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NDMA Crisis Communication on Twitter: A Case Study of Floods in Pakistan 2022

Abstract

Crisis communication during natural disasters holds a substantial significance, especially for underdeveloped countries where information infrastructures are weak. The 2022 floods in Pakistan have led to one of the most extensive humanitarian crises. National Disaster Management Authority(NDMA)used X as one of the key digital platforms to provide timely situational updates and ongoing relief efforts. Nevertheless, a concurrent surge of misinformation distorted public understanding. Using existing studies on crisis communication, this study examines NDMA's disaster response communication on Twitter during the 2022 floods, along with the effects of misinformation. The research employs qualitative content analysis and a theory-guided approach. Insights from secondary evidence suggest that NDMA has recurrently posted updates, lining up with efficient crisis communication practices. Information access disparities, insufficient prebunking, and minimal proactive fact-checking obstructed reach and impact. The research concludes by outlining key recommendations for proactive communication, multilingual dissemination strategy, enhanced data transparency, and partnering with fact-checking organizations.

Keywords: Crisis Communication, NDMA, Misinformation, Twitter (X), 2022 Pakistan Floods

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Title

NDMA Crisis Communication on Twitter: A Case Study of Floods in Pakistan 2022

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Contents

Abstract

Crisis communication during natural disasters holds a substantial significance, especially for underdeveloped countries where information infrastructures are weak. The 2022 floods in Pakistan have led to one of the most extensive humanitarian crises. National Disaster Management Authority(NDMA)used X as one of the key digital platforms to provide timely situational updates and ongoing relief efforts. Nevertheless, a concurrent surge of misinformation distorted public understanding. Using existing studies on crisis communication, this study examines NDMA's disaster response communication on Twitter during the 2022 floods, along with the effects of misinformation. The research employs qualitative content analysis and a theory-guided approach. Insights from secondary evidence suggest that NDMA has recurrently posted updates, lining up with efficient crisis communication practices. Information access disparities, insufficient prebunking, and minimal proactive fact-checking obstructed reach and impact. The research concludes by outlining key recommendations for proactive communication, multilingual dissemination strategy, enhanced data transparency, and partnering with fact-checking organizations.

Keywords:

Crisis Communication, NDMA, Misinformation, Twitter (X), 2022 Pakistan Floods

Introduction

In recent years, Pakistan has experienced drastic climate change followed by natural disasters. The 2022 floods are among the most catastrophic disasters. Millions of people around the country were evacuated, requiring emergency support through official means of information. In these circumstances, the National Disaster Management Authority (NDMA) plays the key role in providing real-time updates, circulating credible information, and coordinating emergency response. During the 2022 floods in Pakistan, NDMA has relied on social media platforms, predominantly Twitter, to enable crisis communication (Batool et al., 2024). Twitter's live information ecosystem allows situation updates, operational efforts, and crisis warnings, which makes it a crucial platform for effective crisis communication (Austin & Jin, 2016).

Studies on crisis communication since 2018 emphasize that social media platforms, while

contributing to situational updates, lead to an increased flow of misinformation (Austin & Jin, 2016; Reuter & Kaufhold, 2017). During the 2022 floods in Pakistan, Twitter generated high volumes of inaccurate information, public appeals, crisis reporting, and political commentary. Research shows that social media, especially Twitter (X), is a popular microblogging platform to support effective crisis management during floods. However, the public is facing strategic concerns and emotional inconsistencies, suggesting enhanced community participation. (Ishtiaq, 2023; Boota et al., 2024). Moreover, academics observe that although official disaster management institutions provide in-time updates, the efforts were frequently dominated by political narratives and public communication (Batool et al., 2024).

Despite the NDMA's crisis communication efforts, limited scholarly research evaluates how the institution communicated on Twitter during the 2022 floods in Pakistan and how misinformation disrupted the communication efforts. Most existing researches discuss social media information flow generically, leaving a loophole in understanding the challenges alongside real-time crisis communication. This research paper particularly focuses on NDMA's crisis communication via Twitter during the 2022 Pakistan floods and the corresponding misinformation affecting the perceptibility and response to official information.

Objectives

1. To evaluate the efforts of NDMA on Twitter in communicating time-sensitive information during the 2022 floods in Pakistan.
2. To assess the scope and impact of misinformation on floods 2022, parallel to NDMA's communication.

