Reflection of the Earthquake on Social Media within The Concept of Risk and Emergency Communication: A Review of X Content about The 2019 İstanbul and 2020 İzmir Earthquake

Risk ve Acil Durum İletişimi Bağlamında Depremin Sosyal Medyaya Yansıması: 2019 İstanbul ve 2020 İzmir Depremine İlişkin X İçerikleri Üzerine Bir İnceleme

Abstract

The usage rate of social media, which includes the fast and instant structure of communication technologies and the interactive feature of Web 2.0 technology, is increasing day by day. With this increase, individuals and institutions can share their evaluations about their interests or agenda topics in social media, which has become a new environment for socialising, receiving news and entertainment X/Twitter, which is a type of microblogging, stands out as a social media where users can send messages they want to convey to their circle, society or audiences they can determine. In this study, which aims to determine the use of X/Twitter in risk communication and disaster-related emergency communication, the social media contents related to the earthquake were examined in a way to cover the period before and after the earthquake in Istanbul in 2019 and İzmir in 2020. The study aims to determine and compare the subject of earthquake risk communication and disaster communication. The findings indicated that the content shared on X/Twitter,about the earthquake before the disaster occurred was not intended for risk communication, and X/Twitter was actively used in terms of emergency communication after the earthquake occurred.

Özet

İletişim teknolojilerinin hızlı ve anlık yapısını ve Web 2.0 teknolojisinin etkileşim özelliğini yapısında barındıran sosyal medyanın kullanım oranı gün geçtikçe artmaktadır. Bu artışla beraber sosyalleşme, haber alma ve eğlence için yeni bir ortam haline gelen sosyal medyada kişi ve kurumlar ilgilerine ya da gündem konularına ilişkin değerlendirmelerini paylaşabilmektedir. Bir mikroblog türü olan X/Twitter, kullanıcılarının çevrelerine, topluma ya da kendi belirleyebildikleri kitlelere iletmek istedikleri mesajları gönderebildikleri sosyal mecra olarak ön plana çıkmaktadır. X'in risk iletişimi ve afet dönemi acil durum iletişiminde kullanım durumunu tespit etmeyi amaçlayan bu çalışmada, depreme ilişkin sosyal medya içerikleri Türkiye'de 2019 yılında gerçekleşen İstanbul ve 2020 yılında gerçekleşen İzmir depremi öncesi ve deprem sonrası dönemi kapsayacak şekilde incelenmiştir. Çalışmada, depremin risk iletişimine ve afet iletişimine konu edinilmesine ilişkin tespit ve kıyas yapılması amaçlanmıştır. Elde edilen bulgular X'de /Twitter'da afet meydana gelmeden önce deprem konusunda paylaşılan içeriklerin risk iletişimi amaçlı olmadığına ve X'in/Twitter'ın, deprem meydana geldikten sonra acil durumu iletişimi yönünden aktif bir şekilde kullanıldığına işaret etmiştir.

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Introduction

With the developments in computer and internet technologies, the act of socialization and need, which has changed and diversified substantially, has created a new environment for individuals to come together and share ideas. With the increase in the interaction opportunities offered by computers and mobile communication devices, individuals and communities can communicate with each other independently of time and place. New media technologies have caused time and space to become more flexible, not necessarily to coexist in physical spaces blurring the distinction between far and near (Aydoğan, 2010, p.185). As a product of new media, social media platforms are the social structures consisting of individuals and organizations that have come together around certain goals and values (Karabulut, 2009, p. 99). Social media communication, which emerged as a result of new media, has been added as a routine to the daily actions of individuals in terms of usage. One of the important features that distinguishes new media from traditional media is the distribution and display of content rather than its production, through information technologies (Manovich, 2002, p.43). This new form of distribution and display paved the way for the emergence of the concept of social media.

Social media platforms, which started to be used with Web 2.0 technology, provide content that is in a continuous flow with the participation of their own users. According to Data Reportal data (2022), channels such as Facebook, YouTube, Instagram, TikTok, Snapchat and *X/Twitter[1],* which are among the most commonly used social media applications, have made their growth possible with more users and more time spent. People are constantly producing data both by the time they are on these platforms, by consuming other content on the same platform and by producing and sharing their own content in those channels. Users not only ensure the working and continuity of these platforms, which they use for free but also allow the platforms to accumulate big data with their own information and data. Social media constantly produces and stores digital footprints, which are called big data, with high speed, large volume and diversity (Kitchin, 2014, p.2; Blazquez and Domenech, 2018, p. 101). Many events and issues in the world and in Türkiye take place in social media as well as in traditional media. Due to its interactivity feature, not only the informer but also the receiver of the news can express their opinions on these issues with their own comments and contributions. X, users who want to be heard by others is a community that expresses their opinions, communicates directly with each other and satisfies their curiosity about current issues (Klassen and Russell, 2019, p. 24).

