

Tweeting from the Shadows: Social Media Convergence Behaviour During the 2017 Iran-Iraq Earthquake

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ABSTRACT

Official policies, socioeconomic and demographic factors of an area and population impacted by an extreme event influence the way that individuals use social media to cope with and respond to disasters. It is difficult to untangle the impact of these factors in social media crisis communications and users' behaviour. This paper focuses on convergence behaviour of Twitter users in response to an earthquake event in an environment where the access to commercial social media platforms is highly restricted. This study analyses 41,745 Tweets and retweets communicated within two weeks of an event where the Iran-Iraq border was hit by a 7.3-magnitude earthquake in 2017. This research indicates the impact of political factors affecting the region on social media users and their reaction to this extreme event. Analysing the content of the Tweets showed the response to government policies as well as the social difficulties of ethnic groups affected by the event. This is reflected in the use of Twitter as an example of social media platforms in crisis communication. This behaviour was not expected and has been underreported in the current body of knowledge.

Keywords

Social Media Crisis Communication, Convergence Behaviour, Political Communication, Earthquake, Natural Disaster

INTRODUCTION

Social media communication during extreme events has become a revolutionary way of communicating during a crisis and has had a tremendous impact on societies and organisations (Li 2017; Raisinghani 2012). These platforms are used by individuals to reach a large number of people in a short period of time and have become an essential source of information and a communication channel for crisis management (Fischer et al. 2016).

Online users' engagement on social media during natural extreme events has been studied, and it is revealed that agencies and individuals play different roles in these online networks (Carter et al. 2014; Ross et al. 2018). For instance, during the 2016 flood in Louisiana, individuals actively shared emergency information with their friends on Facebook and Twitter, while, organisations actively played the role of "gatekeepers" to connect a network in the city of Baton Rouge with external social groups or online communities (Kim and Hastak 2018a). Similarly, other studies have highlighted the importance of agencies in information diffusion during an extreme event and how crisis-related information should be published on Facebook to reach as many people as possible (Ross et al. 2018). It is also reported that government officials seek to leverage user-generated content as an important source of information to improve their services and communication with citizens (Kavanaugh et al. 2012).

Social media platforms, however, are not freely accessible everywhere in the world; many countries have implemented laws to censor content and access to such networking sites. For instance, access to Facebook, YouTube, or Twitter is currently blocked in North Korea, China, and Iran. Figure 1 outlines a map of countries that consolidate their filtering systems and enforce Internet content standards. It also indicates the location of the 2017 Iran-Iraq Earthquake that we are using as the case for this study (see map cut-out).

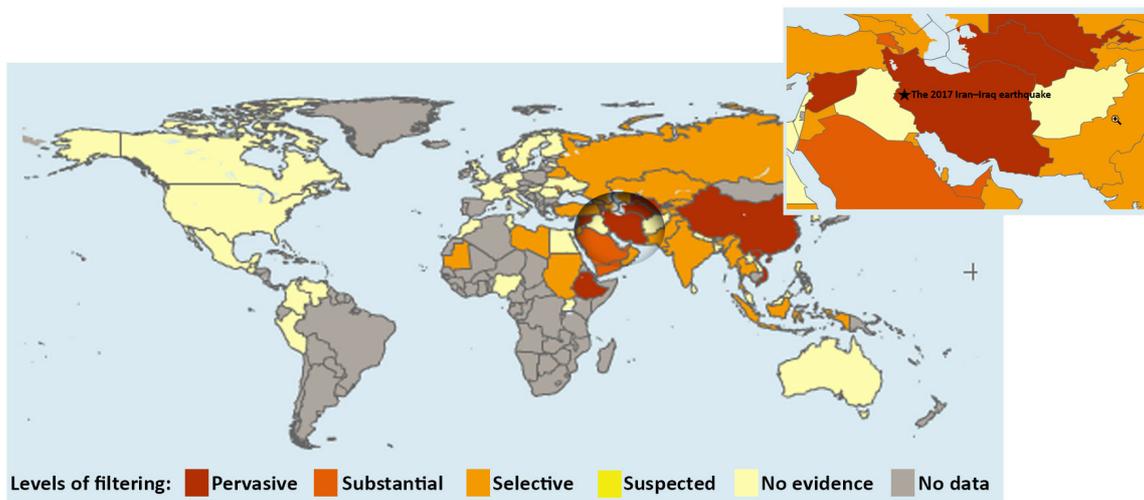


Figure 1 Countries that restrict Social Media platforms containing political content¹

Regarding the role of social media in crises management; one of the indirect consequences of blocking public access to online social communication platforms, as well as regulating the Internet, is the limitation of the role that emergency management organisations can play in the crisis communication network on these platforms, as well as restricting official responses to the extreme event. This has an impact on the communication patterns between community members and emergency management organisations as well as affecting the behaviour of individual online users in utilising the platforms during an extreme event. As can be seen in Figure 1, the 2017 Iran–Iraq earthquake mostly affected the area where residents are restricted to the access of social media platforms such as Facebook and Twitter through technical measures.

