



Social Media as Communication for Natural Disasters: Analysis of Social Media for Disaster Management in Bantul Regency

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Abstract. This study aims to describe the process of communicating natural disasters through social media belonging to the Disaster Management Agency (BPBD) of Bantul Regency. The choice of research location was based on the high disaster risk index in Bantul Regency against natural disasters. Taking into account the vulnerability of locations to natural disasters encourages disaster authority agencies such as the BPBD to communicate disaster information to strengthen community resilience to disasters, one of which is through social media. This study used a qualitative method with a case study approach. The main data in this study were obtained from BPBD social media accounts such as Instagram, Facebook, and Twitter. The results of the data obtained were analyzed interactively using the Nvivo 12 Plus software through the Crosstab Analysis feature. The theoretical basis for this research uses Haddow's disaster communication theory which divides four indicators, including: 1) Customer Focus; 2) Leadership Commitment; 3) Situational Awareness and 4) Media Partnership. This theory helps in knowing BPBD's communication process in distributing information in the form of disaster mitigation, preparation, response, and recovery. Through a comparison of the three social media accounts belonging to the BPBD, the results of the research can see the trend of disaster information being conveyed in the last two years.

Keywords: Disaster Communication; Social media; Disaster Resilience.

1 Introduction

Indonesia is a country prone to disasters, both natural and non-natural disasters. Various natural disasters that often occur in Indonesia include earthquakes, tsunamis, volcanic eruptions, floods, and droughts [1]. One of the efforts to reduce disaster risk is to optimize disaster communication through social media. The context is in areas that have a high disaster risk index such as in Bantul Regency. Disaster communication through social media is vital as a way to reduce disaster risk [2]. Based on data from BNPB, Bantul Regency is one of the areas in Indonesia that has a high disaster risk index, with

a risk class score of 157.30. As for the provincial level of the Special Region of Yogyakarta, Bantul Regency ranks second in areas with high disaster risk after Kulon Progo Regency [3]. In more detail, Table 1 is the disaster risk index values for the Special Province of Yogyakarta (DIY) in 2021.

Table 1. The Risk Index Value of the Province of the Special Region of Yogyakarta

No	REGION	2015	2016	2017	2018	2019	2020	2021	KLS RISK 2021
1	Kulon Progo	203.2	203.20	203.20	203.20	203.20	203.20	180.80	High
2	Bantul	187.2	187.20	187.20	187.20	187.20	187.20	157.30	High
3	Gunungkidul	157.6	157.60	157.60	157.60	157.60	157.60	142.09	Moderate
4	Sleman	153.6	105.45	99.46	90.17	83.72	83.72	78.96	Moderate
5	Kota Yogyakarta	124.8	80.88	78.46	73.00	72.86	72.86	72.57	Moderate

Source. BNPB Indonesia Disaster Risk Index, 2021

Based on this, it can be seen that Bantul Regency ranks second after Kulon Progo Regency which ranks first as a region with a high disaster risk index in DIY [4]. Although the disaster risk index in Bantul Regency has decreased in the last five years, the disaster risk class in Bantul Regency remains high. Previous research has relevance to the disaster communication process [5]. This study contributes that optimizing disaster communication in an integrated manner is important in disaster management, in synergy with the involvement of the mass media and the public in the distribution of information through the use of media [6]. Communication in a disaster is not only needed during a disaster emergency but is also important during pre-disaster situations. In addition to adequate information about potential disasters in an area, training and internalization of habits in dealing with disaster situations must also be carried out on an ongoing basis [7]. Mistakes in communicating information can lead to uncertainty that exacerbates the situation [8] and the active network of actors is more dominantly carried out by local governments as the holder of responsibility or the main actor in conveying information is only played by BPBD [9] and [10].

