese, D. D., Carroll, J. M., & Rosson, M. B. (2003). *Weak ties in networked communities*. <https://dl.eusset.eu/bitstream/20.500.12015/2726/1/00299.pdf>
- Keele, L. (2007). Social capital and the dynamics of trust in government. *American Journal of Political Science*, 51(2), 241-254. <https://doi.org/10.1111/j.1540-5907.2007.00248.x>
- Kelton, K., Fleischmann, K. R., & Wallace, W. A. (2008). Trust in digital information. *Journal of the American Society for Information Science and Technology*, 59(3), 363-374. <https://doi.org/10.1002/asi.20722>

- Kendra, J. M., & Wachtendorf, T. (2003). Reconsidering convergence and converger legitimacy in response to the World Trade Center disaster. *Terrorism and disaster: New threats, new ideas* (pp. 97-122). [https://doi.org/10.1016/S0196-1152\(03\)11007-1](https://doi.org/10.1016/S0196-1152(03)11007-1)
- Khanal, M. R. (n.d.). *Afraid of catching big fish (30 August-5 September #671)*. Nepali Times. <http://archive.nepalitimes.com/regular-columns/Inside-Out/inside-out-big-fish-corruption-ciaa,159>
- Kharel, P. (2010). *Political communication: Media, message, and meaning*. Sangam Institute.
- Kharel, P. (2012). *Media for Participatory Democracy*. Supravaha Publication (P.) Ltd.
- Khunwishit, S., & McEntire, D. A. (2012). Testing social vulnerability theory: A quantitative study of Hurricane Katrina's perceived impact on residents living in FEMA designated disaster areas. *Journal of Homeland Security and Emergency Management, 9(1)*. <https://doi.org/10.1515/1547-7355.1950>
- Kim, H.-W., Chan, H. C., & Gupta, S. (2007). Value-based adoption of mobile internet: An empirical investigation. *Decision support systems, 43(1)*, 111-126. <https://doi.org/10.1016/j.dss.2005.05.009>
- Kim, J.-Y. (2006). The impact of Internet use patterns on political engagement: A focus on online deliberation and virtual social capital. *Information Polity, 11(1)*, 35-49. <https://doi.org/10.3233/IP-2006-0087>
- Kim, S. (2010). Public trust in government in Japan and South Korea: Does the rise of critical citizens matter? *Public administration review, 70(5)*, 801-810. <https://doi.org/10.1111/j.1540-6210.2010.02207.x>
- King, D. C. (1997). The polarization of American parties and mistrust of government. In Nye, Jr. J.S., Zelikow, P.D & King, D.C. (eds), *Why people don't trust government*, pp. 155-178.
- Kirschenbaum, A. A., Rapaport, C., & Canetti, D. (2017). The impact of information sources on earthquake preparedness. *International Journal of Disaster Risk Reduction, 21*, 99-109. <https://doi.org/10.1016/j.ijdrr.2016.10.018>
- Kitwood, T. M. (1977). *Values in Adolescent Life: Towards a Critical Description*. [PhD Thesis, University of Bradford]. EThOS (e-theses online service). <https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.462205>
- Kobayashi, T. (2010). Bridging social capital in online communities: Heterogeneity and social tolerance of online game players in Japan. *Human Communication Research, 36(4)*, 546-569. <https://doi.org/10.1111/j.1468-2958.2010.01388.x>
- Kobayashi, T., Ikeda, K. i., & Miyata, K. (2006). Social capital online: Collective use of the Internet and reciprocity as lubricants of democracy. *Information, Community & Society, 9(5)*, 582-611. <https://doi.org/10.1080/13691180600965575>

- Krackhardt, D. (1992). The strength of strong ties: The importance of philos in organizations. In R. E. N. Nohria (Ed.), *Networks and Organizations: Structures, Form and Action* (Vol. 82, pp. 216–239). Harvard Business School Press.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American psychologist*, 53(9). <https://doi.org/10.1037/0003-066X.53.9.1017>
- Kroll-Smith, J. S., & Couch, S. R. (1990). *The real disaster is above ground: A mine fire & social conflict*. The University Press of Kentucky.
- Krosnick, J. A. (1999). Survey research. *Annual Review of Psychology*, 50(1), 537-567. <https://doi.org/10.1146/annurev.psych.50.1.537>
- Kumar, A., Singh, J. P., Dwivedi, Y. K., & Rana, N. P. (2020). A deep multi-modal neural network for informative Twitter content classification during emergencies. *Annals of Operations Research*, 1-32. <https://doi.org/10.1007/s10479-020-03514-x>
- Kumar, R. (2011). *Research methodology: A step-by-step guide for beginners (3rd ed.)*. Sage Publications.
- Kumar, R. (2018, April 2). *How they kept Nepal in the dark ages*. Nepali Times. <https://www.nepalitimes.com/here-now/how-they-kept-nepal-in-the-dark-ages/>
- Kvale, S. (1996). *InterViews: An introduction to qualitative research interviewing*. Sage Publications.
- Kwak, H., Lee, C., Park, H., & Moon, S. (2010). What is Twitter, a social network or a news media? *Paper presented at the Proceedings of the 19th international conference on World wide web*, 591-600. <https://doi.org/10.1145/1772690.1772751>
- Kwak, K. T., Hong, S. C., & Lee, S. W. (2018). An analysis of a repetitive news display phenomenon in the digital news ecosystem. *Sustainability*, 10(12). <https://doi.org/10.3390/su10124736>
- Lammers, J. C. (2011). How institutions communicate: Institutional messages, institutional logics, and organizational communication. *Management Communication Quarterly*, 25(1), 154-182. <https://doi.org/10.1177/0893318910389280>
- Lampe, C., Ellison, N. B., & Steinfield, C. (2007). The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143-1168. <https://doi.org/10.1111/j.1083-6101.2007.00367.x>
- Lather, P. (1992). Critical frames in educational research: Feminist and post-structural perspectives. *Theory into practice*, 31(2), 87-99. <https://doi.org/10.1080/00405849209543529>

- Lee, A. S. (1989). A scientific methodology for MIS case studies. *MIS quarterly*, 33-50.  
<https://doi.org/10.2307/248698>
- Legard, R., Keegan, J., & Ward, K. (2003). In-depth Interviews. In J. Ritchie & J. Lewis (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. Sage Publications.
- Levin, D. Z., & Cross, R. (2004). The strength of weak ties you can trust: The mediating role of trust in effective knowledge transfer. *Management science*, 50(11), 1477-1490.  
<https://doi.org/10.1287/mnsc.1030.0136>
- Lewis, J. D., & Weigert, A. (1985). Trust as a social reality. *Social forces*, 63(4), 967-985.  
<https://doi.org/10.1093/sf/63.4.967>
- Li, S., Liu, Z., & Li, Y. (2020). Temporal and spatial evolution of online public sentiment on emergencies. *Information Processing & Management*, 57(2).  
<https://doi.org/10.1016/j.ipm.2019.102177>
- Lin, N. (1999). Building a network theory of social capital. *Connections*, 22(1), pp. 28-51.  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.96.3792&rep=rep1&type=pdf>
- Lin, N. (2001). *Social capital: A theory of social structure and action*. Cambridge University Press.
- Lin, X., & Spence, P. R. (2018). Identity on social networks as a cue: Identity, retweets, and credibility. *Communication Studies*, 69(5), 461-482.  
<https://doi.org/10.1080/10510974.2018.1489295>
- Lindlof, T. R., & Taylor, B. C. (2002). *Qualitative Communication Research Methods (Second ed.)*. Sage Publications.
- Lueg, J. E., & Finney, R. Z. (2007). Interpersonal communication in the consumer socialization process: Scale development and validation. *Journal of Marketing Theory and Practice*, 15(1), 25-39. <https://doi.org/10.2753/MTP1069-6679150102>
- Luhmann, N. (1979). *Trust and Power*. John Wiley & Sons.
- Ma, J., Saul, L. K., Savage, S., & Voelker, G. M. (2009). Identifying suspicious URLs: An application of large-scale online learning. *Paper presented at the Proceedings of the 26th annual international conference on machine learning*, pp. 681-688.  
<https://doi.org/10.1145/1553374.1553462>
- MacAskill, A., & Sharma, G. (2015, September 2). *Four months after quakes, Nepal fails to spend any of \$4.1 billion donor money*. Reuters. <https://www.reuters.com/article/us-nepal-rebuilding/four-months-after-quakes-nepal-fails-to-spend-any-of-4-1-billion-donor-money-idUSKCN0R20GU20150902>
- Makara, C. (2013). *11 easy ways to spot a fake Twitter account instantly*.  
<https://chrismakara.com/social-media/11-easy-ways-to-spot-a-fake-twitter-account/>