Research Question

How did the National Disaster Management Authority (NDMA) communicate official updates during floods in Pakistan 2022 on Twitter, and how did misinformation shape its effectiveness?

Theoretical Framework

This research uses Situational Crisis Communication Theory (SCCT) as the main theoretical framework. The theory focuses on crisis communication and evaluates public expectations and perception. Coombs (2007) categorizes calamity into victim-centric, unintentional, or avoidable classifications. The scholar recommends an applicable communication approach for every category. In the context of floods in Pakistan 2022, the natural disaster lies in the category of a victim crisis. This suggests that the National Disaster Management Authority was not responsible for the cause of the disaster; rather, its role is communication-centric in providing timely information and maintaining authenticity.

Situational Crisis Communication Theory (SCCT) recommends two foundational approaches towards victim crisis.

1. Directive Information: Provide safety instructions, resource management, hazard vulnerability, and evacuation.
2. Adaptive Communication: Showing compassion, acknowledging public concerns, and providing adequate support.

Coombs (2007) suggests that when misleading information looms over the organization's authority, it is imperative to carry out supportive approaches such as bolstering and corrective measures. To further develop the theoretical approach, this research integrates Crisis and Emergency Risk Communication (CERC), which underlines being authentic and being the first in communicating information (Reynolds & Seeger, 2005). In case of high-risk emergencies, practicality and a targeted approach are important contributors.

In relation to the academic work on misinformation, it emphasizes the interruption of misleading information with official sources during disaster management. As shown in the study, fabricated information is intentionally spread to inflict disruption and social unrest (Wardle and Derakhshan, 2017). The framework of misinformation can be seen as contextually misrepresented visuals and false statistics across social media platforms during floods in Pakistan.

With respect to the psychological inoculation theory, immunizing the public with manipulation tactics contributes to the pre-bunking communication, making the public less susceptible to misleading information. The nature of this study highlights how pre-bunking strategies make people better informed regarding manipulative information (Roozenbeek et al., 2022). These theoretical frameworks and CERC will provide a comprehensive

analytical lens in evaluating the NDMA's crisis communication approach during the 2022 floods in Pakistan.

Literature Review

Scholarly studies on crisis communication signify the public dependence on official institutions for reliable and swift information flow during crisis situations. The research argues that crisis communication must be both emotionally sensitive and time-sensitive to keep the public trust (Reynolds and Seeger, 2005). Study shows that the communication approach must come in parallel to the type of crisis, especially when institutions carry no responsibility for the calamity (Coombs, 2007).

Several studies have shown that digital communication spaces are effective in providing concurrent updates. A study conducted by Houston et al. (2015) shows that social media allows the timely dissemination of emergency warnings. Moreover, Lindsay (2011) argues that digital public spheres allow official authorities to disintermediate conventional media gatekeepers. In contrast, social media platforms amplify unverified narratives, which impact crisis response efforts. Alexander (2014) concludes that disaster management organizations must take into account ethical considerations and associated risks with the evolving digital landscape.

Social media platforms, particularly Twitter (X), have become a key channel to provide information to the public during natural disasters and aid in crisis communication. These social media networks allow crisis management institutions to provide real-time updates, share location-based media, and receive on-ground feedback from both vulnerable and affected public. However, they also create a breeding ground for misinformation and fabricated news. Research shows that digital streams can identify emerging threats quickly in comparison to traditional media. Therefore, the signal-to-noise problem is crucial in many cases requiring enhanced filtering and validation protocols (Huang et al., 2022; Kitazawa & Hale, 2019).

Many academics have established in prior research that misinformation propagates more swiftly than credible updates and emergencies. Vosoughi et al. (2018) exemplify that fabricated information travels deeper than credible content in the world of digital media. Studies examine that factually inaccurate content follows anticipated patterns, including repurposed imagery, false attribution to official institutions, and deceptive video edits (Wardle and Derakhshan, 2017)

Evidence-based disaster researches reaffirm these patterns. A study conducted by Jaeger et al. (2007) found that CRGs use communication gadgets to let the public access, communicate, and share information in response to an emergency disaster. Zeng et al. (2016) emphasize that crisis communication propagates through collaborative interpretation online. Findings suggest that credible and time-sensitive communication does not completely eliminate but reduces the impact of false information.