In the literature, there are studies that draw attention to the capacity of social media in terms of risk communication (Ding, Zhang, 2010; Heldman et al., 2013; Panagiotopoulos et al., 2016, Boztepe Taşkıran, 2021; Zhang and Cozma, 2022; Feng and Umaier, 2023) and also its use in terms of emergency communication, including disaster periods (Lai and Tang, 2021; Liu et al., 2020; Lovari and Bowen, 2020; Graziano, 2023). Based on this information, this study aims to determine the usage of social media in risk communication for earthquakes, which is the most basic disaster risk for Türkiye, and in post-disaster emergency communication that started with the occurrence of the earthquake. The research focused on X, among other social media platforms because X encourages users to be more organized compared to other platforms and is prominent in obtaining information, giving advice and sharing general evaluations (Danneman and Heiman, 2014).

As a matter of fact, X is recognized as a key platform that covers the critical communication objectives of all components of disaster management (Son, 2023) and therefore plays an active role in disaster periods (Robertson et al., 2019).

Within the scope of the study, research was conducted in which the content shared about earthquakes on X, was analysed over a total of four months, covering the periods one month before and one month after the Istanbul Earthquake on 26 September 2019 and the Izmir Earthquake on 30 October 2020 in Türkiye. The study is planned to reveal the use of X with the earthquake-related risk communication dimension and the emergency communication dimension after the earthquake

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[1] *Since the name of the Twitter platform has changed and is now called X, the name X will be used instead of Twitter in the rest of the study.*

occurred. This study focuses on talkings and the subjects of these talkings about the earthquakes on X in the context of Risk and Emergency Communication.

1. Risk and Emergency Communication

In recent years, the existence of studies dealing with natural disasters such as earthquakes, floods, forest fires, etc. from the framework of communication science draws attention. When the literature is evaluated, it is seen that various concepts such as risk communication, crisis communication, emergency communication and disaster communication are used in studies dealing with disaster from the perspective of communication science.

The studies highlight the significance of media, social media, and institutional communication strategies in disaster communication. In this context, the role of media as a tool for informing and raising awareness (Yıldırım, 2023; Atkan and Çevik Ergin, 2024), its power in facilitating coordination in disaster-related communication (Balta et al., 2024), and its critical role in ensuring the flow of accurate information (Koçyiğit, 2024; Öze, 2024; Serin and Ünlü, 2024; Yıldırım, 2024) are emphasized. Additionally, institutional communication strategies employed during disaster periods are noted to play a significant role (Boztepe Taşkıran, 2024). Therefore, it is evident that disaster communication strategies hold a comprehensive importance across all phases, encompassing pre-disaster, during-disaster, and post-disaster processes.

Disaster communication consists of three phases: the first phase, risk communication, which covers communication about the disaster risk before the disaster occurs; the second phase, disaster response communication, which focuses on informing the relevant groups quickly after the disaster occurs; and third phase is post-disaster recovery and recovery, which covers a long period after the disaster (Boztepe Taşkıran, 2023, pp. 359-360). It is clear that risk communication constitutes the first stage of disaster communication in this context. Along with risk communication, which aims to establish disaster preparedness before the disaster occurs, emergency communication is another concept that this study focuses on and meets the same scope as disaster communication.

Emergency communication is a concept used to explain the communication efforts before, during and after disasters that require urgent intervention and therefore can be referred to as emergencies. Another concept used in the literature on disaster-oriented communication efforts is crisis communication. Studies that consider disasters as crises are interested in how crisis communication is carried out during disaster periods. . Seeger et al. (1998, p. 233) point out that crises refer to adverse situations that need to be addressed from an organizational perspective, and that crises are unexpected and non-routine events or series of events that create a high degree of uncertainty, threaten an organization's primary objectives, or are perceived as a threat to organizational goals. Seeger et al. (1998, p. 233) point out that crises refer to adverse situations that need to be addressed from an organizational perspective, and that crises are unexpected and non-routine events or series of events that create a high degree of uncertainty, threaten an organization's primary objectives, or are perceived as a threat to organizational goals. According to this perspective, crises are seen as an adverse event or series of events that can have an impact on organizations and their activities and should be evaluated from an institutional perspective. The concept of disaster can also be seen as a crisis situation, but as Liu et al. (2016, p. 628) state, it differs from crises that need to be addressed from an institutional perspective as they refer to a community and society-based adverse situation. Based on this information, it is clear that disaster-oriented communication activities should be differentiated from crisis communication processes and should be examined in terms of disaster or emergency communication concepts instead of crisis communication. Accordingly, in this study, communication activities carried out before the disaster are discussed in the context of risk communication. Although it is known to have a wider scope as explained above, communication activities carried out in response to the disaster after the disaster occurs, in other words during and after the earthquake, are evaluated in the context of emergency communication.