- Malasig, B. J. C., & Quinto, E. J. M. (2016). Functions of and Communication Behavior on Twitter after the 2015 Nepal Earthquake. *Jurnal Komunikasi: Malaysian Journal of Communication*, 32(1). <http://ejournal.ukm.my/mjc/article/view/14723>
- Malla, S. B., Dahal, R. K., & Hasegawa, S. (2020). Analyzing the disaster response competency of the local government official and the elected representative in Nepal. In *Geoenvironmental Disasters*, 7(1), 1-13. <https://doi.org/10.1186/s40677-020-00153-z>
- Manyena, B., O'Brien, G., O'Keefe, P., & Rose, J. (2011). Disaster resilience: a bounce back or bounce forward ability? *Local Environment: The International Journal of Justice and Sustainability*, 16(5), 417-424. <https://doi.org/10.1080/13549839.2011.583049>
- Manzo, A. N., & Burke, J. M. (2012). Increasing response rate in web-based/internet surveys. In Gideon, L. (ed.), *Handbook of survey methodology for the social sciences* (pp. 327-343). Springer.
- March, J. G., & Olsen, J. P. (1989). *Rediscovering institutions: The organizational basis of politics*. The Free Press.
- Marsden, P. V., & Campbell, K. E. (1984). Measuring tie strength. *Social forces*, 63(2), 482-501. <https://doi.org/10.1093/sf/63.2.482>
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of management review*, 20(3), 709-734. <https://doi.org/10.5465/amr.1995.9508080335>
- Mayfield, A. (2008). *What is social media?* iCrossing. [https://www.icrossing.com/uk/sites/default/files\\_uk/insight\\_pdf\\_files/What%20is%20Social%20Media\\_iCrossing\\_ebook.pdf](https://www.icrossing.com/uk/sites/default/files_uk/insight_pdf_files/What%20is%20Social%20Media_iCrossing_ebook.pdf)
- McCombs, M. (2004). *Setting the agenda: Mass media and public opinion*: John Wiley & Sons.
- McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of mass media. In *Public opinion quarterly*, 36(2), 176-187. <https://doi.org/10.1086/267990>
- McCoy, D., Grier, C., Kolcz, A., Paxson, V., & Thomas, K. (2013). *Trafficking Fraudulent Accounts: The Role of the Underground Market in Twitter Spam and Abuse*. <https://www.icsi.berkeley.edu/pubs/networking/traffickingfraudulent13.pdf>
- McCrum-Gardner, E. (2010). Sample size and power calculations made simple. *International Journal of Therapy and Rehabilitation*, 17(1), 10-14. <https://www.magonlinelibrary.com/doi/abs/10.12968/ijtr.2010.17.1.45988>
- McFadyen, M. A., & Cannella Jr, A. A. (2004). Social capital and knowledge creation: Diminishing returns of the number and strength of exchange relationships. *Academy of management Journal*, 47(5), 735-746. <https://doi.org/10.5465/20159615>

- McGregor, S. C. (2019). Social media as public opinion: How journalists use social media to represent public opinion. *Journalism*, 20(8), 1070-1086.  
<https://doi.org/10.1177/1464884919845458>
- McNely, B. (2009). Backchannel persistence and collaborative meaning-making. *Paper presented at the Proceedings of the 27th ACM international conference on Design of communication*. <https://doi.org/10.1145/1621995.1622053>
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual review of sociology*, 27(1), 415-444.  
<https://doi.org/10.1146/annurev.soc.27.1.415>
- McSweeney, L. W. (2010). Introduction to A Behavioral Model of Rational Choice. *Competition Policy International*, 6(1), pp. 239-258.  
[https://static.aminer.cn/upload/pdf/1700/343/450/53e9a23fb7602d9702b47f9c\\_0.pdf](https://static.aminer.cn/upload/pdf/1700/343/450/53e9a23fb7602d9702b47f9c_0.pdf)
- Media Foundation-Nepal. (2012). *A research report on media and the Nepali public*.  
[https://www.mfnepal.org/wp-content/uploads/2015/02/Research\\_report\\_Media\\_N\\_Public\\_ENG.pdf](https://www.mfnepal.org/wp-content/uploads/2015/02/Research_report_Media_N_Public_ENG.pdf)
- Mehta, A. M., Bruns, A., & Newton, J. (2017). Trust, but verify: social media models for disaster management. *Disasters*, 41(3), 549-565. <https://doi.org/10.1111/disa.12218>
- Mei, Y., Zhong, Y., & Yang, J. (2015). Finding and analyzing principal features for measuring user influence on Twitter. *Paper presented at the 2015 IEEE First International Conference on Big Data Computing Service and Applications*.  
<https://doi.org/10.1109/BigDataService.2015.36>
- Merton, R. K., & Nisbet, R. A. (1976). *Contemporary social problems (Vol. 2)*. Harcourt College Pub.
- Merton, R. K., Fiske, M. & Kendall, P.L. (1955). *Focused interview: A manual of problems and procedures*. The Free Press.
- Messner, M., Linke, M., & Eford, A. (2012). Shoveling tweets: An analysis of the microblogging engagement of traditional news organizations. *Paper presented at the International Symposium on Online Journalism*, pp. 74-87. [https://isoj.org/wp-content/uploads/2016/10/ISOJ\\_Journal\\_V2\\_N1\\_2012\\_Spring.pdf#page=74](https://isoj.org/wp-content/uploads/2016/10/ISOJ_Journal_V2_N1_2012_Spring.pdf#page=74)
- Metaxas, P., Mustafaraj, E., Wong, K., Zeng, L., O'Keefe, M., & Finn, S. (2015). What do retweets indicate? Results from user survey and meta-review of research. *Paper presented at the Ninth International AAAI Conference on Web and Social Media*.  
<https://www.semanticscholar.org/paper/What-Do-Retweets-Indicate-Results-from-User-Survey-Metaxas-Mustafaraj/f0e3e6386b01f5dcfb22347687483146709ffa05>
- Metzger, M. J. (2007). Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. *Journal of the American*



- Society for Information Science and Technology*, 58(13), 2078-2091.  
<https://doi.org/10.1002/asi.20672>
- Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, 59, 210-220.  
<https://doi.org/10.1016/j.pragma.2013.07.012>
- Metzger, M. J., Flanagin, A. J., Eyal, K., Lemus, D. R., & McCann, R. M. (2003). Credibility for the 21st century: Integrating perspectives on source, message, and media credibility in the contemporary media environment. *Annals of the International Communication Association*, 27(1), 293-335.  
<https://doi.org/10.1080/23808985.2003.11679029>
- Meyerson, D., Weick, K. E., & Kramer, R. M. (1996). Swift trust and temporary groups. In R.M. Kramer & T.R. Tyler (Ed.) *Trust in organizations: Frontiers of theory and research*, (pp. 166-195). Sage Publications.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook (3rd ed.)*. Sage Publications.
- Miles, R. E., & Snow, C. C. (1992). Causes of failure in network organizations. *California management review*, 34(4), 53-72. <https://doi.org/10.2307/41166703>
- Mileti, D. (1999). *Disasters by design: A reassessment of natural hazards in the United States*. Joseph Henry Press.
- Mileti, D., & Fitzpatrick, C. (1991). *Communication of public risk: Its theory and its application*. National Emergency Training Center.
- Mileti, D., Bandy, R., Bourque, L. B., Johnson, A., Kano, M., Peek, L., Sutton, J., Wood, M. (2006). Annotated Bibliography For Public Risk Communication On Warnings For Public Protective Actions Response And Public Education\*(Revision 4). *Natural Hazards Centre, University of Colorado at Boulder*.  
<https://pdfs.semanticscholar.org/1eb9/22cae298297f3911a2bc11d201cd2c044904.pdf>
- Miller, A., & Listhaug, O. (1999). Political Performance and Institutional Trust. In Norris, P. (ed.), *Critical citizens: Global support for democratic government* (pp. 204-216). Oxford University Press.
- Mishler, W., & Rose, R. (2001). What are the origins of political trust? Testing institutional and cultural theories in post-communist societies. *Comparative political studies*, 34(1), 30-62. <https://doi.org/10.1177/0010414001034001002>
- Molyneux, L. (2015). What journalists retweet: Opinion, humor, and brand development on Twitter. *Journalism*, 16 (7), 920-935. <https://doi.org/10.1177/1464884914550135>