Our research explores social media crisis communication where the access to social media platforms is highly restricted. For this study, we use Twitter as an example of a social media platform. By analysing the content of the messages shared on the platform, we disclose disaster convergence behaviour archetypes, shaped in response to the 2017 Iran–Iraq earthquake.

Social media interaction in disaster management can be separated in three dimensions; the interaction between emergency service agencies, the interaction between an emergency service agency and the public, and the interaction within the general public (Ahmed 2011; Ehnis and Bunker 2013). We focus on the third dimension of use, which is the crisis communication between members of the general public enabled through social media. We use the microblogging service Twitter as our source of data. Twitter was launched in 2006 and is a prominent microblogging service for research studies because of its simple privacy setting structure (Bruns and Stieglitz 2013) which enables its users to post short messages (Riemer et al. 2010). Our research approach takes a case study approach (Piekkari et al. 2009) in which we analyse Tweets which are specifically related to the Iran-Iraq earthquake. This earthquake occurred on the 12th of November 2017. The purpose of this study is to better understand online convergence behavior patterns shaped in response to this crisis where the use of social media is impacted an environment where it is highly restricted.

The remainder of this paper is structured as follows: in the next section, we provide an overview of the existing literature describing and presenting convergence behavior archetypes exhibited by social media users in extreme events. We also define the concept of crisis exploitation or political interpretation of extreme events in this section. Next, we provide an overview of the 2017 Iran-Iraq Earthquake case study. This is followed by a description of the research methodology, which shows our process of data collection and analysis. Lastly, we outline our results and discussion where we disclose our findings and explain their contribution to social media crisis communications.

¹ Figure adopted from: <http://onimap.citizenlab.org/filtering-pol.html> Accessed on 13th of June 2018

LITERATURE REVIEW

Social media is a group of Internet-based applications built on the ideological and technological foundations of Web 2.0, which allows the creation and exchange of User Generated Content (Kaplan and Haenlein 2010). Social media includes a vast array of different technologies and platforms such as Social Networking Sites, Microblogging Services, Wikis, Collaborative Web Maps, Media Content Sharing platforms, etc. (Kane et al. 2014). Social media has contributed enormously in disaster management to the process of finding collaborative solutions to complex problems (Bruns and Stieglitz 2013; Underwood 2010). Social media platforms influence the process of information diffusion in society. The general public and emergency service agencies use social media and in particular Microblogging Services to interact and communicate information at all stages of an extreme event (Ehnis and Bunker 2013). Users employ social media as a low-cost source of information to reach a large number of people in a short time and for sense-making and crisis management (Bunker et al. 2017; Fischer et al. 2016). Studies have shown that people use online communication platforms for self-organisation of help, diffusion of information, expression of anger or empathy, and to mitigate the effects of an extreme event (Ehnis and Bunker 2013; Procter et al. 2013; Shahid and Elbanna 2015). For instance, reports have highlighted that social media enables people to find their families and friends and to know if they are safe, also, to accurately report an incident and to send requests for assistance (Wendling et al. 2013). It is also stated that social media helps people to identify survivors and victims and to solicit donations for them.

Convergence Behaviour Archetypes

Social-technical milieu enables individual and collective action; researchers have attempted to reveal these patterns of action in a crisis setting (Starbird and Palen 2011). When an extreme event happens, convergence behaviour occurs and in consequence there is a mass movement of people, resources and assets towards the area that is impacted by the disaster. This can be explained by the concept of collective behaviour which was first used by Franklin Henry Giddings (1908) to refer to social processes and events that emerge in a spontaneous way, and do not reflect existing social structures.

Scholars have categorised online social media user convergence behaviour during a disaster by analysing the content of the messages that were created and communicated during and related to the extreme event. Social media interaction amongst community members have been studied by disaster researchers, and various convergence behaviours archetypes have been observed and outlined (Bunker et al. 2017; Fritz and Mathewson 1957). Researchers have reported seven major types of collective behaviours during extreme events. These convergence behaviour archetypes includes returners, anxious, helpers, curious and exploiters recognised by Fritz and Mathewson (1957), Fans and supporters by Kendra and Wachtendorf (2003), the detectives by Subba and Bui (2010) and behaviours of manipulators recognised by Bunker & Sleight (2016). Table 1 explains thirteen online convergence behaviour types that occur during extreme events and which are recognised by disaster researchers.