It is generally accepted that risks concerning humanity and society have existed and will continue to exist at every stage of history, from primitive societies to modern societies in the development process of humanity. Today, many risk categories that may have negative effects on the continuity of social order are spoken about, and these risks are discussed in all aspects on international platforms. It is foreseen that risks arising from natural disasters such as earthquakes, floods, droughts, tornadoes and forest fires may strongly affect social life and operation, as well as human-induced risks to fields such as health, environment, security, economy and social harmony. As Giddens and Sutton stated (2014, p.116), natural disasters such as earthquakes, hurricanes, droughts and other risk factors caused by people and societies are within the scope of risk studies, and also, studies on risks come into prominence due to the increase in today's risk factors (Turancı, 2018, p.195). Studies on risks are focused on risk evaluations and the implementation of risk management successfully in order to societies to be prepared for risks. It is known that risk communication constitutes an important dimension in managing risks in an effective way.

According to Lundgren and McMakin (2013, p.1), risk communication is part of the science of risk assessment and the risk management process. Risk communication is discussed by Covello et al. (1986, p.172) in connection with important risk categories such as health and environment; the dimensions of risk communication, which they define as the exchange of goal-oriented information on risks between related parties, are as follows: "Risk communication is the activity of transferring and communicating information between interested parties a) the level of health and environmental risks b) the meaning or significance of health and environmental risks or c) decisions, actions and policies aimed at managing or controlling health and environmental risks.

The parties involved in risk communication are public institutions, organizations, associations, media, scientists, professional organizations, public interest groups and citizens. Therefore, risk communication includes communication between people who are likely to be affected by the risk and the actors responsible for the management of the risk, as well as all other parties engaged in risk-related activities. Risk communication processes and strategies that will be effective in shaping these processes are involved in risk communication.

While risk communication includes informing the parties that will be affected by the risk, as well as all risk-related parties, about the decisions and practices taken for the risk, it also aims to shape the risk perceptions on the basis of the correct information and to establish the preparedness for the risk. Especially when it comes to risks that concern the whole public such as earthquakes, public institutions, citizens, non-governmental organizations and the media gain the position of basic communication actors in risk communication. It is clear that in cases where there is an "effective" risk communication between these parties, the establishment of risk preparedness in public will be achieved. It is known that social media has the capacity to engage all these parties and to carry out effective risk communication processes with a large mass.

Risk communication is a process that requires a proactive approach towards monitoring the environment, predicting situations that may pose a risk, and the main purpose here is to provide precautions and preparations before the risks that may arise due to risk happens. Risk communication aims to shape both individual and social perceptions of risk on the basis of correct information, to raise individual and social awareness before risk-related harms occur, and to take necessary precautions.

The importance of risk communication, especially when disaster risks are on the agenda, draws attention to the fact that recent natural and man-made disasters increase awareness about the need to be prepared for emergencies (Paek et al., 2010, p. 429). In terms of risks related to natural disasters, disasters; it is also necessary to consider it in the context of emergency communication covering pre-disaster, disaster period and post-disaster. Since emergency communication covers all communication processes related to pre-disaster, disaster period and post-disaster, it includes communication strategies and practices with a long-term orientation. Based on this information, it is clear that the communication processes related to the pre-disaster period can be considered as risk communication. Communication processes carried out regarding disaster risk before the earthquake

can be discussed in the topic of risk communication, while communication processes carried out during and after the earthquake can be considered as emergency communication during the disaster period.

Emergency communication involves the use of various technologies and protocols to facilitate communication in emergency situations. As Abukhalaf and Meding pointed out (2021, p.2), emergency communication is a field that, before, during or after a disaster, spreads the necessary information through notification systems or communication channels to minimise the negative effects of the incident. These protocols can include the use of traditional methods, such as phone and radio systems, as well as new technologies, such as satellite communication and mobile apps. Disasters, whether natural or man-made, can interrupt traditional communication/ telecommunication services. It is crucial for post-disaster rescue operations or damage assessment that additional telecommunication capacities need to be activated quickly, especially in the post-disaster period, as there will be a great deal of intensity (Košmerl and Vilhar, 2015, p.200).

Coordination is one of the most important elements between emergency response agencies to manage and reduce the effect of the disasters (Pechta, Brandenburg, Seeger, 2010, p.2). Pechta, Brandenburg and Seeger propose a four-channel emergency communication model that public creates its own information and shares this information via the internet as a part of citizen journalism; agency to agency, agency to public, public to agency and public to the public (2010, p.12). Social media, especially microblogging platforms such as X, are critical for emergency communication because of the extensive use habits of users, their rapidity and accessibility from other platforms (Vieweg et al., 2010, p.1079).