- Mondal, T., Pramanik, P., Bhattacharya, I., Boral, N., & Ghosh, S. (2018). Analysis and early detection of rumors in a post disaster scenario. *Information Systems Frontiers*, 20(5), 961-979. <https://doi.org/10.1007/s10796-018-9837-8>
- Montgomery, L. (2002). NGOs and the internet in Nepal. *Journal of computer-mediated Communication*, 7(2). <https://doi.org/10.1111/j.1083-6101.2002.tb00141.x>
- Moore, D. C., Lee, J.-E. R., Park, E.-A., & Park, S. G. (2012). Who wants to be “friend-rich”? Social compensatory friending on Facebook and the moderating role of public self-consciousness. *Computers in Human Behavior*, 28(3), 1036-1043. <https://doi.org/10.1016/j.chb.2012.01.006>
- Morgan, G., & Smircich, L. (1980). The case for qualitative research. *Academy of management review*, 5(4), 491-500. <https://doi.org/10.5465/amr.1980.4288947>
- Morris, M. R., Counts, S., Roseway, A., Hoff, A., & Schwarz, J. (2012). Tweeting is believing?: Understanding microblog credibility perceptions. *Paper presented at the Proceedings of the ACM 2012 conference on computer supported cooperative work*. <https://doi.org/10.1145/2145204.2145274>
- Murayama, Y., Saito, Y., & Nishioka, D. (2013). Trust issues in disaster communications. *Paper presented at the System Sciences (HICSS), 2013 46th Hawaii International Conference on*. <https://doi.org/10.1109/HICSS.2013.576>
- Murray, S. O., Rankin, J. H., & Magill, D. W. (1981). Strong ties and job information. *Sociology of Work and Occupations*, 8(1), 119-136. <https://doi.org/10.1177/073088848100800107>
- Murthy, D. (2013). *Twitter: Social communication in the Twitter age*. Polity Press.
- Mustafaraj, E., Metaxas, P., Finn, S., & Monroy-Hernández, A. (2012). Hiding in plain sight: A tale of trust and mistrust inside a community of citizen reporters. *Paper presented at the Sixth International AAAI Conference on Weblogs and Social Media*, pp. 250-257. <https://www.semanticscholar.org/paper/Hiding-in-Plain-Sight%3A-A-Tale-of-Trust-and-Mistrust-Mustafaraj-Metaxas/5f5a7e6e120396cd0827b175d50ac0e5b29457cd>
- Na, Y.-J. & Kim, J.-H. (2007). Effects of celebrity athlete endorsement on attitude towards the product: The role of credibility, attractiveness and the concept of congruence. *International Journal of Sports Marketing & Sponsorship*, 8(4), 23-33. <https://doi.org/10.1108/IJSMS-08-04-2007-B004>
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of management review*, 23(2), 242-266. <https://doi.org/10.5465/amr.1998.533225>



- Nakagawa, Y., & Shaw, R. (2004). Social capital: A missing link to disaster recovery. *International Journal of Mass Emergencies and Disasters* March 2004, 22(1), 5-34. <https://pdfs.semanticscholar.org/a29c/07b60ae9a9ae981630d6d4a29d9ca6b98632.pdf>
- Nallapati, R., Feng, A., Peng, F., & Allan, J. (2004). Event threading within news topics. *Paper presented at the Proceedings of the thirteenth ACM international conference on Information and knowledge management*. <https://doi.org/10.1145/1031171.1031258>
- Nepal, P., Khanal, N. R., & Sharma, B. P. P. (2018). Policies and institutions for disaster risk management in Nepal: A review. *Geographical Journal of Nepal*, 11, 1-24. <https://doi.org/10.3126/gjn.v11i0.19546>
- Nepali Times, (2015, April 3). *CIAA catches 'big fish'*. <http://archive.nepalitimes.com/blogs/thebrief/2015/04/03/ciaa-catches-big-fishes/>
- Nepali Times. (2015a). *Have faith* (21-27 August 2015 #722). Nepali Times. <http://archive.nepalitimes.com/article/nation/Himal-media-poll-have-faith,2515>
- Nesbary, D. (1999). *Survey research and the world wide web*. Allyn & Bacon, Inc.
- Nestor, P., & Schutt, R. K. (2012). *Research methods in psychology: Investigating human behaviour (third edition)*. Sage.
- Nettikara, S. (2015, April 28). *Fake quakes: Rumours spread after Nepal tragedy*. BBC. <https://www.bbc.com/news/blogs-trending-32493556>
- Neuman, W. L. (2006). *Social research methods: Qualitative and quantitative approaches* (6th ed.). Pearson.
- Newman, N. (2009). *The rise of social media and its impact on mainstream journalism*. [https://ora.ox.ac.uk/objects/uuid:a980df14-1b49-401b-a136-78d47ab76cdc/download\\_file?file\\_format=pdf&safe\\_filename=The%2BRise%2Bof%2BSocial%2BMedia&type\\_of\\_work=Report](https://ora.ox.ac.uk/objects/uuid:a980df14-1b49-401b-a136-78d47ab76cdc/download_file?file_format=pdf&safe_filename=The%2BRise%2Bof%2BSocial%2BMedia&type_of_work=Report)
- Newton, K. (1999). Mass media effects: Mobilization or media malaise? *British Journal of Political Science*, 29(4), 577-599. <https://doi.org/10.1017/S0007123499000289>
- Nguyen, A. (2010). Harnessing the potential of online news: Suggestions from a study on the relationship between online news advantages and its post-adoption consequences. *Journalism*, 11(2), 223-241. <https://doi.org/10.1177/1464884909355910>
- Nicholls, K., & Picou, J. S. (2013). The impact of Hurricane Katrina on trust in government. *Social Science Quarterly*, 94(2), 344-361. <https://doi.org/10.1111/j.1540-6237.2012.00932.x>
- Nie, N. H. (2001). Sociability, interpersonal relations, and the Internet: Reconciling conflicting findings. *American behavioral scientist*, 45(3), 420-435. <https://doi.org/10.1177/00027640121957277>

- Nie, N. H., & Hillygus, D. S. (2002). The impact of Internet use on sociability: Time-diary findings. *It & Society*, *1*(1), 1-20.  
[https://www.researchgate.net/profile/D\\_Sunshine\\_Hillygus/publication/247901330\\_The\\_Impact\\_of\\_Internet\\_Use\\_on\\_Sociability\\_Time-Diary\\_Findings/links/0deec5398cdce1b76800000/The-Impact-of-Internet-Use-on-Sociability-Time-Diary-Findings.pdf](https://www.researchgate.net/profile/D_Sunshine_Hillygus/publication/247901330_The_Impact_of_Internet_Use_on_Sociability_Time-Diary_Findings/links/0deec5398cdce1b76800000/The-Impact-of-Internet-Use-on-Sociability-Time-Diary-Findings.pdf)
- Noguera-Vivo, J. M. (2013). How open are journalists on Twitter? Trends towards the end-user journalism. *Communication and Society*, *26* (1), 93-114.  
<https://hdl.handle.net/10171/35432>
- Norris, P. (1999). Introduction: The growth of critical citizens? In *Critical citizens: Global support for democratic government*, (pp. 1-27). Oxford University Press.
- Norris, P. (2001). *Digital divide: Civic engagement, information poverty, and the Internet worldwide*. Cambridge University Press.
- Norris, P., & Curtice, J. (2008). Getting the message out: A two-step model of the role of the Internet in campaign communication flows during the 2005 British general election. *Journal of Information Technology & Politics*, *4*(4), pp. 3-13.  
<https://doi.org/10.1080/19331680801975359>
- Nottage, L., Nasu, H., & Butt, S. (2014). Disaster management: socio-legal and Asia-Pacific perspectives. In *Asia-Pacific Disaster Management* (pp. 1-58). Springer.
- NPC. (2015). *Nepal Earthquake 2015 post disaster needs assessment*. National Planning Commission (NPC), Government of Nepal.  
[https://www.npc.gov.np/images/category/PDNA\\_volume\\_BFinalVersion.pdf](https://www.npc.gov.np/images/category/PDNA_volume_BFinalVersion.pdf)
- NSC. (2019). *About us*. National Seismological Center (NSC), Government of Nepal.  
<http://seismonepal.gov.np/about-us>
- NTA. (2015). *MIS Report: Jestha, 2072 (15 May, 2015 – 15 June, 2015)*. Nepal Telecommunications Authority (NTA). <https://nta.gov.np/wp-content/uploads/2017/11/NTA-MIS-99.pdf>
- NTA. (2019). *MIS Report: Chaitra, 2075 (15 March, 2019 – 13 April, 2019)*. Nepal Telecommunications Authority (NTA). <https://nta.gov.np/wp-content/uploads/MIS-Chaitra-2075.pdf>
- Obeta, M. C. (2014). Institutional approach to flood disaster management in Nigeria: Need for a preparedness plan. *British Journal of Applied Science & Technology*, *4*(33), 4575-4590. <https://doi.org/10.9734/BJAST/2014/11844>
- OECD, & OECD. (2013). Trust in government, policy effectiveness and the governance agenda. In *Government at a Glance*, (pp. 19-37). [https://doi.org/10.1787/gov\\_glance-2013-en](https://doi.org/10.1787/gov_glance-2013-en)