When it comes to natural disasters such as floods, there is a high likelihood of misinformation because of the visual imagery showing victims and destruction, triggering strong emotional responses. Sutton (2021) argues that the traditional crisis communication model primarily focuses on a short-term approach. Five important areas, including misinformation, risk awareness, attention dynamics, impartiality, and trust, contribute to long-term crisis management. Digital Rights Foundation (2023) has reported several fabricated viral information regarding floods, which include falsified donation hubs and decontextualized images. Additionally, AFP Pakistan has also issued many fact-checks debunking false flood narratives. Research indicates that the impact of official communication is frequently diminished when misinformation prevails across the digital diaspora.

In the case study of the Thai floods of 2011, it was found that unclear updates from official institutions contributed to misunderstanding and chaos (Preedaananthasuk, 2014). Research on Queensland floods in the year 2010 suggests the increased use of Facebook community groups as a source of situation updates (Bird et al. 2012). These comparative studies align with the situation of Pakistan, where infrastructural shortcomings and linguistic diversities affect information access. In Pakistan, digital communication frameworks are intricate, with a major segment of the population using primarily WhatsApp, having multilingual environments, and unequal distribution of internet facilities.

Political narratives have a considerable influence on the social media ecosystem (Newsom et al.,

2022). Political influences often raise questions regarding the credibility of official agencies, and therefore, cooperation between government and media institutions is often necessary (Sharif et al., 2024). Furthermore, Raza et al. (2025) examine in-depth media framing, sensationalism, and how political narratives can dominate flood relief operations. Social media networks play a crucial part in keeping the public informed by providing live and time-critical information. In the province of KPK, most disaster communication takes place via Twitter, while early warning alerts are still insufficiently evolved and depend on external agencies (Anis & Ashfaq, 2023).

Several scholars have worked on flood-related communication. Pakistan has been improving its disaster response strategies in comparison to the 2010 floods. Maqsood et al. (2023) confirm in their study that the fragmented media landscape of Pakistan has a major influence on circulating factually misleading portrayals. Studies suggest that online misinformation can further aggravate flood-driven hazards. Researchers argue that communication gaps directly affect disease mitigation practices. While crisis communication focuses on uncertainty, however, there is limited research on how uncertainty is communicated (Liu, Bartz, & Duke, 2016).

An increasing volume of research investigates the dynamics of the Pakistan floods in 2022. Nanditha et al. (2023) examine the underlying hydrometeorological determinants of the floods. Hussain et al. (2023) review that Pakistan's exposure to natural calamities creates unstable longitudinal vulnerability across various regions. Government and disaster management institutions must shift from post-crisis relief operations to preparedness strategies beforehand. The e-governance in Pakistan is moderately active, which limits the efficiency of crisis communication management. The research further highlights the significance of timely and targeted strategic communication to minimize negative feedback (Batool et al., 2024). The study on the COVID-19 pandemic emphasizes the multilingual crisis communication, which remains insufficient in view of diverse linguistic communities. The use of English-centric communication broadens the gap in developing credibility and resilient societies (Zhang, Piller, & Li, 2020).

Synthesis

The literature suggests the following:

1. Situational Crisis Communication Theory (SCCT) and CERC principles can be used to evaluate NDMA's crisis communication efforts.
2. While social media can provide real-time crisis updates, it can also become a source of misinformation.
3. Pakistan has heterogeneous linguistic communities, and further political instability can make the public vulnerable to misleading information.
4. Analyze NDMA's official Twitter account and updates on the floods of 2022.

Methodology

This research uses mixed methodology with a primary focus on a qualitative approach. The framework is suitable for assessing patterns of crisis communication and misinformation during the floods in Pakistan in 2022. Also, it aligns with the best crisis communication practices frequently evaluated in disaster management studies.

Research Design

The study uses an interpretive research design. This includes a thorough analysis of Twitter insights using SCCT. The initial investigative framework is suitable since a detailed study on the crisis communication of NDMA has not yet been explored much. A qualitative interpretive approach is helpful in evaluating the conceptual structure to study the framing dynamics of communication.

Data Sources

The research draws upon two primary data categories, including:

1. Primary Digital Dataset: Evaluating NDMA's Twitter communication from June to October 2022. This includes updates on relief operations, situational reports, and early warnings. Instead of investigating raw data sets, the study will examine reported information.
2. Secondary Data Sources: Examining situational summaries published by the United Nations, fact-checking data, relevant case

studies, and peer-reviewed academic literature. A contextual information framework is substantial for understanding communication emergencies (Nanditha et al. 2023).