Social media is a digital space consisting of various platforms where individuals can express their feelings and thoughts with their own sentences and their own perspectives and share instantaneously. Social media is an interactive environment where people participate voluntarily and can set their own agenda or discuss an event or issue that is on the agenda, both individually and collectively. Interactivity, demassification, and asynchronicity which are the characteristic features of new media (Rogers, 1986, p.7), are among the building blocks of social media. The interaction feature ensures that the reach of the shared messages can be quite high, reach more people and their impact is much more important and critical.

According to Data Reportal data (2023), 64.4% (5.16 billion) of the world's population are internet users, while 59.4% (4.76 billion) are social media users. In Türkiye, 83.4% of the total population are internet users and 73.1% are active social media users. Social media users spend an average of 2 hours and 54 minutes per day on various social media channels. According to the ranking of Similar Web, the top 5 most visited websites in the world are Google, YouTube, Facebook, X and Instagram, while X has 16.1 million users in Türkiye.

Social media platforms also differ according to their characters due to their interfaces and communities. While YouTube and Instagram are mostly visual platforms, including video and photography, Facebook and X also focus on articles, although there are videos and photos. In other words, Facebook and X are the leading social media platforms for conveying feelings and thoughts about current events and issues.

One of the most important features distinguishing X from Facebook is its open profile/account system. What is written on X is not only on the person's profile but also -if the account is not locked-it can be found in word searches, tag searches, and tweets liked by other people. Texts shared on X are not on one stable page, so it has a more dynamic text archive. Unlike Facebook members, X community can find each other more easily, communicate more easily, and run into each other more easily with the support of algorithms, even without an effort to search. Due to this active, dynamic and open structure of X, it is preferred for social media research on social issues.

Castells (2012, p.22) identifies the foundation of the network society as the global networks formed by the development of the internet, mobile communication, digital media and social software tools that contain both synchronical and non-synchronous messages because interactive structure and horizontal communication networks involves many people. The rapid and instant

sharing nature of social media enables events to quickly become topics of discussion, and allows for more in-depth analysis of these events.

Users can individually convey their concerns, anxieties, criticisms and due diligence on X, as this study focuses on. Due to the nature of information technologies and the easy access to the internet archives, it has become possible to access the previous events happened years ago. Thus, users can connect with the current agenda by bringing the previous agendas back to the table and reinforcing their arguments or criticisms. Different types of messages shared on social media can function as potential sources for users to understand the public (Neubaum andKrämer, 2016, p.4). With digital technologies, it has become very easy to follow by which gender these messages are written, from which regions they are shared, and what other tweets are posted on the same subject at similar times. X has 237.8 million daily active users (Statista, 2022). The data that these users create every day is not just the content they share. Users refresh their bios, like and Retweet other tweets, write a reply (mention) to others, read comments by clicking inside some tweets, mark some Tweets so that they do not appear again, and do searches. X has created a participatory communication environment where users can produce their own content, circulate the content shared by other users on their own networks and share their evaluations. X has created a participatory communication environment where users can produce their own content, circulate the content shared by other users on their own networks and share their evaluations. Users can individually convey their concerns, anxieties, criticisms and due diligence on X as this study focuses on.

Walther and Jang (2012) divided the content shared on participating websites into three: Proprietor Content,[2] User-Generated Content, and Aggregate User Representations. Content that is stable on the site or added by the admin of the page is named Proprietor Content; contents created by visitors and produced to contribute to the site are named User-Generated Content; and the ratings of the user communities, the number of shares, etc. joint decisions are named Aggregate User Representations. When these contents come together, they make social interactions different from traditional web systems thanks to the participatory nature of web 2.0 technology and serve as a potential source for understanding public perception (Walther and Jang, 2012, p.4-6). These resources can be used in the field of marketing, as well as for education, policy, public learning or different research for various sectors. With the increase in the use of social media platforms and in favour of new technologies in collecting data from these platforms, a social media analysis has begun to be widely adopted (McGuirk, 2021, p.365).

Social media platforms and especially X, where users both share about their daily lives, follow their comments on the agenda, and create an agenda collectively, have become an environment where important determinations can be made about public opinion with the necessary classifications and limitations. With the development of social media platforms such as X individual opinions can be observed, and changes in public opinion can be followed. Individual opinions shared on social media, together with a systematic analysis and classification made with the existing data set, can explain how the current agenda or a certain event is reacted by the public (Akcora et al., 2010, p.62). The Internet provides effective information sharing to the public and the participation to this information sharing chain (Chung, 2018, p.223). Public opinion on social media provides instant participation by more and more citizens to the current issues, and in the light of the data generated here, public reactions and potential action plans are analysed more easily by machine learning and text mining methods (Han et al., 2020, p.2). On the other hand, as Safianu and Van Belle (2023) emphasize, a holistic understanding of the functions of social media at all stages of disaster management has a beneficial role in minimizing the impact of disasters and managing them better.