- Oh, O., Kwon, K. H., & Rao, H. R. (2010). An exploration of social media in extreme events: Rumor theory and Twitter during the Haiti Earthquake 2010. *Thirty First International Conference on Information Systems, St. Louis 2010*.  
[https://www.researchgate.net/publication/221599216\\_An\\_Exploration\\_of\\_Social\\_Media\\_in\\_Extreme\\_Events\\_Rumor\\_Theory\\_and\\_Twitter\\_during\\_the\\_Haiti\\_Earthquake\\_2010](https://www.researchgate.net/publication/221599216_An_Exploration_of_Social_Media_in_Extreme_Events_Rumor_Theory_and_Twitter_during_the_Haiti_Earthquake_2010)
- Ohanian, R. (1991). The impact of celebrity spokespersons perceived image on consumers intention to purchase. *Journal of advertising research*, 31(1), 46-54.
- Oliver-Smith, A., & Hoffman, S. M. (1999). *The angry earth: Disaster in anthropological perspective*. Routledge.
- Onlinekhabar. (2019, February 26). *Bibeksheel Sajha urges CIAA to catch big fish*.  
<https://english.onlinekhabar.com/bibeksheel-sajha-urges-ciaa-to-catch-big-fish.html>
- Opgenhaffen, M., & Scheerlinck, H. (2014). Social media guidelines for journalists: An investigation into the sense and nonsense among Flemish journalists. *Journalism Practice*, 8(6), 726-741. <https://doi.org/10.1080/17512786.2013.869421>
- Ovadia, S. (2009). Exploring the potential of Twitter as a research tool. *Behavioral & Social Sciences Librarian*, 28(4), 202-205. <https://doi.org/10.1080/01639260903280888>
- Palen, L. (2008). Online social media in crisis events. *Educause Quarterly*, 31(3), 76-78.
- Palen, L., & Vieweg, S. (2008). *The emergence of online widescale interaction in unexpected events: Assistance, alliance & retreat*. <https://doi.org/10.1145/1460563.1460583>
- Palen, L., Anderson, K. M., Mark, G., Martin, J., Sicker, D., Palmer, M., & Grunwald, D. (2010). *A vision for technology-mediated support for public participation & assistance in mass emergencies & disasters*. <https://doi.org/10.14236/ewic/VOCS2010.8>
- Pandey, S. B. (2020). *English in Nepal: A sociolinguistic profile*. In World Englishes.  
<https://doi.org/10.1111/weng.12490>
- Pandey, S. B., & Regmi, N. (2020). If You Build It, Will They Come? Exploring Narratives That Shape the Internet in Nepal. *Science, Technology and Society* (2020).  
<https://doi.org/10.1177/0971721820912922>
- Parise, S., Whelan, E., & Todd, S. (2015). How Twitter users can generate better ideas. *MIT Sloan management review*, 56(4), 21-25.
- Paton, D. (2007). Preparing for natural hazards: The role of community trust. *Disaster Prevention and Management: An International Journal*, 16(3), 370-379.  
<https://doi.org/10.1108/09653560710758323>
- Paton, D., & Johnston, D. M. (2017). *Disaster resilience: an integrated approach* (2<sup>nd</sup> ed.). Charles C Thomas, Publisher, Ltd.

- Patterson, O., Weil, F., & Patel, K. (2010). The role of community in disaster response: conceptual models. *Population Research and Policy Review*, 29(2), 127-141.  
<https://doi.org/10.1007/s11113-009-9133-x>
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3 ed.). Sage Publications.
- Paudel, N. R. (2016). Citizens' Trust in Public Institutions of Nepal after April 25, 2015 Earthquake. *South Asian Journal of Policy and Governance*, 39(2), 81-100.  
<http://www.sjpgjournal.org/index.php/sjpg/article/download/5/13>
- Paul, B. K., Acharya, B., & Ghimire, K. (2017). Effectiveness of earthquakes relief efforts in Nepal: Opinions of the survivors. *Natural Hazards*, 85(2), 1169-1188.  
<https://doi.org/10.1007/s11069-016-2627-z>
- Paulussen, S., & Harder, R. A. (2014). Social media references in newspapers: Facebook, Twitter and YouTube as sources in newspaper journalism. *Journalism Practice*, 8(5), 542-551. <https://doi.org/10.1080/17512786.2014.894327>
- Perez-Lugo, M. (2004). Media uses in disaster situations: A new focus on the impact phase. *Sociological inquiry*, 74(2), 210-225. <https://doi.org/10.1111/j.1475-682X.2004.00087.x>
- Petróczi, A., Nepusz, T., & Bazsó, F. (2007). Measuring tie-strength in virtual social networks. *Connections*, 27(2), 39-52.  
[https://www.researchgate.net/profile/Andrea\\_Petroczi/publication/38175499\\_Measuring\\_tie-strength\\_in\\_virtual\\_social\\_networks/links/00b495149b712b3cdd000000/Measuring-tie-strength-in-virtual-social-networks.pdf](https://www.researchgate.net/profile/Andrea_Petroczi/publication/38175499_Measuring_tie-strength_in_virtual_social_networks/links/00b495149b712b3cdd000000/Measuring-tie-strength-in-virtual-social-networks.pdf)
- Petrović, S., Osborne, M., & Lavrenko, V. (2010). Streaming first story detection with application to Twitter. *Paper presented at the Human language technologies: The 2010 annual conference of the north american chapter of the association for computational linguistics*, 181-189. <https://www.aclweb.org/anthology/N10-1021.pdf>
- Petrovic, S., Osborne, M., & Lavrenko, V. (2011). Rt to win! predicting message propagation in Twitter. *Paper presented at the Fifth International AAAI Conference on Weblogs and Social Media*.  
<https://www.aaai.org/ocs/index.php/ICWSM/ICWSM11/paper/viewPaper/2754>
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. Springer Science & Business Media.
- Pezzoni, F., An, J., Passarella, A., Crowcroft, J., & Conti, M. (2013). Why do I retweet it? An information propagation model for microblogs. In Jatowt, A., Lim, E., Ding, Y., Miura, A., Tezuka, T., Dias, G., Tanaka, K., Flanagin, A. & Dai, B.T. (Eds.), *Social Informatics, 5<sup>th</sup> International Conference, SocInfo 2013*, (pp.360-369). Springer.
- Pham, N. (2015, May 4). *Haunting 'Nepal quake victims' photo from Vietnam*. BBC.  
<https://www.bbc.com/news/world-asia-32579598>