Table 1 Convergence behavior archetypes (Bunker et al. 2017)

Authors	Convergence Behaviour Archetypes	Characteristics
Fritz and Matthewson, 1957	The Returnees	Users showed a strong sense of legitimacy to return to the area that impacted by the disaster. The motivation for this behaviour could be to evacuate residents, friends and family, or they might be property owners etc.
Fritz and Matthewson, 1957	The Anxious	Divided into two categories: 1) those directly impacted by the disaster and/or anxious about those affected by the disaster. 2) Information seekers and responders.
Fritz and Matthewson, 1957	The Helpers	Volunteers to help victims who could be sub-categorised as formal (PSA) volunteers and informal (everyone else) volunteers.
Fritz and Matthewson, 1957	The Curious	Sightseeing with minimal personal concerns.
Fritz and Matthewson, 1957	The Exploiters	Looking for personal gain, detachment from or non-sympathetic identification with the victims. Intentionally spreading misleading information, deceiving, stealing, looting, giving etc.
Kendra and Wachtendorf, 2003	The Fans or Supporters	Encourage or express appreciation to helpers and rescuers.
Kendra and Wachtendorf, 2003	The Mourners	Expression of sympathy and mourn the dead.
Subba and Bui, 2010	The Detectives	Official and unofficial intelligence collectors who watch over activities and take appropriate action.
Bunker and Sleigh, 2016	The Manipulators	Looking to promote self and project personal characteristics of power. Manifests in attention seeking behaviour and creating or seeking roles of perceived importance in the management of the disaster.
Bunker et al., 2017	The Furious	Users who express their anger/annoyance about the situation and/or organizations/other people
Bunker et al., 2017	The Impassive	People who don't take part in the crisis communication and mostly tweet about personal things or just share their location
Bunker et al., 2017	The Promoters	Mainly advertisement and other unrelated content
Bunker et al., 2017	The Informers	Mostly news organisations, they don't show any emotion and only share news about the crisis

Crisis Exploitation: The Political Interpretation of Extreme Events

Extreme events and their substantial impacts on society and environment have become an exciting topic for interdisciplinary researchers in areas such as climatology, ecology, earth sciences, engineering, hydrology, social sciences and political science. A study showed that when disasters happen, government and their critics compete to interpret events, the severity of a crisis, its causes, the responsibility for its occurrence, and implications for the future, in ways that best serve their political purposes and visions of future policy directions (Boin et al. 2009). Utilizing computer-mediated communication and social media tools for political discussion, has seen the creation of unique arenas and locations for online discourse, for instance, in Facebook, several thousand groups with a political focus exist (Kushin and Kitchener 2009; Williams and Gulati 2007). Social media has become an information platform to share public opinion on policies and political positions which plays a vital role in shaping political communication around the world (Benkler 2006). These platforms are increasingly used in a political context by individuals and policy institutes which has also been reflected in online communication and users' microblogging activities during extreme events (Stieglitz and Dang-Xuan 2013).

The application of social media in managing extreme events has been studied in detail, however, some aspects of the phenomena have received less attention. This study has explored the influence of politics, socioeconomic and demographic features of the population affected by the crisis and how these shape convergence behaviors in the online space. This is a topic that deserves more attention than it has historically received. We have contributed to closing this research gap by focusing on a case of an extreme event that occurred in an area inhabited by an ethnic group with unique social, cultural and spiritual characteristics.

RESEARCH BACKGROUND - CASE STUDY DESCRIPTION

A 7.3 magnitude earthquake struck around 32 kilometres (20 miles) south of the Halabja and Kermanshah province on the border of Iraq and Iran on Sunday 12th of November 2017 at 9:18 pm. According to the Red Crescent, following the initial quake, close to 200 aftershocks occurred (Cross 2018). Figure 2 shows the location and areas that were affected by Iran-Iraq earthquake.

Iran's Press TV reported that 445 people were confirmed dead and more than 7,000 were injured on Monday afternoon (13th of November 2017). The Red Crescent also reported that ten people were killed and more than 425 injured in northern Iraq by the Sunday evening (12th of November 2017) earthquake (Khosaii 2017). The earthquake affected approximately 70,000 people, and the Iranian government declared three days of national mourning. Other countries' officials such as the US sent a message of condolence and offered help; however, Iranian officials declined offers of foreign assistance. Authorities in Iran and Iraq initiated rescue operations and military assistance, and civilians also offered to be dispatched to quake areas to assist, however, survivors of the disaster complained of a slow aid effort and slow response to requests for food and shelter.