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[2] *Proprietor content includes the messages composed and displayed by the primary author or proprietor of a webpage. We avoid the term ''owner-generated content''because the controller or proprietor of a web page may not in fact own it… The content of traditional websites is entirely proprietor content. In Web 2.0 systems, proprietor content tends to persist on a webpage where it becomes accompanied by messages that other users append.*

As Klašnja et al. (2017, p.2) stated, especially social media offers researchers the opportunity to examine the opinions of the public without any direction from the researcher, and the X archive is currently the largest international dataset in which individual public opinion is open to large masses. In this direction, it is thought that the analysis of the data set to be obtained through social media is important in order to determine how and how intensely the earthquake is the subject of risk and emergency communication-oriented mass communication activities in Türkiye.

2. Aim and Methodology [3]
2.1. Aim

This study aims to examine the circulating social media content related to the earthquake in the context of risk and emergency communication. In this direction, the content shared on X about the earthquake in the period one month before and one month after the earthquakes that took place in Istanbul on 26 September 2019 and in Izmir on 30 October 2020 in Türkiye were analysed. X data needed within the scope of the research were obtained through the Brand Watch platform.

Brand Watch is a paid platform that includes built-in analysis tools and allows institutions and brands to conduct deep research using machine learning. Although it was aimed to conduct research by obtaining an API from X, this could not be achieved because X 's access to old tweets is limited to a certain period of time.

In the study, one hundred and twenty-seven thousand (127,000) Turkish tweets containing the hashtags "deprem", "istanbuldeprem", "izmirdeprem" were collected and analyzed. In the rest of the study, the original Turkish version of the tags will be mentioned as a footnote.

In line with the findings obtained from the study, the present study aims to determine:

1. How the earthquake was discussed?

2. What kind of content was shared among social media users?

3. How these contents changed before and after the earthquake dates?

In connection with the aims of the research, the following research questions are expected to be answered:

1. Which word groups are used in tweets about earthquakes?

2. What is the intensity of the earthquake-related content in the pre-earthquake and post-earthquake periods?

3. On which subtopics is earthquake-related content made before and after the earthquake?

4. Do the earthquake-related contents on X focus on risk communication and emergency communication?

Data obtained with the Brand Watch platform include the periods before (26 August 2019 - 25 September 2019) and after (26 September 2019 - 26 October 2019) Istanbul earthquake and before (29 September 2020 - 29 October 2020) and after (30 October 2020 - 30 November 2020) İzmir earthquake separately. It was aimed to obtain meaningful results by cleaning and classifying the data covering the dates of four periods. The data was selected based on certain keywords. In the research, all the tweets that contain the words "earthquake", "istanbuldeprem", or "izmirdeprem" are collected. The content analysis technique, one of the qualitative research methods, was applied to the data obtained and ready to be used. The content analysis aims to reveal the facts in the data by defining the data in a meaningful way (Yıldırım and Şimşek, 2018, p.242).

In the content analysis process which is conducted on Brand Watch platform, the tweets constituting the sample were analyzed according to the categories as "the most frequently used word groups related to the earthquake in the tweets", "the distribution of tweets according to the pre-earthquake and post-earthquake periods", "the topics that the tweets focused on", "the actors who came to the fore in social media content related to the earthquake".

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[3] *When this study was started, the Kahramanmaraş Earthquake in 2023 had not yet occurred. The most recent and impactful earthquakes in Türkiye were 2019 İstanbul and 2020 İzmir Earthquakes. Therefore, the research was conducted on these two earthquakes.*

2.2. Scope and Limitations

The scope for this research as a medium is X (Twitter) and its data. The reasons determining the medium as X it encourages users to be more organised compared to other platforms and it comes to the forefront in obtaining information, giving advice and sharing general evaluations (Danneman and Heiman, 2014). Also X is accepted as a key platform during disaster periods (Robertson et al., 2019).

And the data which includes 2019 İstanbul and 2020 Earthquakes because when this research conducted, these two earthquakes were the recent and impactful earthquakes. The fact that the aforementioned earthquakes were heavily on the agenda of Türkiye and caused loss of life and property became grounds for the decisions to conduct the research specific to these two earthquakes.