Sampling

The study utilizes a purposive sampling strategy for evaluating literature and misinformation datasets. The selection of studies is limited to the following criteria:

- Sourced from peer-reviewed scholarly journals
- Crisis communication strategies relevant to floods and fabricated content on social media during the Pakistan 2022 floods
- Conceptual and evidence-based insights related to NDMA's crisis communication efforts.

Literature volume on crisis communication and misinformation is vast and assorted; therefore, choosing purposeful selection is important. Palinkas et al. (2015) emphasize that the use of purposive sampling contributes to the conceptual analysis of qualitative integrative analyses.

Analytical Framework

The analytical framework is built upon:

- Situational Crisis Communication Theory (SCCT) to conceptualize and evaluate NDMA's crisis communication response.
- Crisis and Emergency Risk Communication (CERC) principles to assess the quality of the message.
- Misinformation & Inoculation Theory for examining misleading information and evaluating corrective potential.
- Thematic Analysis to find out crisis communication patterns of NDMA in the larger framework of misinformation dynamics.

Braun and Clarke (2006) discuss thematic analysis as a dynamic approach to identify vast communication patterns. Reliability is ensured by employing SCCT and CERC principles to analyze communication patterns.

Analysis

NDMA's Crisis Communication Structure

Crisis communication strategy adopted by the National Disaster Management Authority (NDMA) during the Pakistan floods of 2022 can be mapped onto the SCCT framework. Coombs (2007) found that disseminating information is the key module of victim-crisis disaster management response. NDMA has issued the following responses:

- Meteorological early warnings and evacuation advisories
- Preliminary information on river flow
- Coordination of messages and relief operations by military and provincial departments
- Daily situational reporting outputs

These conform to CERC's criteria for timely and operationally useful information. Reynolds and Seeger (2005) investigate that actionable instructions mitigate public ambiguities and adhere to safety practices. Zhang, Piller, & Li's (2020) study focuses on linguistic misalignment. Existing literature suggests that government organizations use the English language when issuing official reports. However, the empirical evaluation of the official NDMA Twitter account reveals notable nonconformity from this hypothesis. Contradicting the English-centric communication, most of NDMA's flood-related updates were disseminated in Urdu. English appeared in inter-agency coordination and formal correspondence. It also advocates the significance of platform-level content analysis rather than generalizing crisis communication patterns. Although Urdu enhanced accessibility, crisis messaging still posed certain limitations in flood-affected rural communities where other local languages such as Pushtu, Punjabi, Sindhi, Balochi, and Saraiki dominate. As a result, Urdu-centric communication may not fully reduce communication barriers.

Update Periodicity & Format-Driven Clarity

Similar to practices observed in international disaster management, NDMA has communicated emergency flood situation updates in a similar pattern. The agency's frequent posting reinforced and empowered its role as the primary and credible source of information. However, it did not efficiently neutralize inaccurate information.

NDMA has also released detailed situation reports. This type of format poses accessibility challenges for mobile users. Precise visual summaries are comparatively more efficient for swift understanding. The authority's dependence on technical SITREPs may have narrowed public access.

Competing Information Streams

Pakistan experienced a dynamic flow of misinformation during the floods. According to AFP Pakistan (2022), several misleading viral news stories, miscaptioned visuals, and charity links have been reported. Wardle and Derakhshan (2017) indicate that image-based information poses risks to credible sources and empirical evidence. Amid the natural calamity, attention towards credible information is rare since people are more influenced by emotionally charged content. A study by Vosoughi et al. (2018) concludes that fabricated information spreads quickly than authentic information due to emotional appeal. Therefore, the institution's bureaucratic communication style still lags behind viral and emotionally charged visuals.

This contrasting approach created the following issues during the flow of information:

- Official information was dominated by emotional disinformation
- Delayed corrective responses mitigate the overall efficiency
- Trust in governmental agencies is fragmented across wide-ranging public groups.

Pre-emptive Response Gaps & Institutional Partnerships

A key shortcoming in NDMA's communication strategy is the lack of prebunking as suggested by inoculation theory. A proactive and prebunking approach substantially reduces vulnerability to crisis-related misleading information. Although NDMA released certain corrective updates, but failed to provide proactive information about prevalent misinformation techniques.

NDMA engaged in partnership with the Pakistan Army, provincial governments, and rescue agencies. However, they did not extend the associations with fact-checkers and media houses. Cross-platform communication provides an enhanced multilingual and accessible approach. Likewise, inter-agency coordination is required to address any ambiguities and clarify information during floods.