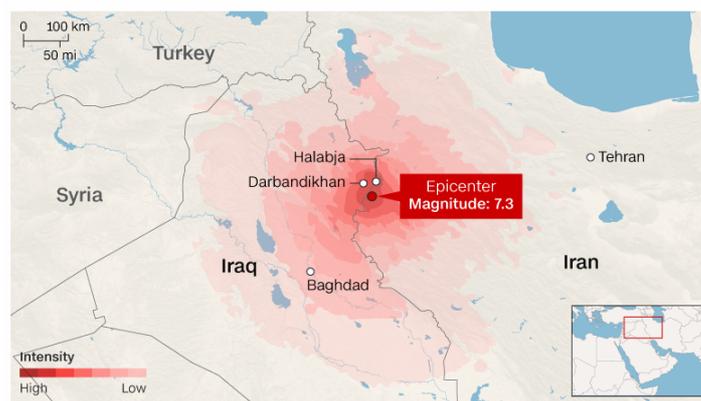


Figure 2 location of the earthquake (Adopted from Masters 2017)

Ethnic enclaves and religious and political characteristics of the case

The Iran-Iraq earthquake was chosen as the case for this study because of the unique ethnic enclave that was impacted and political characteristics of the event.

Considering ethnicity as an explanatory factor, helps this study to understand the behaviour of a group of social media users who vented their emotions via the online platform Twitter during a disaster. The Iran-Iraq earthquake had a catastrophic effect on a geographic area with a high Kurdish ethnic concentration. The Kurdish or the Kurd people, are an ethnic group, mostly inhabiting a mountainous region straddling the borders of Turkey, Iran, and Syria. Distribution of the Kurdish population is estimated at around 14.3 to 20 million in Turkey, 8.2 million to 12 million in Iran, 5.6 to 8.5 million in Iraq and 2 to 3.6 million in Syria. Kurd people are the fourth-largest ethnic group in the Middle East, however, they have never obtained a permanent nation-state, and during the past 80 years, Kurdish separatist movement efforts to set up an independent state have been quashed. These people also have counterparts across each of the countries' borders which increase the potential for ethnic separatism or to fuel civil wars (Sanasarian 2000).

Ethnicity is the crucial factor beyond socioeconomic and demographic characteristics which have differentiated the Kurds from other ethnic populations in the region (Sirkeci 2000). According to Nagel (1980) Kurds suffer from a lack of recognition in Turkey and limited political influence in Iran and Iraq and they have a resistance to local government authority. Nagel also stated that Kurdish separatist movements have formed due to various reasons including unequal economic and political relations between the ethnic periphery and the dominant

groups within the Kurdish populations (Nagel 1980). Recently the presence of Kurds in global media networks has increased due to their important position in the struggle against Islamic State (IS) which has changed the role of Kurdish movements in the region from fighting for autonomy, to being part of global union against a 'common' threat (Smets and Sengul 2016).

Religion is another factor of differentiation that has influenced the self-concept of the Kurdish community and its boundaries of inclusion and exclusion. The majority of Kurds are Sunni Muslims alongside minority communities of Kurdish Alevis, Jews, Christians, and ancient Iranian groups such as the Yāresān and the Yezidis (Foltz 2017).

The earthquake occurred on the Iran–Iraq border, just inside Iran, in Ezgeleh, Kermanshah Province which is mostly inhabited by Kurds. Iran is home to over 80 million people who are religious, ethnically, and linguistically diverse. The central authority is dominated by the Persian population which is estimated as being nearly 51 per cent of the total population, and the state religion is Shia, Islam (Hassan 2007). Ethnic groups are closely supervised by the Iranian government, and state policies protect national identity to impose unity even through force if necessary. In this regard, Persian nationalism, and Shi'a Islam are used as unifying factors. In Iran, Kurds and other ethnic groups extend beyond the borders, therefore, border security has been a very sensitive matter for the Iranian central government. Kurd people are considered as one of the ethnoreligious minorities in Iran, and according to Saleh (2013), Iran's ethnic groups such as the Kurds blame the government for their deprivation. In addition, Tehran's ethnic policies, economic inequality, political isolation, social marginalisation, and in general, the government's failure to meet the rising expectations of the ethnic minorities have disenchanted these groups with the government (Saleh 2013).