The population of the research consists of shared content related to the earthquake on X Since it is not possible to analyse all the content about the earthquake on X, sampling was used. The sample of the research consists of Tweets shared between 26 August 2019 and 26 October 2019 for the Istanbul earthquake and between 29 September 2020 and 30 November 2020 for the Izmir earthquake, which also includes any of the patterns of "earthquake", "istanbuldeprem", "izmirdeprem".

In the content analysis various categories were used. These categories are the distribution of the shared contents according to the pre-earthquake and post-earthquake period, the type of social media posts as tweets, retweets, comments and responses, the social media users of the effective social media posts about the earthquake, and the distribution of the social media posts about the earthquake according to their topics.

3. Findings

In this part of the study, the findings obtained from the analysis of the content shared on social media in the focus of the Istanbul and Izmir earthquakes are included. In the social media content before and after the Istanbul earthquake 127.000 posts were made by a total of 69.400 users between 26 August 2019 and 25 September 2019, which is the pre-earthquake period.

Between 26 September 2019 and 26 October 2019, which is the post-earthquake period, three hundred and 386.000 posts were made by a total of 137.000 users about the earthquake. As can be seen from these findings, it is significant that after the disaster occurred, the shares about the earthquake increased on social media. Although there was an increase in tweets after the Istanbul earthquake that occurred on 26 September, it was observed that the decrease in the number of tweets accelerated as time passed. In October, the serious decrease in tweets was remarkable.

It has been determined that the first choice of X users is to retweet another user's tweet about the earthquake. Before the earthquake, 60% of the earthquake-related posts are retweets, 32% are tweets, and 8% are comments and replies. After the earthquake, the retweet rate increased to 76%, and the tweets increased to 22%; comments and responses decreased to 2%.

While the most tweeted day before the earthquake was 24 September, the day when another earthquake occurred, it was revealed that the most tweeted day before and after the earthquake was 26 September 2019, the date the earthquake occurred. It was seen that the contents that can be evaluated in the context of risk communication before the earthquake were news link shares. When we look at these links, we see that the change of duty in the Department of Earthquake Risk Management and Urban Development has been discussed in daily political discussions. There is no agenda for creating awareness about earthquake risk or content for the benefit of society regarding this risk. The word earthquake has been used to discuss another topic, independent of its meaning.

While journalists and news organisations stood out as the most influential social media users before the earthquake, politicians and ordinary media users took the place of journalists after the earthquake. Among the tweets that received high interaction before the earthquake, the presence of content featuring the earthquake as a humorous subject draws attention, while the most influential tweets in the post-earthquake period include the opinions of academics and journalists about the inadequate preparations for the earthquake, the political polemics that emerged due to the

earthquake, and the critical content about the inadequacy of meeting areas, Kandilli Observatory and Earthquake Research Institute's information posts about the earthquake and football teams' get well soon messages are included.

It has also been observed that the number of Tweets about non-governmental organisations, mobile phone operators, gathering areas, criticism and precautions has increased after Istanbul earthquake in the 30 days period. While there were 4,628 Tweets about non-governmental organisations including the word "earthquake" before the abovementioned dates, this number increased to 53.501 after the earthquake. Tweets about mobile phone operators including the word "earthquake" increased from 16 to 47.228. The reason for this increase is the service interruption of mobile phone operators during and after the earthquake and the disconnection in communication. While tweets about gathering areas including the word "earthquake" before the earthquake were 696, it increased to 26.723, earthquake-oriented criticisms increased from 657 to 9.313, and tweets about earthquake prevention including the word "earthquake" increased from 1.750 to 8.523. It can be seen that what people are talking about the earthquake on X is the reflection of what is inadequate for people and as a form of complaint message.

When we look at the hashtags used in the tweets about earthquake before the Istanbul earthquake, it is seen that the hashtags hashtags "earthquake[4], kandilli, Saturday[5], eartquake[6], Istanbul, turkey, breakingnews[7], ankaraearthquake[8], breakingnews, tuesday[9]" come to the fore. The hashtags used after the earthquake are; "earthquake[10], earthquakeistanbul[11], istanbul, istanbulearthquake[12], kandilli, turktelekom[13], turkcell, earthquake". It is seen that telecommunication companies Turkcell and Türk Telekom started to be talked about after the earthquake. This is a reflection of the communication problem experienced that day on social media.

When tweets before and after the Izmir Earthquake are analysed, it is observed that 119.000 posts were made by a total of 61.000 users between 29 September 2020 - 29 October 2020, the period before the earthquake. In the post-earthquake period, between 30 October 2020 and 30 November 2020, 1.900.000 shares were made by 302.000 users about the Izmir Earthquake. In the pre-earthquake period, 58% of the posts were retweets, 26% were tweets, and 16% were comments and replies. In the post-earthquake period, retweets account for 74%, tweets for 19%, and comments and replies for 7%.