- Pokharel, S. (2020, May 21). *Nepal issues a new map claiming contested territories with India as its own*. CNN. [https://edition.cnn.com/2020/05/21/asia/nepal-india-map-territories-intl/index.html#:~:text=\(CNN\)%20Nepal%20has%20issued%20a,incorporating%20Lipulekh%2C%20Limpiyadhura%20and%20Kalapani](https://edition.cnn.com/2020/05/21/asia/nepal-india-map-territories-intl/index.html#:~:text=(CNN)%20Nepal%20has%20issued%20a,incorporating%20Lipulekh%2C%20Limpiyadhura%20and%20Kalapani)
- Pokharel, U. (n.d.). *Media coverage of Gorkha quake*. The Rising Nepal. <http://www.therisingnepal.org.np/news/30886>
- Poortinga, W., & Pidgeon, N. F. (2003). Exploring the dimensionality of trust in risk regulation. *Risk analysis: An international journal*, 23(5), 961-972. <https://doi.org/10.1111/1539-6924.00373>
- Poortinga, W., & Pidgeon, N. F. (2004). Trust, the asymmetry principle, and the role of prior beliefs. *Risk analysis: An international journal*, 24(6), 1475-1486. <https://doi.org/10.1111/j.0272-4332.2004.00543.x>
- Porumbescu, G. (2017). Not all bad news after all? Exploring the relationship between citizens' use of online mass media for government information and trust in government. *International Public Management Journal*, 20(3), 409-441. <https://doi.org/10.1080/10967494.2016.1269859>
- Porumbescu, G. A. (2013). Assessing the link between online mass media and trust in government: Evidence from Seoul, South Korea. *Policy & Internet*, 5(4), 418-443. <https://doi.org/10.1002/1944-2866.POI346>
- Potts, L. (2013). *Social media in disaster response: How experience architects can build for participation*. Routledge.
- Potts, L., Seitzinger, J., Jones, D., & Harrison, A. (2011). Tweeting disaster: Hashtag constructions and collisions. *Paper presented at the Proceedings of the 29th ACM international conference on Design of communication*, 235-240. <https://doi.org/10.1145/2038476.2038522>
- Powell, W. (2012). Neither market nor hierarchy. In Godwyn, M. & Gittel, J.H. (ed.), *The sociology of organizations: Structures and Relationships* (pp. 30-40). Sage Publications.
- Prasanna, R., Adhikari, M., Paton, D., Johnston, D., & McColl, S. T. (2018). Modelling predictors of earthquake hazard preparedness in Nepal. *Procedia engineering*, 910-917. <https://doi.org/10.1016/j.proeng.2018.01.117>
- Press Council Nepal. (2015). *Annual Press Council Report 2014/2015*. <https://archive.org/details/40thAnnualReportPressCouncilNepal/mode/2up>
- Press Trust of India (2018, May 27). *Report: Journalists are largest, most active verified group on Twitter*. The Hindu. <https://www.thehindubusinessline.com/info-tech/social-media/journalists-most-active-largest-group-on-twitter/article7251823.ece>

- Prior, M. (2006). The incumbent in the living room: The rise of television and the incumbency advantage in US House elections. *The Journal of Politics*, 68(3), 657-673. <https://doi.org/10.1111/j.1468-2508.2006.00452.x>
- Procopio, C. H., & Procopio, S. T. (2007). Do you know what it means to miss New Orleans? Internet communication, geographic community, and social capital in crisis. *Journal of Applied Communication Research*, 35(1), 67-87. <https://doi.org/10.1080/00909880601065722>
- Putnam, R. (2000). *Bowling alone: The collapse and revival of American community*. Simon & Schuster Paperbacks.
- Putnam, R., Leonardi, R., & Nanetti, R. Y. (1994). *Making democracy work: Civic traditions in modern Italy*: Princeton University Press.
- Putney, L. G. (2010). Case Study. In Salkind, N.J., (Ed.), *Encyclopedia of Research Design* (pp. 116-120). Sage Publications.
- Quarantelli, E. L. (1999). What Is a Disaster: Perspectives on the Question. *Disaster Prevention and Management: An International Journal*, 8(5), 370-452. <https://doi.org/10.1108/dpm.1999.8.5.370.3>
- Radianti, J., Hiltz, S. R., & Labaka, L. (2016). An overview of public concerns during the recovery period after a major earthquake: Nepal Twitter analysis. *Paper presented at the 2016 49th Hawaii International Conference on System Sciences (HICSS)*. <https://doi.org/10.1109/HICSS.2016.25>
- Rainey, H. G. (1996). Public opinion toward the civil service. In H. A. G. M. Bekke, J. L. Perry, & T. A. J. Toonen (eds.). *Civil service systems in comparative perspective* (pp. 180-203). Indiana University Press.
- Rath, B., Gao, W., Ma, J., & Srivastava, J. (2017). From retweet to believability: Utilizing trust to identify rumor spreaders on Twitter. *Paper presented at the Proceedings of the 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2017*, 179-186. <https://doi.org/10.1145/3110025.3110121>
- Recuero, R., & Zago, G. (2016). Em busca das “redes que importam”: redes sociais e capital social no Twitter. *LÍBERO. ISSN impresso: 1517-3283/ISSN online: 2525-3166*(24), 81-94.
- Recuero, R., Araujo, R., & Zago, G. (2011). *How does social capital affect retweets? Paper presented at the Fifth International AAAI Conference on Weblogs and Social Media*. <https://www.researchgate.net/publication/221297952> [How Does Social Capital Affect Retweets](https://www.researchgate.net/publication/221297952)
- Reeves, B., & Nass, C. I. (1996). *The media equation: How people treat computers, television, and new media like real people and places*. Cambridge University Press.



- Regmi, K. D. (2016). The political economy of 2015 Nepal earthquake: Some critical reflections. *Asian geographer*, 33(2), 77-96.  
<https://doi.org/10.1080/10225706.2016.1235053>
- Regmi, N. (2017). Expectations versus Reality: A Case of Internet in Nepal. *The Electronic Journal of Information Systems in Developing Countries*, 82(1), 1-20.  
<https://doi.org/10.1002/j.1681-4835.2017.tb00607.x>
- Ritchie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. Sage Publications.
- Robinson, S. E., Liu, X., Stoutenborough, J. W., & Vedlitz, A. (2012). Explaining popular trust in the department of homeland security. *Journal of Public Administration Research and Theory*, 23(3), 713-733. <https://doi.org/10.1093/jopart/mus025>
- Rogstad, I. (2016). Is Twitter just rehashing? Intermedia agenda setting between Twitter and mainstream media. *Journal of Information Technology & Politics*, 13(2), 142-158.  
<https://doi.org/10.1080/19331681.2016.1160263>
- Rokeach, M. (1979). *Understanding human values: Individual and societal*. Free Press.
- Rose, L. E. (1999). Citizens (re) orientation in the welfare state: From private to public citizens. In Bussemaker, J. (ed.), *Citizenship and the welfare state reform in Europe* (pp. 129-146). Routledge.
- Ross, C., Terras, M., Warwick, C., & Welsh, A. (2011). Enabled backchannel: Conference Twitter use by digital humanists. *Journal of Documentation*, 67(2), 214-237.  
<https://doi.org/10.1108/00220411111109449>
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of management review*, 23(3), 393-404.  
<https://doi.org/10.5465/amr.1998.926617>
- Roy, A., Sarkar, C., Srivastava, J., & Huh, J. (2016). Trustingness & trustworthiness: A pair of complementary trust measures in a social network. *Paper presented at the 2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. <https://doi.org/10.1109/ASONAM.2016.7752289>
- Rulke, D. L., & Rau, D. (2000). Investigating the encoding process of transactive memory development in group training. *Group & Organization Management*, 25(4), 373-396.  
<https://doi.org/10.1177/1059601100254004>
- Runyan, R. C. (2006). Small business in the face of crisis: Identifying barriers to recovery from a natural disaster. *Journal of Contingencies and Crisis Management*, 14(1), 12-26. <https://doi.org/10.1111/j.1468-5973.2006.00477.x>
- Salinger, M. (2010). *Behavioral economics, consumer protection, and antitrust*.  
<https://ideas.repec.org/a/cpi/cpijrn/6.1.2010i=5484.html>