The role of disaster communication determines the government's success in providing information for public safety and dealing with disasters that occur [11] and [12]. This study contributes that the optimization of disaster communication in an integrated manner is important in disaster management, synergy with the involvement of the mass media and the public in the distribution of information through the use of the media [13] and the existence of interactive communication strategies in disaster preparedness, namely: Determining personnel village/community leaders as communicators/credible sources [14] Selection of messages that are easily accepted by the community [15], Use of communication media that are appropriate to the characteristics of village communities, Understanding of village community characteristics, Overcoming communication barriers that occurred during the implementation of the communication strategy [16] and [17].

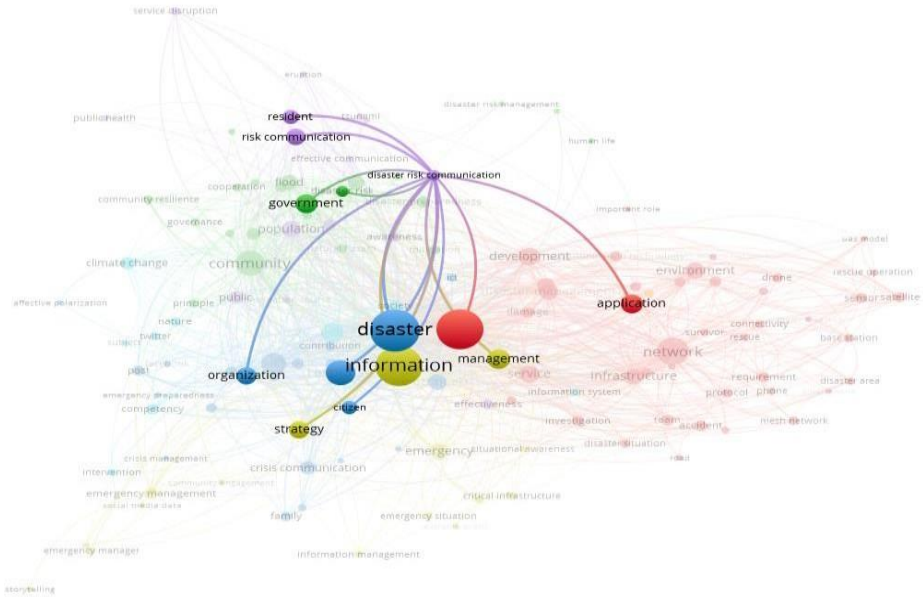


Fig. 1. Network Visualization Analysis Results (Source. VOSviewer 2022)

The results from the VOSviewer (Fig. 1) using the network visualization method and previous researchers found a disaster risk communication research topic. Disaster risk communication is an analysis that studies the best ways to convey disaster risk-related information to the public. This analysis includes a study of the best way to convey this information, as well as studying what can influence the success of this communication. It aims to help communities take appropriate actions to reduce the disaster risks they face. which discusses disaster communication because density visualization is used to see the level of density or the magnitude of a problem being studied. Therefore, the novelty of this research will show the novelty of research through social media as communication for this disaster.

Therefore, this study aims to look at the disaster communication process of the Bantul Regency BPBD through social media such as Facebook, Twitter, and Instagram. This study uses Haddow's disaster communication process theoretical basis with five indicators, including: First, customer focus, namely disaster information needed; The two leadership commitments are commitments in disaster emergency response as effective communication; three situational awareness, namely the data submitted emphasizes the elements of transparency and accountability; The four media partnerships are the collaboration between the Bantul Regency BPBD and other media in disseminating disaster information. The theory of disaster communication processes assists research in carrying out disaster communication flows and disaster information submitted by BPBD Bantul Regency in reducing disaster risk.

2 Method

This study uses a qualitative analysis method with a case study approach. This research will focus on social media as natural disaster communication through analysis of social media disaster management in Bantul Regency. This study uses social media data and literature data in the form of library data and journal article data. This study uses an approach to analysis, namely content analysis techniques for social media data from Facebook, Instagram, and Twitter.

This study has research stages, namely starting from data collection, which is a stage that aims to collect secondary data, data reduction is a stage that aims to select data that has been collected before, data analysis is a stage that aims to categorize and analyze data that has been reduced. and concluding is the final stage that aims to draw meaning and value from the data that has been analyzed (Fig. 2).