Discussion

The crisis communication of the National Disaster Management Authority (NDMA) on Twitter during the 2022 Pakistan floods explores an intricate nexus between the agency's authenticity, reach limitations, and the trajectory of misinformation circulation. Within the framework of SCCT, CERC practices, and thematic analysis, this research discusses NDMA's strategic performance, keeping in view the techno-cultural and socio-linguistic context.

Institutional Legitimacy

In light of Situational Crisis Communication Theory, the National Disaster Management Authority (NDMA) unfolds the victim-specific crisis category, which avoids blaming and increases public acceptance. Coombs (2007) argues that the transparency and coherence in official communication contribute to public trust in governance. Official account of NDMA on Twitter posted comprehensive information which addresses scientific datasets & predictive modelling. This strategy aligns with the principles of SCCT, which focuses on non-defensive communication and accuracy for a victim-type crisis.

The performance of an institution based on the SCCT framework doesn't merely evaluate its credibility; rather, it also discusses the impact of communication and stakeholder silence. NDMA lacks in the behavioral impact since the communication did not involve an emotional appeal, which is often necessary to engage public understanding in this highly reactive environment. While the organization keeps up with the technical precision, its official messaging was dominated by emotionally charged content on social media, primarily visual misinformation influencing public perception. SCCT highlights the need for stakeholder reassurance and transparent communication. Though NDMA met the informational baseline, but limited its ability to meet emotional and interpretive expectations of the public, which shapes the overall framing during the crisis.

Public Reach and Linguistic Accessibility

Crisis and Emergency Risk Communication emphasizes real-time information update and targeted messaging. NDMA's Twitter posting is in line with timeliness since communication was consistent and in time. However, the organization struggled to tailor messages considering public segmentation and socio-linguistic adaptation.

Most of the Twitter communication was in Urdu; a larger segment of the Pakistani population speaks and understands regional languages. As per the principles of CERC, it is imperative to adapt communication formats in accordance with audience diversity. NDMA's one-language messaging approach reduced message reach among multilingual populations, particularly across disaster-prone and rural areas.

Additionally, Twitter remains an urban-elite-centric social media platform. On the other hand, rural communities rely on local broadcast media (FM Radio), community authority structures, local journalistic actors, and information dissemination on WhatsApp. While NDMA's tweets on flood updates were primarily in the Urdu language, many posts attached visuals such as SITREP excerpts and flood situation snapshots containing English text, creating a hybrid linguistic format. Keeping in view of global crisis management agencies such as the Japan Meteorological Agency, FEMA, and Bangladesh Cyclone Preparedness Program, the organizations frequently use real-time alerts, visual infographics, and multi-lingual updates optimized for fast information consumption. One strategic challenge for NDMA is not message quantity, but rather it is the communication usability.

Resilience to Misinformation

NDMA's misinformation management on Twitter was predominantly reactive. The organization did publish corrections, but they only appeared when misinformation had already achieved virility. Also, the extent of information correction remains minimal, with more focus on current updates. Early warnings of false information would have played a substantial role. Pre-exposure warnings are more effective than post-exposure corrections, especially during natural disasters.

NDMA did not employ pre-bunking strategies such as:

- Sharing user-friendly verification protocols to confirm official NDMA sources and information (fact-checking organizations)
- Focus on digital literacy by educating the public on common deceptive tactics (e.g., falsely contextualized imagery)
- Advance alerts about fraudulent donation appeals

Most viral information during the 2022 Floods in Pakistan involved deceptive imagery, fabricated fundraising appeals, and politically influenced narratives. However, failing to address any of these proactive approaches undermines NDMA's operational resilience.

In addition, various political stakeholders positioned the overall NDMA's performance in alliance with their narratives. The organization's communication highlights the government-led initiatives, which reflect the pro-government alignment. Instead of focusing on actors, NDMA could have adopted a technocratic prebunking strategy, reinforcing its neutral role while mitigating rumor circulation.

Structural and Ecosystem Constraints

Thematic analysis of NDMA Twitter messaging suggests that public responses are beyond the organization's control.

- Assessment delays on ground level created space where misinformation and rumor network prevailed, aligning with the study of Jaeger et al. (2007).
- Emotionally-driven images dominated NDMA's text-centric communication.
- The reach of Twitter is limited to literate urban users and not to the most vulnerable and flood-affected communities.
- Public trust was divided across religious figures, political actors, social media & local influencers, diminishing DNMA's authority as the only credible source.