RESEARCH METHODOLOGY

Within this research study, we take a qualitative research case approach (Piekkari et al. 2009) where the utilisation of a social media platform (Twitter) by users in response to an extreme event is analysed. The data source is social media data collected from the microblogging platform Twitter (Stieglitz et al. 2018) between the 12th of November 2017 and the 26th of November 2017 which provides a critical crisis communication 'window' for analysis. A content analysis methodology is used to determine the presence of certain words in communication between the platform users and also to identify their online convergence behaviours in response to the crisis. We also analysed the genres and linguistic features of Tweets to classify them in appropriate genre chains. "Genre" particularly refers to purpose and text prototypicality (Johns 2015) and Genre Analysis (GA) thus is the production of meaning through the use of linguistic analysis approaches with some attention paid to the professional context it is situated in, and the communicative purposes it tends to serve (Bhatia 2012). The following subsections explain the research approach that has been taken.

Data Collection

With over 300 million monthly active users, Twitter is a social media platform that is highly integrated into the daily life of western societies (Whiting and Williams 2013) and which influences how people communicate with each other (Burke et al. 2011) as well as track events and news (Pentina and Tarafdar 2014). Twitter is built upon the rationale of the 'follower' principle, and its microblogging services enabled users to post, share and retrieve a short messages, which appear publicly on the platform. Both crisis management agencies and the general public have used Twitter microblogging services for communication and cooperation during crises events. Twitter offers an API for collecting data; This includes tweets and retweets as well as information about the authors of tweets (Bruns et al. 2011).

For this study, we collected 70504 tweets and retweets during the first two weeks of the 2017 earthquake which happened at the border of Iran and Iraq. A self-developed Python tool was used to connect to the Twitter API and download messages by keywords. Since Twitter is technically restricted in the region, we couldn't identify and disclose the location of the users. We crawled the content of Farsi and English tweets as well as their users' ID and timestamps and stored them in .csv files. We used the following keywords for the data collection: Kermanshah; Azgeleh; SarePolZohab; Sar_e_Pol_Zohab; #PolZohab; SarePolZohab; #Kermanshah; IranEarthquake; #IranEarthquake; Iran_IraqEarthquake; Iranquake; #Iranquake; #Maskan_Mehr.

Keywords were chosen and codified by one of the authors, who is a native Farsi speaker and fluent in English, through observing the communication and tracking hashtags.

The automatic export setting downloaded 70504 Tweets and retweets which were cleaned with keyword searches, and by manually skimming through the content of tweets in order to reduce spam and unrelated content. 28559 Tweets of the initial dataset were removed because they were either spam or did not directly relate on the event. The final dataset contains 41745 messages including 26085 tweets and 15666 retweets (a sample of tweets downloaded is available in Appendix A).

Data Analysis

Two datasets were created in Farsi and English. These final datasets were imported into Microsoft Access. The Tweets were grouped and labelled based on the shared keywords reflected in the motivation and/or interest contained in the Tweet. Keywords were chosen to codify Tweets into convergence behaviour categories. The keywords were re-assessed and re-codified by an academic who is also a native Farsi speaker as well as being fluent in English but who was not familiar with the context of the study, to reduce the influence of researcher bias and increase the accuracy of the results. In a final step, the content of the Tweets within each category were manually analysed and Tweets re-coded where necessary.

FINDINGS AND DISCUSSION

The content analysis of Tweets and Retweets in Farsi and English revealed five different convergence behaviour patterns: The Helpers, the Mourners, the Fans and Supporters, the Informers, and the Political Proponents. The first four are already found in the literature (Bunker et al. 2017). The fifth, the Political Proponents, have not yet been reported in the convergence behaviour social media literature. The frequency of convergence behaviour archetypes observed from analysing both Farsi and English data sets are shown in Figure 3. Table 2 shows the number of Tweets by convergence behaviour archetype. It was observed that the distribution of Farsi and English tweets among the identified behaviour archetypes does not follow a similar pattern, however, tweets containing political concepts were broadcast more compared with other tweets in both Farsi and English.

The Tweets which were classified as those of Helpers mostly provide updates on the victims' circumstances and their need to genuinely request relief items including blankets, tents, hygiene items, ground sheets, and food items. The Helpers also monitor the distribution of relief items and communication of related information to the public.