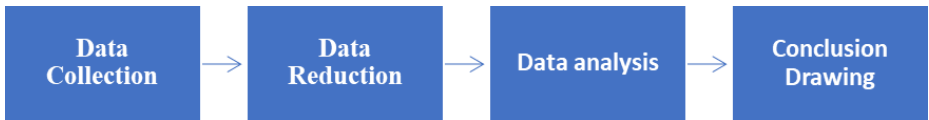


Fig. 2. Research Stages (Source. Processed by Author 2022)

3 Result and Discussion

3.1 Customer Focus

According to Haddow, Customer Focus is understanding what information is needed by customers, in this case, the community and volunteers. To obtain this information an understanding is needed from the customer's point of view so that the response in the form of service can be optimal and to the needs, desires, and expectations of customers [18]. In addition, Customer Focus can also be interpreted as a series of services or strategies to serve customers optimally, effectively, and accurately [19]. Optimal with solutive services, effective with good service results without wasting excessive effort, and accurate with clarity of results as well as targets for services [20].

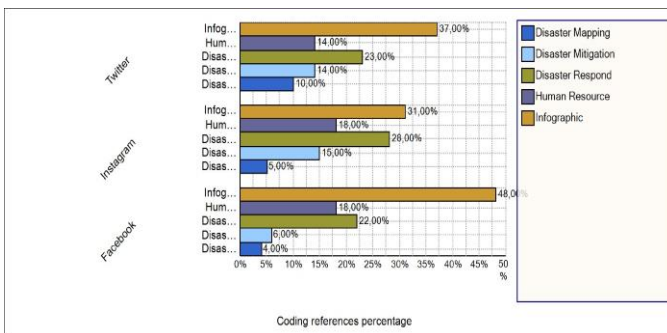


Fig. 3. NVIVO 12 Plus Crosstab Analysis (Source NVIVO 12 Plus)

Based on the NVIVO 12 Plus (Fig. 3) which were analyzed 1 year ago, it can be seen that in the Twitter application, the Infographic parameter achieved the highest percentage of 37%. Then the Instagram application it can be seen that on Instagram, the infographic parameter also achieved the highest percentage of 31% and on the Facebook application, the infographic parameter also achieved the highest parameter, namely 48%. The lowest average between Facebook, Instagram, and Twitter is in Disaster Mapping.

The implementation of Customer Focus in natural disaster communication through social media in Bantul Regency is implemented through BPBD Bantul Regency social media content such as providing information about the definition of a natural disaster, guidelines for responding to certain natural disasters, as well as information on whether a natural disaster is happening in Bantul Regency or not. BPBD applies the Customer Focus basis or understands what the people of Bantul Regency need, namely information regarding the latest disasters and in response, BPBD presents social media content in the form of information related to natural disasters in Bantul Regency according to what the community needs.

3.2 Leadership Commitment

Leadership commitment is a leader who plays a role in emergency response and must commit to communicating effectively and be actively involved in the communication process. The role of the leader here is one of the important factors because he is directly responsible to the person being led, besides that the leader is also a communicator and a person who takes quick and effective steps in an emergency. Commitment means bringing together, sealing together, or promising together to do something that is considered important and is in the common interest [21]. So, the basis of Leadership commitment itself can be interpreted as a leader who communicates effectively and is actively involved in the communication process for the common good [22].