In comparison to international best practices, NDMA has the following shortcomings:

1. The organization lacks in using Twitter as the primary platform for sharing flood alerts. India's NDMA and Bangladesh's CPP use Twitter as the primary social media network to disseminate crisis information, which is immediately shared across SMS gateways, Facebook, and WhatsApp. Twitter remains the primary source of official news communication.
2. Indonesia's BNPB and Japan's JMA use multiple languages to target region-specific public, such as Sundanese language variants and kana/kanji for immediate and enhanced comprehension.

3. EU civil-protection agencies frequently partner with EDMO-affiliated fact-checkers on Twitter for crisis management. Likewise, the Philippines' NDRRMC strengthens its counter misinformation response by retweeting AFP and Rappler fact-checking threads.
4. The functioning of New Zealand's NEMA is aligned with the government-media information desk during a crisis. Twitter updates are shared alongside key broadcasters, disaster management agencies, and local agencies.

Though NDMA's Twitter messaging was time-sensitive and demonstrated credibility, it has inadequate support from surrounding media ecosystems, limiting the broader impact.

Recommendations

Strengthen Multilingual Outreach

- Design micro-alerts in Punjabi, Sindhi, Pashto, Balochi, and local languages to support low-literacy decoding of crisis information.
- Broader collaborations with regional influencers, provincial information desks, and FM radio.

Employ Prebunking and Inoculation Strategies

- Issue early warnings about anticipated misinformation patterns to pre-empt rumor circulation.
- Provide user-friendly verification toolkits comprising step-by-step guides, visual explainers, and hotline details.
- Partner with fact-checking networks to co-produce prebunking dashboards and enable synchronized countermeasures against misleading information.

Optimize Twitter Content for Mobile Audiences

- Replace platform native formats with visual imagery, infographics, optimized hashtags, and short video briefings.
- Use of consistent visual templates and alt-text to improve algorithmic visibility.

Enhance Chronological Responsiveness

Employ early-window communication tactics that pre-emptively provide contextual updates to minimize the space for rumor propagation.

Limitations

- Twitter creates a demographically narrow space for communication and is limited to the elite urban population. Consequently, it compromises low connectivity, rural and marginalized communities.
- The research does not investigate the internal decision-making processes of the organization and focuses only on communication content analysis.
- Mapping misinformation is limited by insufficient metadata across platforms.

Conclusion

NDMA's Twitter communication during floods in Pakistan 2022 demonstrated the institution's time-sensitive and credible reporting. However, the efficiency was constrained by State influences, linguistic limitations, and a reactive approach towards dealing with misinformation. SCCT explores NDMA's performance in establishing trust, while CERC principles highlight information access loopholes to the affected population. Research on proactive measures against misinformation in light of inoculation theory suggests the shortcomings of responsive corrections. Thematic analysis concludes limitations of structural ecosystems in shaping crisis communication effectiveness. Overall, the crisis communication management of NDMA on Twitter was informationally accurate and timely, but lacked in coping with Pakistan's multilingual ecosystem, multi-dynamics of online misinformation, and political influence. To address these limitations, it is important to partner with fact-checking organizations, use visually encoded data for better public engagement, and implement pre-emptive counter strategies.

References

Alexander, D. E. (2014). Social media in disaster risk reduction and crisis management. *Science and Engineering Ethics, 20*(3), 717–733. https://doi.org/10.1007/s11948-013-9502-z
Google Scholar Worldcat Fulltext

Anis, F., & Ashfaq, A. (2023). Role of Digital Media in Disaster Management: A Case of Khyber Pakhtunkhwa, Pakistan. *Journal of Development and Social Sciences, 4*(1), 536–551. https://ojs.jdss.org.pk/journal/article/view/690
Google Scholar Worldcat Fulltext

Austin, L., & Jin, Y. (2016). Social media and crisis communication: Explicating the social-mediated crisis communication model. *Strategic Communication: New Agendas in Communication*, 164–183. https://doi.org/10.4324/9781315749068-13
Google Scholar Worldcat Fulltext

Batool, S., Zaffer, A., & Batool, A. (2024). *E-Governance for Crisis Communication: A Study of Environmental Disaster in Pakistan.* Research Journal for Societal Issues, 6(2), 102–120. https://rjsi.com.pk/article/e-governance-crisis-communication
Google Scholar Worldcat Fulltext