- Sandelowski, M. (1995). Sample size in qualitative research. *Research in nursing & health*, 18(2), 179-183. <https://doi.org/10.1002/nur.4770180211>
- Sandman, P. M. (1993). *Responding to community outrage: Strategies for effective risk communication*. American Industrial Hygiene Association.
- Sangraula, B. (2017, January 16). *How Nepal got the electricity flowing*. The Christian Science Monitor. <https://www.csmonitor.com/World/Asia-South-Central/2017/0116/How-Nepal-got-the-electricity-flowing>
- Sapkota, N. (2015, June 18). *Rotten rice from WFP found in Gorkha again*. Republica. <http://archive.myrepublica.com/2015-16/society/story/23008/wfp-distributes-rotten-rice-in-gorkha-with-pics.html>
- Sarkar, D. D. (2015, May 8). *That other jolt from Nepal's earthquake*. Livemint. <https://www.livemint.com/Opinion/9pKEczeSK5x5iM8sMx0hhL/That-other-jolt-from-Nepals-earthquake.html>
- Save the Children. (2017, October 18). *Much awaited disaster risk reduction and management act is endorsed*. <https://nepal.savethechildren.net/news/much-awaited-disaster-risk-reduction-and-management-act-endorsed>
- Seeger, M. W., Sellnow, T. L., & Ulmer, R. R. (2003). *Communication and organizational crisis*. Praeger Publishers.
- Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences (4th ed.)*. Teachers College Press.
- Self, C. C. (2014). Credibility. In Stacks D.W. & Salwen, M.B. (Ed.), *An integrated approach to communication theory and research* (pp. 449-470). Routledge.
- Seligman, A. B. (1997). *The problem of trust*. Princeton University Press.
- Sellnow, T. L., & Seeger, M. W. (2013). *Theorizing crisis communication*. Wiley-Blackwell.
- Sen, A. K. (1999). Democracy as a universal value. *Journal of democracy*, 10(3), 3-17. <https://doi.org/10.1353/jod.1999.0055>
- Shah, B. (2010). *Increasing e-Government adoption through social media: A case of Nepal*. <https://www.diva-portal.org/smash/get/diva2:372485/FULLTEXT01.pdf>
- Shakya, M., Varum, H., Vicente, R., & Costa, A. (2012). Structural vulnerability of Nepalese Pagoda temples. *Paper presented at the Proceedings of the 15th world conference on earthquake engineering*. [https://www.iitk.ac.in/nicee/wcee/article/WCEE2012\\_2919.pdf](https://www.iitk.ac.in/nicee/wcee/article/WCEE2012_2919.pdf)
- Shapiro, S. P. (1987). The social control of impersonal trust. *American Journal of Sociology*, 93(3), 623-658. <https://doi.org/10.1086/228791>
- Sharecast Initiative Nepal [@SharecastNP]. (2019, 21 August, 2019). इन्टरनेट, अनलाईन या सामाजिक संजालमा सूचना तथा समाचार पढ्दै गर्दा तपाईंले समाचारको श्रोत, संवाददाता वा समाचारको सत्यता बारे कतिको ख्याल गर्नुहुन्छ?



भनेर सोध्दा ४५%ले ख्याल गर्छु भन्नुभयो भने ४६% ले चाहिँ ख्याल गर्दिन भन्नुभयो । [tweet]. Twitter.

<https://twitter.com/SharecastNP/status/1164077208350015489>

- Sharecast Initiative. (2018, April 13). *Nepal's changing media landscape*. Nepali Times. <https://www.nepalitimes.com/banner/how-nepals-media-landscape-is-being-transformed/>
- Sharratt, M., & Usoro, A. (2003). Understanding knowledge-sharing in online communities of practice. *Electronic Journal on Knowledge Management*, 1(2), 187-196.
- Shaw, D., Lin, S., & Ho, M.-C. (2008). Why are flood and landslide victims less willing to take mitigation measures than the public? *Natural Hazards*, 44(2), 305-314. <https://doi.org/10.1007/s11069-007-9136-z>
- Shepard, D. L., Hashimoto, T., Kuboyama, T., & Shin, K. (2016). What Do Boy Bands Tell Us About Disasters? The Social Media Response to the Nepal Earthquake. *Paper presented at the DH*. <https://dh2016.adho.org/abstracts/105>
- Shi, J., Lai, K. K., Hu, P., & Chen, G. (2017). Understanding and predicting individual retweeting behavior: Receiver perspectives. *Applied Soft Computing*, 844-857. <https://doi.org/10.1016/j.asoc.2017.08.044>
- Shore, D. A. (2003). Communicating in times of uncertainty: the need for trust. *Journal of health communication*, 8(S1), 13-14. <https://doi.org/10.1080/713851977>
- Shrestha, B., & Pathranarakul, P. (2018). Nepal Government's Emergency Response to the 2015 Earthquake: A Case Study. *Social Sciences*, 7(8), 2-27. <https://doi.org/10.3390/socsci7080127>
- Shrestha, R. (n.d.). How Nepal is facing the challenges of a federal system. *Development Asia: An Initiative of Asian Development Bank*. <https://development.asia/policy-brief/how-nepal-facing-challenges-federal-system>
- Siebecker, M. R. (2009). Trust & transparency: Promoting efficient corporate disclosure through fiduciary-based discourse. *Washington University Law Review*, 87, 115-174.
- Sigal, L. V. (1973). Reporters and officials: The organization and politics of newsmaking. *Political Science Quarterly*, 89(3), 672-674.
- Silverman, C. (2015). Lies, damn lies, and viral content: How news websites spread (and Debunk) online rumors, unverified claims and misinformation. *Tow Center for Digital Journalism*, 168(4), 134-140. <https://doi.org/10.7916/D8Q81RHH>
- Simon, H. A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, 69(1), 99-118. <https://doi.org/10.2307/1884852>
- Simonin, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic management journal*, 20(7), 595-623. [https://doi.org/10.1002/\(SICI\)1097-0266\(199907\)20:7<595::AID-SMJ47>3.0.CO;2-5](https://doi.org/10.1002/(SICI)1097-0266(199907)20:7<595::AID-SMJ47>3.0.CO;2-5)

- Sindane, A. (2009). Administrative Culture, Accountability and Ethics: Gateways in search of the best Public service. *Journal of Public Administration*, 44(3), 492-503.
- Singleton Jr, R., & Straits, B. C. (1999). *Approaches to Social Research*. Oxford University Press.
- Sliburyte, L. (2009). How celebrities can be used in advertising to the best advantage. *International Scholarly and Scientific Research & Innovation*, 3(10).  
<https://pdfs.semanticscholar.org/ca1b/bf8c15990be690967e9ae12697ca765b2091.pdf>
- Song, C., & Lee, J. (2016). Citizens' use of social media in government, perceived transparency, and trust in government. *Public Performance & Management Review*, 39(2), 430-453. <https://doi.org/10.1080/15309576.2015.1108798>
- Spence, P. R., Lachlan, K. A., Lin, X., & del Greco, M. (2015). Variability in Twitter content across the stages of a natural disaster: Implications for crisis communication. *Communication Quarterly*, 63(2), 171-186.  
<https://doi.org/10.1080/01463373.2015.1012219>
- Stake, R. E. (1995). *The art of case study research*. Sage Publications.
- Starbird, K. (2011). Digital volunteerism during disaster: Crowdsourcing information processing. *Paper presented at the Conference on human factors in computing systems*.
- Stelman, T. A., McCaffrey, S. M., Velez, A.-L. K., & Briefel, J. A. (2015). What information do people use, trust, and find useful during a disaster? Evidence from five large wildfires. *Natural hazards*, 76(1), 615-634. <https://doi.org/10.1007/s11069-014-1512-x>
- Stiglitz, J. E. (1999). On liberty, the right to know, and public discourse: The role of transparency in public life. *Globalizing rights: The Oxford amnesty lectures*, 149.  
<http://www.internationalbudget.org/wp-content/uploads/On-Liberty-the-Right-to-Know-and-Public-Discourse-The-Role-of-Transparency-in-Public-Life.pdf>
- Stringhini, G., Kruegel, C., & Vigna, G. (2010). Detecting spammers on social networks. *Paper presented at the Proceedings of the 26th annual computer security applications conference*. <https://doi.org/10.1145/1920261.1920263>
- Subba, R., & Bui, T. (2017). Online convergence behavior, social media communications and crisis response: An empirical study of the 2015 Nepal earthquake police twitter project. *Paper presented at the Proceedings of the 50th Hawaii International Conference on System Sciences*. <https://doi.org/10.24251/HICSS.2017.034>
- Subedi, S., & Chhetri, M. B. P. (2019). Impacts of the 2015 Gorkha Earthquake: Lessons Learnt from Nepal. *Earthquakes-Impact, Community Vulnerability and Resilience*. IntechOpen. <https://doi.org/10.5772/intechopen.85322>