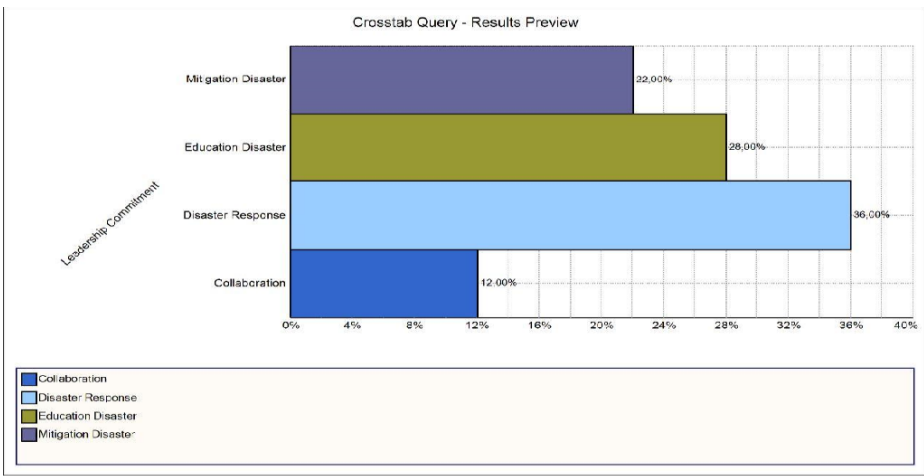


Fig. 4. NVIVO 12 Plus Crosstab Analysis (Source NVIVO 12 Plus)

Based on the NVIVO 12 Plus results (Fig. 4) which were analyzed from 1 year ago, using Haddow's 2nd theoretical foundation on Leadership Commitment, it was found that the highest percentage was in Disaster Response with several 36% and the lowest percentage was in Collaboration with several 12%.

The leadership commitment foundation was also implemented by Agus Yuli Herwanto as the head of the 2022 Bantul Regency BPBD who is also responsive in dealing with various natural disasters in Bantul Regency. According to Agus Yuli Herwanto so far, they have carried out various disaster anticipations, in the form of outreach and mitigation [23], this is evidenced by the social media content of the Bantul Regency BPBD which shows their role in active outreach related to natural disasters. Other evidence can also be seen from the head of the 2022 Bantul Regency BPBD who often conducts outreach and training not only to the community but also to their colleagues, this opens the door for communication between the community and the BPBD team with their leader so that strong communication emerges while strengthening the implementation of the foundation. Leadership commitment by BPBD Bantul Regency [24].

3.3 Situational Awareness

Situational awareness, and effective communication based on the collection, analysis, and dissemination of controlled information related to disasters. Principles of effective communication such as transparency and reliability are key [25]. Situational awareness (abbreviated as AS) is the perception of environmental elements and events that occur concerning space and time, accompanied by Based on the results of NVIVO 12 Plus above which was analyzed from 1 year ago, using Haddow's 2nd theoretical foundation on Leadership Commitment, it was found that the highest percentage is found in Disaster Response with a figure of 36% and the lowest percentage is found in Collaboration with a rate of 12%.

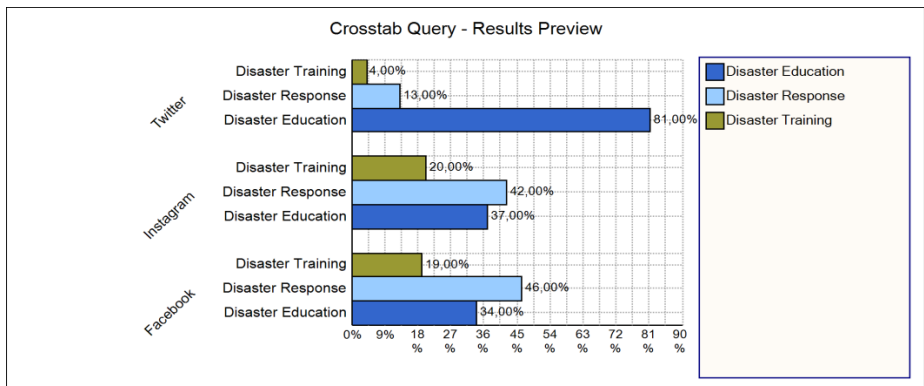


Fig. 5. Analysis Crosstab NVIVO 12 Plus (Source: NVIVO 12 Plus)

Based on the NVIVO 12 Plus results (Fig. 5) which were analyzed from 1 year ago using Haddow's 3rd theoretical foundation on Situational Awareness, it was found that

on Twitter it was found that Disaster Education got a score of 81% and the smallest was on Disaster Training with a score of 4%. On Instagram, it was found that Disaster Response obtained a score of 42%, and the lowest was found on Disaster Training with a score of 20%. On Facebook social media, it was found that Disaster Response obtained the most results, namely 46%, while Disaster Training obtained the least results, namely 19%.