Table 2 Convergence behaviour of Twitter users during the crisis

Tweets and retweets	The Political proponents	The Helpers	The Informers	The Mourners	The Fans and Supporters
Farsi	16695	8555	8424	4445	933
English	989	241	556	812	95
Total = 41745	17684	8796	8980	5257	1028

The propagation rate of Mourners tweets stands at the fourth spot in our ranking and contains Tweets and Retweets expressing users' feelings and emotions regarding the crisis and its victims. Celebrities, Non-Iranian government officials, organisations and interest groups were identified in Tweet analysis as well as individuals who shared these Tweets to express their sympathy or condolences and pray for victims of the crisis.

The Fans and Supporters used Twitter to express their gratitude and appreciation in the form of Tweets of praise for the services provided to the victims by public individuals including; celebrities and famous people as well as official and unofficial groups such as the National Army and The Iranian Red Crescent Society named "Helal e Ahmar".

Tweets from the Informers consisted of the second largest group of Tweets broadcast by curious users mostly to defuse the information related to the event. For example, these Tweets consisted of text regarding technical information about seismology and earthquake engineering and its effects and damages.

The analysis exposed that the most widely shared Tweets and retweets contained political keywords. These Tweets were classified under the convergence archetype of the Political Proponent. These Political Proponents

often blamed government policies including foreign relations with other governments. These messages also indicated condemnation towards the government in regard to collapsed buildings in cases where homes were built under an affordable housing scheme initiated in 2011. Moreover, since the disaster was focussed in the region inhabited by ethnic minorities, these Tweets also showed a tendency of calling attention to racism. The user ID of the source of these Tweets were mostly anonymised by the user; hence, it is presumed that the origin of these Tweets was generally from the general public or unofficial groups and less from official opposition members. Twitter is blocked by the Iranian government due to political reasons; hence, the official response from the government or any official group has not been observed in this study. The Political Proponents use the communication around an event for political gain; they indicate similar characteristics in comparison to the exploiters and the manipulators. The exploiters are looking for personal gain (Bunker et al. 2017), the manipulators are aiming to promote themselves and project personal characteristics of power (Bunker et al. 2017); both of these archetypes are hijacking crisis communication for individual gains. The Political Proponents hijack the crisis communication as well, however, these archetypes use the communication for political influence, and not just personal gain, and are, therefore, in the social media literature an unreported convergence behaviour class.

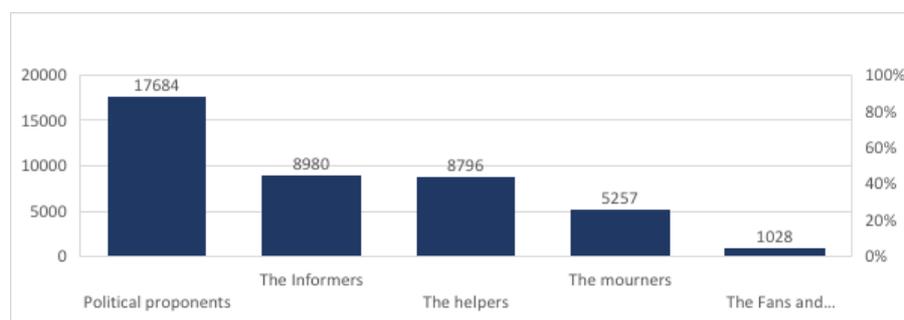


Figure 3 Frequencies of Twitter users Convergence Behaviour Archetypes

Looking deeper into the context of the Tweets it is revealed that; in this event, those who were directly impacted by the disaster rarely used the Twitter platform as a tool for emergency response, communication or spread of information. For instance, it was generally not used to evacuate residents or search for their friends or family, and generally the majority of Tweets were shared by third-parties. Most of the messages were generated by observers and helpers and mostly spread by users who were not located in the affected area. This can be explained by the poor infrastructure in the region and difficulties to access the Internet for residents. For the rural regions affected by the earthquake cell phone coverage might get more and more patchy until it possibly entirely disappears.



Figure 4 Returners travelling to the area affected by the disaster. Adopted from (Khosaii 2017).

Moreover, as opposed to Fritz and Matthewson (1957) and Bunker and Sleight (2016), this study did not observe noticeable online activities from Detectives or Returners during the event. Although, the official Iranian police website reported that massive numbers of Helpers physically travelled to the region mostly to assist victims and this caused a severe distraction in emergency agency responses (see Figure 4).