- Subrahmanyam, K., Reich, S. M., Waechter, N., & Espinoza, G. (2008). Online and offline social networks: Use of social networking sites by emerging adults. *Journal of applied developmental psychology*, 29(6), 420-433.  
<https://doi.org/10.1016/j.appdev.2008.07.003>
- Suh, B., Hong, L., Pirolli, P., & Chi, E. H. (2010). Want to be retweeted? Large scale analytics on factors impacting retweet in Twitter network. *Paper presented at the 2010 IEEE Second International Conference on Social Computing*.  
<https://doi.org/10.1109/SocialCom.2010.33>
- Sundar, S. S. (2008). *The MAIN model: A heuristic approach to understanding technology effects on credibility*. <https://www.issuelab.org/resources/875/875.pdf>
- Sutton, J. N., Palen, L., & Shklovski, I. (2008). Backchannels on the front lines: Emergency uses of social media in the 2007 Southern California Wildfires. In *Proceedings of the 5th International ISCRAM Conference*.  
[https://www.researchgate.net/publication/228846438\\_Backchannels\\_on\\_the\\_Front\\_Lines\\_Emergent\\_Uses\\_of\\_Social\\_Media\\_in\\_the\\_2007\\_Southern\\_California\\_Wildfires](https://www.researchgate.net/publication/228846438_Backchannels_on_the_Front_Lines_Emergent_Uses_of_Social_Media_in_the_2007_Southern_California_Wildfires)
- Sztompka, P. (1999). *Trust: A sociological theory*. Cambridge University Press.
- Takahashi, B., Tandoc Jr, E. C., & Carmichael, C. (2015). Communicating on Twitter during a disaster: An analysis of tweets during Typhoon Haiyan in the Philippines. *Computers in human behavior*, 392-398. <https://doi.org/10.1016/j.chb.2015.04.020>
- Tandoc Jr, E. C., Lim, Z. W., & Ling, R. (2018). Defining “fake news” A typology of scholarly definitions. *Digital journalism*, 6(2), 137-153.  
<https://doi.org/10.1080/21670811.2017.1360143>
- Tang, X., Tang, M., Weng, Z., Cao, X., & Lu, Y. (2012). The impact of social capital on information exchange and well-being in virtual communities. *Journal of Global Information Technology Management*, 15(3), 5-29.  
<https://doi.org/10.1080/1097198X.2012.10845616>
- Taylor, H. (2000). Does Internet research work? *International journal of market research*, 42(1), 1-11. <https://journals.sagepub.com/doi/pdf/10.1177/147078530004200104>
- Teo, T. S., Lim, V. K., & Lai, R. Y. (1999). Intrinsic and extrinsic motivation in Internet usage. *Omega*, 27(1), 25-37. [https://doi.org/10.1016/S0305-0483\(98\)00028-0](https://doi.org/10.1016/S0305-0483(98)00028-0)
- Thapa, L. (2016). Spatial-temporal analysis of social media data related to Nepal Earthquake 2015. *The international archives of photogrammetry, remote sensing and spatial information sciences*, 567-571. <https://doi.org/10.5194/isprs-archives-XLI-B2-567-2016>
- The Kathmandu Post. (2018, October 7). *Govt increases minimum pay of journalists by 25%*. <https://kathmandupost.com/national/2018/10/07/govt-increases-minimum-pay-of-journalists-by-25>

- The Kathmandu Post. (2019, March 28). *Kulman Ghising: The man who gave us light*.  
<https://kathmandupost.com/national/2019/02/15/kulman-ghising-the-man-who-gave-us-light>
- Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237-246.  
<https://doi.org/10.1177/1098214005283748>
- Thomas, Z. (2020, February 13). *WHO says fake coronavirus claims causing 'infodemic'*. BBC. <https://www.bbc.com/news/technology-51497800>
- Thomson, R., Ito, N., Suda, H., Lin, F., Liu, Y., Hayasaka, R., Isochi, R. & Wang, Z. (2012). Trusting tweets: The Fukushima disaster and information source credibility on Twitter. Paper presented at the Proceedings of the 9th International ISCRAM Conference. <https://www.semanticscholar.org/paper/Trusting-tweets%3A-The-Fukushima-disaster-and-source-Thomson-Ito/58b05531a87ee4f640866f71e7619fad6475f799>
- Tilak, P., Acharya, U., Karki, B., Bhandari, R., Shrestha, U., & Dahal, R. (2012). *Journalist & social media: 2011 National survey on Nepali journalists*. Center for Media Research, Nepal. [http://research.butmedia.org/wp-content/uploads/2012/06/Journalist\\_Social\\_Media\\_CMR\\_Nepal.pdf](http://research.butmedia.org/wp-content/uploads/2012/06/Journalist_Social_Media_CMR_Nepal.pdf)
- Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: An empirical study of intra-firm networks. *Academy of management Journal*, 4, 60-65.
- Turner, S. F., Cardinal, L. B., & Burton, R. M. (2017). Research design for mixed methods: A triangulation-based framework and roadmap. *Organizational research methods*, 20(2), 243-267. <https://doi.org/10.1177/1094428115610808>
- Twitter. (2019, January 15). Platform manipulation and spam policy. <https://help.twitter.com/en/rules-and-policies/platform-manipulation>
- Twitter. (2020a, February 12). *Twitter trends FAQs*. Retrieved February, 12, 2020, from <https://help.twitter.com/en/using-twitter/twitter-trending-faqs>
- Twitter. (2020b, March 17). *Report impersonation accounts*. <https://help.twitter.com/en/safety-and-security/report-twitter-impersonation>
- UNDP. (2004). *Reducing Disaster Risk A Challenge For Development*. USA: United Nations Development Programme (UNDP).  
<https://www.undp.org/content/undp/en/home/librarypage/crisis-prevention-and-recovery/reducing-disaster-risk--a-challenge-for-development.html>
- UNFPA. (2017). *Population Situation Analysis*. United Nations Population Fund (UNFPA)-Nepal. <https://nepal.unfpa.org/en/publications/population-situation-analysis-nepal>
- UNISDR. (2009). *2009 UNISDR Terminology on Disaster Risk Reduction*. United Nations International. <https://www.undrr.org/publication/2009-unisdr-terminology-disaster-risk->

[reduction#:~:text=The%20UNISDR%20Terminology%20aims%20to,authorities%2C%20practitioners%20and%20the%20public.](#)

- Upreti, S., Baral, S. C., Regmi, K., & Lamichanne, B. (2016). Media Monitoring of Nepal Earthquake: Lessons Learnt and Way Forward. *Asian congress for media and communication 2016 international conference*.  
[https://www.researchgate.net/publication/309661139\\_Media\\_Monitoring\\_of\\_Nepal\\_Earthquake\\_Lessons\\_Learnt\\_and\\_Way\\_Forward](https://www.researchgate.net/publication/309661139_Media_Monitoring_of_Nepal_Earthquake_Lessons_Learnt_and_Way_Forward)
- Uslaner, E. M. (2002). *The moral foundations of trust*. Cambridge University Press.
- Vaidya, T., Votipka, D., Mazurek, M. L., & Sherr, M. (2019). Does Being Verified Make You More Credible? Account Verification's Effect on Tweet Credibility. *Paper presented at the Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, pp. 1-13. <https://doi.org/10.1145/3290605.3300755>
- Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of computer-mediated Communication*, 14(4), 875-901. <https://doi.org/10.1111/j.1083-6101.2009.01474.x>
- Valero, J. N., Williams, B. D., & Kim, K. (2018). Social media, trust, and disaster: Does trust in public and nonprofit organizations explain social media use during a disaster? *Quality & Quantity*, 52(2), 537-550. <https://doi.org/10.1007/s11135-017-0594-4>
- Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *CyberPsychology & Behavior*, 9(5), 584-590. <https://doi.org/10.1089/cpb.2006.9.584>
- Van den Bos, K. (2011). *Vertrouwen in de overheid: Wanneer hebben burgers het, wanneer hebben ze het niet, en wanneer weten ze niet of de overheid te vertrouwen is?* : Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.
- Van Liere, D. (2010). How far does a tweet travel? Information brokers in the Twitterverse. *Paper presented at the Proceedings of the International Workshop on Modeling Social Media*, 1-4. <https://doi.org/10.1145/1835980.1835986>
- VanDam, C., & Tan, P.-N. (2016). Detecting hashtag hijacking from Twitter. *Paper presented at the Proceedings of the 8th ACM Conference on Web Science*.  
<https://doi.org/10.1145/2908131.2908179>
- Varda, D. M., Forgette, R., Banks, D., & Contractor, N. (2009). Social network methodology in the study of disasters: Issues and insights prompted by post-Katrina research. *Population Research and Policy Review*, 28(1), 11-29. <https://doi.org/10.1007/s11113-008-9110-9>