Situation awareness has been considered a very important thing, so in the Bantul BPBD media awareness of the community's situation through posts and uploads on social media such as Twitter, Instagram, and Facebook. This helps and makes it easier for the Bantul BPBD to provide awareness of the community's environmental situation through uploading posts in the media [26]. This awareness activity movement is a form of awareness that can help people understand environmental elements, environmental conditions, and impact analysis that will be caused in the future. With this format, people's understanding can be sensitive to the environment they live in. This means that people's perceptions are getting more mature towards existing and future problems.

3.4 Media Partnership

Media partnerships, media such as television, newspapers, radio, and others are very important media for conveying information appropriately to the public. Collaboration with the media involves understanding the needs of the media with a team trained to work with the media to obtain information and disseminate it to the public [27]. This media partnership is also a collaboration with patterns and forms of various elements in the process of working together to achieve common goals. There are so many media that give a positive response to the general public to be able to access or visit websites from existing media to help increase public understanding [28].

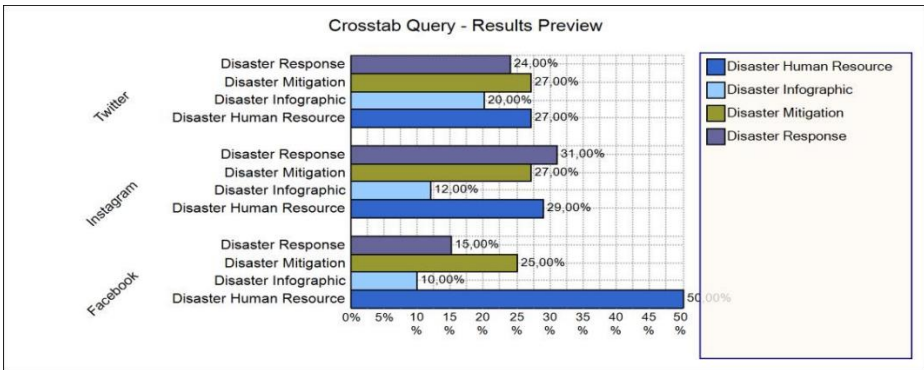


Fig. 6. NVIVO 12 Plus Crosstab Analysis (Source NVIVO 12 Plus)

Based on the results of the NVIVO 12 Plus Crosstab Analysis data (Fig. 6) which was analyzed from the past year, it illustrates that the highest percentage of the Mitigation parameter on Twitter social media is 30.00%. Then on the Instagram social media application, it can be seen that the highest Response Parameter reached 31.00%. And then

the percentage of Facebook media achieved the highest parameter in Human Resources with the highest percentage of 50.00%. Meanwhile, the lowest average between Twitter, Instagram, and Facebook is found in the Disaster Infographic.

In this Media Partnership collaboration, the Bantul regional disaster management agency (BPBD) synergizes with several media including Regional Kompas, Jogja Tribune, Antara news Yogyakarta, Ini Jogja, and other media. Synergy activities between (BPBD) Bantul and the existing media, help facilitate BPBD and makes it easier for the public to access information provided by BPBD through the media [29]. Media participation in disaster management is very meaningful because the media can contribute a variety of resources, accurate information in disaster management efforts, provide concrete evidence of social and human life and cooperation or collaboration to reduce the suffering of others and the will to realize community resilience in facing disasters through media carried out [30].

4 Conclusion

From the results of the discussion above, the authors conclude that disaster mitigation is carried out through social media activities carried out by the competent authorities, in this case, the regional disaster management agency (BPBD) Bantul. In its official account, the Bantul Institution (BPBD) always disseminates information to the public using the media by posting official Twitter, Instagram, and Facebook accounts to the public regarding disaster mitigation. In this way to realize the success of disaster mitigation, preparation, response, and recovery of the situation during a disaster.