Similar to the Bunker et al. (2017) observation of online convergence behaviours during the Munich Shooting on 22 July 2016, this study classified the Manipulator who planned formal responses versus ad-hoc and emergent responses. This study observed immense anger in Tweets about the situation from organisations who

mostly targeted the government's agencies. While, the earthquake was a natural disaster it was entirely dissimilar to the 2016 Munich Shooting that was a human-made disaster involving human intent. Furthermore, unlike their observation, the Impassive or Promoters archetypes were not observed in this study. During this event Twitter was widely used for political gains, hence, these Twitter users were reclassified as Political Proponents.

The findings showed a vast influence of political tendencies in convergence behaviours of online platform users during this natural disaster. This result is in contrast with the Kim et al. (2018b) observation of comparable research conducted on a nearly similar extreme event, the 2016 flood in Louisiana, which affected an area with different political and socioeconomic characteristics (Kim and Hastak 2018b). Kim et al. (2018b) reported that 77% of the posts during emergency responses had a positive sentiment, and the most common keywords shared during the events were related to flooding, the disaster recovery team and disaster debris removal in the city.

A significant feature of our case study in contrast, are the policies of the government in Tehran against social media platforms such as Twitter, Facebook and YouTube. Iranian authorities technically outlawed access to many social media tools and Twitter has been blocked since 2009. Many Iranian users bypass state-imposed filters by using virtual private networks (VPNs) or circumvention tools, and log into these online platforms. Considering this, it can be expected that the majority of messages shared in Farsi by Iranian users express a degree of users' resistance against government policies. Furthermore, Tehran's complicated relationship with the Kurdish ethnic group, who were victims of the disaster, was especially reflected in social media users' convergence behaviour. Users condemned and blamed the government for having repressive policies against ethnic groups.

CONCLUSION, LIMITATION, AND FURTHER RESEARCH

In this study, we analysed Twitter data which was related to the 2017 Iraq-Iran earthquake to better understand social media crisis convergence behaviour in environments where the utilisation of social media is highly restricted. The findings showed that in our case some of the communication resulted in some similar convergence behaviour patterns as in other social media convergence behaviour studies (e.g. Bunker and Sleight 2016; Bunker et al. 2017); The convergence behaviour archetypes of the Informers (Fritz and Mathewson 1957), the Helpers (Fritz and Mathewson 1957), the Fans and Supporters (Kendra and Wachtendorf 2003), and the Mourners (Kendra and Wachtendorf 2003) were present and active in social media participant groups. Nevertheless, there were also a lot of unexpected results. We could not find much indication of other convergence behaviour archetypes on social media such as the Returnees (Fritz and Mathewson 1957), the Anxious (Fritz and Mathewson 1957), the Curious (Fritz and Mathewson 1957), the Exploiters (Fritz and Mathewson 1957), the Detectives (Subba and Bui 2017), or the Manipulators (Bunker and Sleight 2016). The most unexpected result was the high amount of political communication present. This political communication resulted in our study reporting on the convergence behaviour archetype of the Political Proponents. This group of social media users used the crisis communication for political influence or as a critique of the government. These Political Proponents were exhibiting other features found in the Exploiters or the Manipulators and therefore represent a different type of convergence behaviour.

The restriction of social media in the context of the study is a limitation on the interpretation of the results. As mentioned previously, the data sets used for the purpose of this study are drawn from a social platform that is legally restricted to access by the local community. Hence, users' details such as their location and identity were restricted, so that to distinguish between bystanders and active actors in the way that the Bunker et al. (2017) study was able to do was not possible. For the same reason, we were unable to analyse the sociocultural factors such as lifestyle and values of users in shaping convergence behaviours during the earthquake event.

The findings of this study highlight the importance of the potential impact of official policies and socioeconomic and demographic factors on social media crisis communication. In further research, we intend to extend the study to compare the dataset to a similar event that occurs in an area dominated by western culture to compare and highlight the influence of cultural differences on online users' convergence behaviours during extreme events.

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APPENDIX A: A sample of Farsi and English tweets collected for the purpose of this study*