- Vena, J. (2015, April 25). *Pink, Mandy Moore, Kevin Jonas among celebrities tweeting support after Nepal earthquake*. Billboard. <https://www.billboard.com/articles/news/6546041/nepal-earthquake-details-google-executive-celebrity-tweets>
- Versluis, A. (2014). Formal and informal material aid following the 2010 Haiti earthquake as reported by camp dwellers. *Disasters*, 38(s1), 94-109. <https://doi.org/10.1111/disa.12050>
- Vidulich, M., Dominguez, C., Vogel, E., & McMillan, G. (1994). Situation awareness: Papers and annotated bibliography. *Armstrong Lab Wright-Patterson Afb Oh Crew Systems Directorate*, 89 (3), (Autumn, 1974), 672-674. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a284752.pdf>
- W.W. (2012, March 27). Big government and the narcissism of small differences. *The Economist*. <https://www.economist.com/democracy-in-america/2012/03/27/big-government-and-the-narcissism-of-small-differences>
- Walford, G. (2001). *Doing qualitative educational research: A personal guide to the research process*. Continuum.
- Walker, G. (1985). Network position and cognition in a computer software firm. *Administrative science quarterly*, 103-130. <https://doi.org/10.2307/2392814>
- Walther, J. B., Van Der Heide, B., Kim, S.-Y., Westerman, D., & Tong, S. T. (2008). The role of friends' appearance and behavior on evaluations of individuals on Facebook: Are we known by the company we keep? *Human Communication Research*, 34(1), 28-49. <https://doi.org/10.1111/j.1468-2958.2007.00312.x>
- Wang, A. H. (2010). Don't follow me: Spam detection in Twitter. *Paper presented at the 2010 international conference on security and cryptography (SECRYPT)*.
- Wasserman, S., Walker, M. E., & Wellman, B. (1993). Statistical models for social support networks. *Sociological Methods & Research*, 22(1), 71-98. <https://doi.org/10.1177/0049124193022001004>
- Waters, R. D., & Williams, J. M. (2011). Squawking, tweeting, cooing, and hooting: Analyzing the communication patterns of government agencies on Twitter. *Journal of Public Affairs*, 11(4), 353-363. <https://doi.org/10.1002/pa.385>
- Watson, G., & Johnson, D. W. (1966). *Social psychology: Issues and insights*. J.B. Lippincott
- Waugh Jr, W. L., & Streib, G. (2006). Collaboration and leadership for effective emergency management. *Public administration review*, 66, 131-140. <https://doi.org/10.1111/j.1540-6210.2006.00673.x>
- Webb, B., & Webb, S. (1932). *Methods of Social Study*. Longmans Green.



- Wellman, B. (1996). Are personal communities local? A Dumptarian reconsideration. *Social networks*, 18(4), 347-354. <https://www.dhi.ac.uk/san/waysofbeing/data/communities-murphy-wellman-1996a.pdf>
- Wellman, B. (2001). *Little boxes, glocalization, and networked individualism*. In Tanabe, M., Besselaar, P. & Ishida, T. (eds.), *Digital Cities II: Computational and sociological approaches* (pp. 10-25). Springer.
- Wellman, B., & Hampton, K. (1999). Living networked on and offline. *Contemporary Sociology*, 28(6), 648-654. <https://doi.org/10.2307/2655535>
- Wellman, B., Haase, A. Q., Witte, J., & Hampton, K. (2001). Does the Internet increase, decrease, or supplement social capital? Social networks, participation, and community commitment. *American behavioral scientist*, 45(3), 436-455. <https://doi.org/10.1177/00027640121957286>
- Wenger, E., White, N., & Smith, J. D. (2009). *Digital habitats: Stewarding technology for communities*. CPsquare.
- Westerman, D., Spence, P. R., & Van Der Heide, B. (2012). A social network as information: The effect of system generated reports of connectedness on credibility on Twitter. *Computers in Human Behavior*, 28(1), 199-206. <https://doi.org/10.1016/j.chb.2011.09.001>
- Widén-Wulff, G., Ek, S., Ginman, M., Perttilä, R., Södergård, P., & Tötterman, A.-K. (2008). Information behaviour meets social capital: a conceptual model. *Journal of information science*, 34(3), 346-355. <https://doi.org/10.1177/0165551507084679>
- Willer, R. (2009). Groups reward individual sacrifice: The status solution to the collective action problem. *American Sociological Review*, 74(1), 23-43. <https://doi.org/10.1177/000312240907400102>
- Williams, D. (2006). On and off the'Net: Scales for social capital in an online era. *Journal of computer-mediated Communication*, 11(2), 593-628. <https://doi.org/10.1111/j.1083-6101.2006.00029.x>
- Williams, R. (2011). Culture is ordinary (1958). *Cultural theory: An anthology*, 53-59.
- Williamson, O. E. (1985). *The economic institutions of capitalism. Firms, markets, relational contracting*. The Free Press.
- Wisner, B., Blaikie, P., Cannon, T. & Davis, I. (2004). *At risk: natural hazards, people's vulnerability, and disasters* (2nd ed.). Routledge.
- Wisner, B., Gaillard, J.-C., & Kelman, I. (2012). *The Routledge handbook of hazards and disaster risk reduction* (Vol. 2). Routledge.
- Witte, J. C., & Mannon, S. E. (2010). *The internet and social inequalities*. Routledge.

- Wolf, J. (2008). *Self-Administered Questionnaire*. In *Encyclopedia of Survey Research Methods*. <https://dx.doi.org/10.4135/9781412963947.n522>
- Wray, R., Rivers, J., Jupka, K., & Clements, B. (2006). Public perceptions about trust in emergency risk communication: Qualitative research findings. *International Journal of Mass Emergencies and Disasters*, 24(1), 45-75.  
[https://www.isemiraq.net/article\\_sl\\_u\\_trust-1.pdf](https://www.isemiraq.net/article_sl_u_trust-1.pdf)
- Wukich, C. (2016). Government social media messages across disaster phases. *Journal of Contingencies and Crisis Management*, 24(4), 230-243. <https://doi.org/10.1111/1468-5973.12119>
- Yang, K. H. (2015). Participant reflexivity in community-based participatory research: Insights from reflexive interview, dialogical narrative analysis, and video ethnography. *Journal of Community & Applied Social Psychology*, 25(5), 447-458.  
<https://doi.org/10.1002/casp.2227>
- Yang, Z., Wilson, C., Wang, X., Gao, T., Zhao, B. Y., & Dai, Y. (2014). Uncovering social network sybils in the wild. *ACM Transactions on Knowledge Discovery from Data (TKDD)*, 8(1), 1-29. <https://doi.org/10.1145/2556609>
- Yauch, C. A., & Steudel, H. J. (2003). Complementary use of qualitative and quantitative cultural assessment methods. *Organizational research methods*, 6(4), 465-481.  
<https://doi.org/10.1177/1094428103257362>
- Yin, R. K. (2018). *Case study research and applications: Design and methods (Sixth ed.)*. Sage Publications.
- Yin, R. K., & Davis, D. (2007). Adding new dimensions to case study evaluations: The case of evaluating comprehensive reforms. *New directions for evaluation*, 2007, 75-93.  
<https://doi.org/10.1002/ev.216>
- Zaman, T. R., Herbrich, R., Van Gael, J., & Stern, D. (2010). Predicting information spreading in Twitter. In *Paper presented at the Workshop on computational social science and the wisdom of crowds, nips*.  
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.208.5687&rep=rep1&type=pdf>
- Zhu, D. H., & Chang, Y. P. (2012). The role of perceived social capital and flow experience in building users' continuance intention to social networking sites in China. *Computers in Human Behavior*, 28(3), 995-1001.  
<https://doi.org/10.1016/j.chb.2012.01.001>