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References

1. M. I. Khatami And A. Nurjanah, "Difusi Inovasi Dalam Penerapan Komunikasi Bencana Pada Masa Mitigasi Oleh Forum Pengurangan Risiko Bencana (Fprb)," *Jurnal Audiens*, Vol. 3, No. 3, Pp. 121–130, Jul. 2022, Doi: 10.18196/Jas.V3i3.13152.
2. T. Roskusumah, B. Geologi, K. Energi, D. Sumber, And D. Mineral, "Komunikasi Mitigasi Bencana Oleh Badan Geologi Kesdm Di Gunung Api Merapi Prov. D. I. Yogyakarta," 2020.
3. D. Tamitiadini *Et Al.*, "Inovasi Model Mitigasi Bencana Non Struktural Berbasis Komunikasi, Informasi, Koordinasi Dan Kerjasama (Innovation Of Non Structural Disaster Mitigation Model Based On Communication, Information, Coordination And Cooperation)," 2013.
4. F. G. Sukmono And Y. T. Wijayanti, *Komunikasi Lingkungan Dan Komunikasi Bencana Di Indonesia*. 2019.

5. F. W. Lubis, Y. Sabarina, And M. Masril, "Penanganan Bencana Erupsi Gunung Sinabung Ditinjau Dari Aspek Komunikasi Dan Koordinasi," *Jurnal Simbolika: Research And Learning In Communication Study*, Vol. 5, No. 1, P. 1, Apr. 2019, Doi: 10.31289/Simbolika.V5i1.2258.
6. Asteria D, "Optimalisasi Komunikasi Bencana Di Media Massa Sebagai Pendukung Manajemen Bencana," 2016. [Online]. Available: [Http://Www.Penanggulangankrisis.Depkes.Go.Id/](http://www.penanggulangankrisis.depkes.go.id/),
7. D. Wardyaningrum, "Modal Sosial Inklusif Dalam Jaringan Komunikasi Bencana," 2016.
8. Rudianto, "Komunikasi Dalam Penanggulangan Bencana," *Jurnal Simbolika*, 2015.
9. A. Maulana, B. Kusumasari, And S. R. Giyarsih, "Komunikasi Bencana Di Twitter: Studi Kasus Bencana Banjir Perkotaan Di Daerah Khusus Ibukota (Dki) Jakarta'," *Jurnal Kawistara*, Vol. 11, No. 2, P. 129, Aug. 2021, Doi: 10.22146/Kawistara.V11i2.58123.
10. T. M. Ferreira, R. Maio, R. Vicente, And A. Costa, "Earthquake Risk Mitigation: The Impact Of Seismic Retrofitting Strategies On Urban Resilience," *International Journal Of Strategic Property Management*, Vol. 20, No. 3, Pp. 291–304, Jul. 2016, Doi: 10.3846/1648715x.2016.1187682.
11. R. Roro, D. Juneza, And D. Purworini, "Respon Para Disabilitas Terhadap Komunikasi Krisis Bpbd (Badan Penanggulangan Bencana Daerah) Dan Tim Sar Klaten Tahun 2016," 2016. [Online]. Available: [Www.Sarklaten.Org](http://www.sarklaten.org)
12. M. Arif And S. S. Lestari, "Manajemen Komunikasi Bencana Pemerintah Desa Dalam Penanganan Covid-19," Vol. 3, No. 1, 2021, [Online]. Available: [Https://Kemlu.Go.Id/Kabul/Id/News/5980/](https://kemlu.go.id/kabul/id/news/5980/),
13. M. Annapisa, P. Kajian, And P. Berkelanjutan, "Peran Media Cetak Lokal Dalam Komunikasi Bencana Sebagai Pendukung Manajemen Bencana," 2018. [Online]. Available: [Http://Dibi.Bnpp.Go.Id](http://dibi.bnpp.go.id)
14. P. Lestari, E. T. Paripurno, And A. R. B. Nugroho, "Table Top Exercise Disaster Communication Model In Reducing Disaster Risk," *Jurnal Penelitian Komunikasi*, Vol. 22, No.1, Pp. 17–30, Jul. 2019, Doi: 10.20422/Jpk.V22i1.587.
15. Becti, "Penggunaan Media Komunikasi Tradisional Sebagai Upaya Pengurangan Jatuhnya Korban Akibat Bencana Alam," 2013.
16. A. Suherman, "Strategi Komunikasi Bencana Pada Masyarakat Kabupaten Buton Selatan," *Medialog: Jurnal Kajian Komunikasi*, Vol. I, Pp. 10–18, 2018.
17. P. Lestari,) Harnum, And A. Rinasti, "Menyingkap Perspektif Tunggal Dalam Komunikasi Bencana Erupsi Gunung Sinabung Melalui Detik.Com Revealing Single Perspective In Disaster Communication Of Sinabung Mountain Eruption Through Detik.Com 1)," *Jurnal Magister Ilmu Komunikasi*, Vol. 6, No. 1, Pp. 117–134, 2020, [Online]. Available: [Http://Journal.Ubm.Ac.Id/](http://journal.ubm.ac.id/)
18. E. Harry Susanto, "Eksistensi Komunikasi Dalam Menghadapi Bencana," 2016.
19. Budi S, "Komunikasi Bencana: Aspek Sistem (Koordinasi, Informasi Dan Kerjasama)," *Jurnal Komunikasi*, Vol. 1, 2012.
20. Dedi S, "Implementasi Model Komunikasi Bencana Berbasis Komunitas Melalui Rencana Kontijensi Erupsi Gunung Sinabung," 2018.
21. Irfan, "Pola Komunikasi Bencana Badan Penanggulangan Bencana Daerah (Bpbd) Kota TebingTinggi Dalam Penanggulangan Bencana Alam," 2022.
22. K. Syafuddin, "Strategi Manajemen Komunikasi Bencana Dalam Penyebaran Informasi ErupsiMerapi," 2019.
23. Sunnora, "Manajemen Komunikasi Bencana Bpbd Kabupaten Magelang Dalam Pengerangan Resiko Bencana Erupsi Gunung Merapi," 2018.