<ul style="list-style-type: none"> ● Farsi Tweets: ● RT @ XXXXX: سفارت فرانسه در ایران همبستگی خود را با خانواده قربانیان و مجروحان حادثه زلزله مرگیار در مرز ایران و عراق و نیز ● RT @ XXXXX: تو این شرایط #بحرانی مملکت که #زلزله اینهمه خسارت داده و بقیه کشور هم نیاز به بازسازی و زیرساخت داره هر کسی از ● RT @ XXXXX: \n بچه های #ازگله ای سرود ای #ایران را ببینین در سرما با چه شوری میخونن \n \n شعرخوانی در آوره های #زلزله ✓\n ببینید و صفاکنید ● RT @ XXXXX: چرا اسرائیل به قربانیان زمین لرزه در غرب ایران پیشنهاد کمک های پزشکی کرد؟ فقط به یک دلیل... پیام دیگری از نخست ● RT @ XXXXX: بر اساس ... نفر کشته در زیر آوار یعنی یک ولایت در سوگ ۲۰۰۰ \n !تمامی کلمات معنای خودشون رو از دست دادن \n گزارشهای دریافتی آوار ● RT @ XXXXX: ضروری است که هموطنان ما در غرب #ایران بویژه #جوانان دلیر برای \n زلزله اخیر #پیام #مریم رجوی دربارہ ... نجات مردمی که زیر آوار م... ● RT @ XXXXX: بسیاری از این کشته‌ها قبل توسط وزارت کشور باشد تعداد قربانیان می‌تواند چندین برابر بیشتر از رقم اعلام شده بگلف تایمز از ای... ● RT @ XXXXX: فرماندار قصرشیرین از ارسال کمک‌های مردم #عراق برای زلزله زدگان شهرستان‌های قصرشیرین و سرپل ذهاب خبر داد ● RT @ XXXXX: در حالی که کودکان زلزله زده کمبود شیر و پوشاک دارند میلیاردها تومان هزینه اجلاس سه روزه محبان اهل بیت و 500 مهمان خارجی شده... ● RT @ XXXXX: کرمانشاه زیر برف و باران در چادر است. #کانکس_میخواهند #زلزله \n !جایتان خوب است و بخاری هاتان روشن ● RT @ XXXXX: چند روز گذشته؟!...از زلزله میگما... هنوز پتو ندارن بعضی ها...توی این سرما...لعنت به دست های خالی ما... ● RT @ XXXXX: مردم در این سرما در چادرند \n هوای مناطق زلزله زده کرمانشاه از این هم سردتره ● RT @ XXXXX: این داغ و مصیبتی است که مردم ما در این منطقه حدود 500 نفر از عزیزان خود را از دست دادند. اما ببینید که مردم ایران چطور همه ● RT @ XXXXX: جناب #نویخت فرمودند کانکس کمک بلاعوض است یعنی مردم #زلزله_زده از سرما یخ بزنند که بعدها سرنواهی صدقه ای بگیرند ضمناً #کان... ● RT @ XXXXX: یک استان ایران ویران شده و مردمش نیاز مندن ● RT @ XXXXX: ریشتر 1. زلزله ای به بزرگی ۶ ● RT @ XXXXX: خداوندگارا در این صبح جمعه ازت میخوایم زلزله هایی با این قدرت ریشتر برای کشور ما نیاد ● RT @ XXXXX: شبکه خبر این توییت رو امروز نشون داد گفت پس از زلزله عده ای فرصت طلب با انتشار مطالب و تصاویر کذب در صدد تخریب نظام بودن :((... 	<ul style="list-style-type: none"> ● English Tweets: ● I would like to extend my gratitude to our friends in France for their solidarity with the victims of the earthquake ● We're hosting a drive to support victims of the #IranEarthquake & local refugees from the Women's Initiative by our! ● RT @ XXXXX: There was a party going on here. So sad :(\n #Iran \n #iranEarthquake \n #Earthquake ● RT @ XXXXX : Ground motion visualization of the waves from the M6.0 earthquake in Iran. Our sensitive instruments can detect these waves! ● The #Earthquake destroyed some houses in eight villages but so far there has been no #fatalities ● RT @ XXXXX: This beautiful Persian child thanks everyone for their help for the survivors of the earthquake. ● RT @ XXXXX: #Iran - I will never repeat it enough : rain is worsening the situation of ppl affected by #KurdistanEarthquake ● RT @ XXXXX: #Iran:More than one week pass of mass earthquake in west of Iran survivals in most effected eareas have no water ● RT @ XXXXX: #IranEarthquake survivors are in need of your help. ● RT @ XXXXX _SyIFRC: In #Iran to launch an operational plan and support Red Crescent's work after #IranEarthquake. ● #IranEarthquake Death toll rises to 483. ● RT @ XXXXX: #KurdistanEarthquake: Politics create roadblocks to relief response to the crisis along #Kurdish western border ● RT @ XXXXX: #Iran: People without basic resources in areas hit by quake. people live on the street in cold without any shelter. ● RT @As_ XXXXX: Witnessing the aftermath and arriving in Sar-e-pol Zahab to meet the brave first responders of the Iranian Red Crescent.
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*In order to protect the privacy of Twitter users the accounts IDs have been deleted.