Before the Izmir earthquake, while AFAD's information sharing about an earthquake in Nevşehir and the President of the Republic of Türkiye Recep Tayyip Erdogan's get-well message about the earthquake in Elazığ came to the fore, the rest of the tweets shared about the earthquake consisted of mainly critical contents about the gathering areas shared by the news accounts.

While the most used hashtags in the tweets related to the earthquake before the Izmir earthquake were "earthquake[14], vaneartquake[15], eartquake[16], kandilli, turkey, itdoesnotmatter[17], debates2020, Bingöl, hopeformiray[18], wednesday[19]", these tags changed as follows after the

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[4] *Deprem (original hashtag)*
[5] *Cumartesi (original hashtag)*
[6] *the hashtag was written with spelling mistake*
[7] *Sondakika (original hashtag)*
[8] *Ankaradeprem (original hashtag)*
[9] *Salı (original hashtag)*
[10] *Deprem (original hashtag)*
[11] *Depremistanbul (original hashtag)*
[12] *Istanbuldeprem (original hashtag)*
[13] *Türktelekom (original hashtag)*
[14] *Deprem (original hashtag)*
[15] *Vandepremi (original hashtag written with spelling mistake)*
[16] *the hashtag was written with spelling mistake*
[17] *Önemlideğil (original hashtag)*
[18] *Mirayaumutol (original hashtag)*
[19] *Çarşamba (original hashtag)*

earthquake: "earthquake[20], izmir, izmirearthquake[21], earthquakeofizmir[22], earthquakeizmir[23], Izmir, intheizmirearthquake[24], wearewithyouizmir[25], wearenexttoIzmir[26], aegeansea[27]".

Looking at the hashtags before and after the earthquake, it is seen that many topics unrelated to the earthquake are used or a few keywords that come to mind for Türkiye are used when a sentence is made about the earthquake. However, if we look at the hashtags after the earthquake, it is seen that the focus is only on the city where the earthquake happened and an attempt is made to create solidarity with people who were affected by the earthquake.

Among the most shared links after the earthquake are the aid campaign of Izmir Metropolitan Municipality named "One Rent One Home", the announcements of the Republic of Türkye Ministry of Interior Police Department and Izmir Governor's Office, the announcements of non-governmental organisations, get well soon wishes of sports clubs and educational institutions. It is seen that social media content focused on helping the disaster area and disaster victims is more common in the Izmir earthquake since the Izmir earthquake caused greater damage compared to the Istanbul earthquake and was an earthquake in which loss of life and property was experienced.

While journalists, politicians, news pages, and individual accounts were among the most influential users of earthquake-related content before the Izmir Earthquake, it is noteworthy that after the earthquake, the accounts of political actors increasingly came to the fore. The most influential posts before the earthquake were commemoration tweets on the anniversary of past earthquakes, Republic of Türkiye Interior Minister Süleyman Soylu's (one of the previous ministers) post on disaster management in AFAD (Disaster And Emergency Management Presidency), the content about the system used to reduce the earthquake risk in buildings shared by a X user, and the comments of scientists about the earthquakes that occurred in Istanbul before. After the earthquake, Republic of Türkiye President Recep Tayyip Erdoğan's tweets about the Izmir Earthquake aid and actions, citizens' requests for help for the wreckage and missing persons, informative tweets of various official institutions of the state, and the Mayors of Izmir, Istanbul and Ankara Metropolitan Municipality and the President of Religious Affairs Prof. Dr. Ali Erbaş's tweets stand out.

When we look at the data above, AFAD is among the most talked organizations (NGO) both before and after the earthquake. Although AFAD is seen in a similar position to other NGOs, it is an institution affiliated with the state, with coordination centers all around the country. There was a significant increase in the talk of all of them after the earthquake. All the NGOs mentioned above are institutions that provide aid in natural disasters. However, since AFAD's missions include "Risk Management" along with "Crisis Management", it is talked about the most before the earthquake.

There has been an increase in tweets about Non-Governmental Organizations after the earthquake. Tweets about AFAD ranged from 2,695 to 162,963, tweets about Kızılay ranged from 274 to 48.091, tweets about AKUT increased from 63 to 34,158, tweets about AHBAP increased from 161 to 19,966 and tweets about Deniz Feneri increased from 1 to 229.