24. S. Hardiyanto, D. Pulungan, U. Muhammadiyah, And T. Selatan, “Komunikasi Efektif Sebagai Upaya Penanggulangan Bencana Alam Di Kota Padangsidempuan,” 2019.
25. P. Cristin Harnita, “Pengembangan Dan Implementasi Komunikasi Pendidikan Bencana Tsunami,” *Jurnal Komunikasi Pendidikan*, Vol. 5, No. 2, Pp. 224–240, 2021, [Online]. Available: www.Journal.Univetbantara.Ac.Id/Index.Php/Komdik
26. D. Kurniawati, “Komunikasi Mitigasi Bencana Sebagai Kewaspadaan Masyarakat Menghadapi Bencana,” *Jurnal Simbolika: Research And Learning In Communication Study*, Vol. 6, No. 1, Pp. 51–58, Apr. 2020, Doi: 10.31289/Simbollika.V6i1.3494.
27. Z. M. Muktaf, “Studi Literasi Bencana Dalam Perspektif Ilmu Komunikasi,” 2017.
28. D. Prasanti And I. Fuady, “Strategi Komunikasi Dalam Kesiapan Menghadapi Bencana Longsor Bagi Masyarakat Di Bandung Barat Studi Kasus Tentang Strategi Komunikasi Dalam Kesiapan Menghadapi Bencana Longsor Bagi Masyarakat Kawasan Pertanian Di Kaki Gunung Burangrang, Kab. Bandung B,” *Jurnal Komunikasi*, Vol. 11, No. 2, P. 135, Sep. 2017, Doi: 10.21107/Ilkom.V11i2.3329.
29. Yusuf, “Manajemen Komunikasi Bencana Di Masa Pandemi Covid-19,” 2022.
30. Hariati, “Strategi Komunikasi Bencana Oleh Badan Penanggulangan Bencana Pada Kegiatan Desa Tangguh Bencana (Destana),” 2020.

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