After the Izmir Earthquake, it was also seen that the number of content about non-governmental organisations, mobile phone operators, gathering areas, criticism and precautions increased. While there were 3,194 tweets about non-governmental organisations before the earthquake, this number increased to 265,407 after the earthquake. The tweets about the disaster area and about helping the victims increased from 3,204 to 215,071. Tweets about gathering areas before the earthquake increased from 1,713 to 21,328, earthquake-oriented criticisms increased from 3,479 to 28,284, tweets about earthquake prevention increased from 1,852 to 13,716, and tweets about mobile phone

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[20] *Deprem (original hashtag)*

[21] *Izmirdepremi (original hashtag)*

[22] *Izmirdeprem (original haşhtag)*

[23] *Depremizmir (original hashtag)*

[24] *Izmirdepreminde (original hashtag)*

[25] *Yanındayızizmir (original hashtag)*

[26] *Izmirinyanındayız (original hashtag)*

[27] *EgeDenizi (original hashtag)*

operators increased from 73 to 5,548. It has been observed that the contents shared before the earthquake and that mention the earthquake cannot be considered within the scope of risk communication.

When both earthquakes are evaluated, it is notable that the contents shared before the earthquake occurred were not intended for earthquake risk communication. Earthquake becomes the topic of emergency after an earthquake occurs but not a risk communication topic in Türkiye's social media usage. In addition, the high damage caused by the earthquake caused it to meet with intense interest as a subject in mass communication through social media. Earthquake in Türkiye is not a risk, but as an emergency, after the earthquake occurs, it faces intense interest from social media. In addition, the high damage caused by the earthquake caused it to meet with intense interest as a subject in mass communication through social media.

Earthquake in Türkiye is not a risk, but as an emergency, after the earthquake occurs, it atracts attention from social media. In addition, the high damage caused by the earthquake caused it to meet with intense interest as a subject in mass communication through social media.

Previous studies in the field constitute the main basis for the determination that earthquake is a topic that comes to the agenda in the form of emergency response communication during and after the earthquake, and that it is not addressed in relation to risk communication. Similar to the findings of this study, there are studies in the literature that point out that earthquakes come to the forefront as a news topic after the earthquake occurs in traditional media including newspapers, radio and television and online news media, and moreover, there are studies that present findings that the importance and interest attributed as an agenda item is directly proportional to the increase in earthquake-related damages (Yüksel, 1999; Erdoğan, 2006, Kolukırık and Tuna, 2009; Yılmaz, 2019; Vural et al., 2022a; Vural et al. 2022b; Vural et al., 2022c; Ayan and Keten, 2023; Budak, 2023).

Discussion and Conclusion

Risk communication for disasters, taking precautions before disasters occur, and providing awareness about disasters necessitate a proactive approach with a view to reducing disaster-related damages. Emergency communication, on the other hand, undertakes a function in the management of effective communication processes after the disaster occurs. It is known that social media offers a capacity that can be used in risk communication activities related to disaster risks and in communication processes for emergencies that may arise as a result of disasters. The basic features of social media, such as the increasing number of users, immediacy and rapid access to large masses, cause it to come to the fore in risk and emergency communication.

This study aims to examine the circulating content of earthquake-related social media in the context of risk and emergency communication. In this direction, the content shared on X regarding the earthquake in the period one month before and one month after the earthquakes, that took place in Istanbul on 26 September 2019 and in Izmir on 30 October 2020 in Türkiye were analyzed. The findings obtained from the research revealed that the earthquake-related content shared on X cannot be evaluated within the scope of risk communication, which aims to be prepared for earthquakes, to raise awareness about earthquake risk and to take precautions. It has been observed that the content circulating about the earthquake before the earthquake occurred was aimed at reminding about earthquakes in the past and included criticisms of earthquake policies. A significant increase was observed after earthquakes. The intense use of X in the context of emergency communication after the earthquake has attracted attention. It has been revealed that the contents of the earthquake increased after the earthquake occurred, the earthquake fell from the agenda in direct proportion to the time, and the contents of the earthquake decreased rapidly as well. These findings indicate that the earthquake comes to the forefront in terms of emergency communication, rather than being a risk category that is the subject of risk communiçation. The findings of this research which aims to determine how the Istanbul and Izmir earthquakes that occured in Türkiye have similar findings with the studies searching for how printed newspapers (Vural et al., 2022a), radio and television news television (Vural et al., 2022b) and internet news (Vural et al., 2022c) are covered. When an

earthquake occurs, we see how important this risk, which is not prioritized in daily life, is. From here, it is seen that there is no awareness about earthquakes.

Mass communication processes related to earthquakes in Türkiye are handled in the context of emergency communication rather than risk communication, both in traditional media and in new communication environments including internet journalism and social media. Recalling that Türkiye is a country with a permanent and high earthquake risk, the importance of addressing the earthquake in mass communication processes for risk communication can be considered indisputable. In future research, it is recommended to analyse the communication processes and communication contents through social media regarding disasters, which are valid for different countries, in the context of risk and emergency communication and to make comparisons with the findings obtained from this research.

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