Batool, S., Zaffer, A., & Batool, D. F. (2024). Role of new media in good governance: A study of disaster management authorities of Pakistan. *Journal of Professional Research in Social Sciences, 11*(1), 239–265.* https://journal.sbbwu.edu.pk/index.php/JPRSS/article/view/215
Google Scholar Worldcat Fulltext

Bird, D., Ling, M., & Haynes, K. (2012). Flooding Facebook — the use of social media during the Queensland and Victorian floods. *Australian Journal of Emergency Management, 27*(1), 27–33. https://knowledge.aidr.org.au/resources/ajem-jan-2012-flooding-facebook/
Google Scholar Worldcat Fulltext

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa
Google Scholar Worldcat Fulltext

Coombs, W. T. (2007). Protecting organization reputations during a crisis: The development and application of Situational Crisis Communication Theory. *Corporate Reputation Review, 10*(3), 163–176. https://doi.org/10.1057/palgrave.crr.1550049
Google Scholar Worldcat Fulltext

Digital Rights Foundation. (2023). Combatting flood misinformation in Pakistan. DRF Report. https://digitalrightsfoundation.pk/combatting-flood-misinformation-in-pakistan/
Google Scholar Worldcat Fulltext

Houston, J. B., Hawthorne, J., Perreault, M. F., Park, E. H., Hode, M. G., Halliwell, M. R., Turner McGowen, S. E., Davis, R., Vaid, S., McElderry, J. A., & Griffith, S. A. (2015). Social media and disasters: A functional framework for social media use in disaster planning, response, and research. *Disasters, 39*(1), 1–22. https://doi.org/10.1111/disa.12092
Google Scholar Worldcat Fulltext

Huang, L., Shi, P., Zhu, H., & Chen, T. (2022). *Early detection of emergency events from social media: A new text clustering approach. Natural Hazards, 111*(1), 851–875. https://doi.org/10.1007/s11069-021-05048-9
Google Scholar Worldcat Fulltext

Hussain, M. A., Shuai, Z., Moawwez, M. A., Umar, T., Iqbal, M. R., Kamran, M., & Muneer, M. (2023). *A review of spatial variations of multiple natural hazards and risk management strategies in Pakistan. Water, 15*(3), 407. https://doi.org/10.3390/w15030407
Google Scholar Worldcat Fulltext

Ishtiaq, N. (2023). *The use of social media during the 2022 flooding in Pakistan* (Master's thesis). University of Oslo. https://www.diva-portal.org/smash/get/diva2:1791078/FULLTEXT01.pdf
Google Scholar Worldcat Fulltext

Jaeger, P. T., Shneiderman, B., Fleischmann, K. R., Preece, J., Qu, Y., & Fei Wu, P. (2007). Community response grids: E-government, social networks, and effective emergency management. *Telecommunications Policy, 31*(10–11), 592–604. https://doi.org/10.1016/j.telpol.2007.07.008
Google Scholar Worldcat Fulltext

Kitazawa, K., & Hale, S. A. (2019). Social media and early warning systems for natural disasters: A case study of Typhoon Etau in Japan. *International Journal of Disaster Risk Reduction, 52*, Article 101926. https://doi.org/10.1016/j.ijdrr.2020.101926 Google Scholar Worldcat Fulltext

Lindsay, B. R. (2011, September 6). *Social media and disasters: Current uses, future options, and policy considerations* (CRS Report R41987). Congressional Research Service. https://sgp.fas.org/crs/homesec/R41987.pdf Google Scholar Worldcat Fulltext

Liu, B. F., Bartz, L., & Duke, N. (2016). *Communicating crisis uncertainty: A review of the knowledge gaps. Public Relations Review, 42*(3), 479–487. https://doi.org/10.1016/j.pubrev.2016.03.003 Google Scholar Worldcat Fulltext

Maqsood, A., Ashraf, R., Rasool, H., & Moazzam, N. (2023). *Social Media and Political Polarization in Pakistan: A Case Study of Pakistani Youth. Journal of Languages, Culture and Civilization, 5*(2), 235–248. https://ojs.jlccjournal.com/index.php/jlcc/article/view/284 Google Scholar Worldcat Fulltext

Nanditha, J.S., Kushwaha, A. P., Singh, R., Malik, I., Solanki, H., Chuphal, D.S., Vegad, U., Dangar, S., Mahto, S. S., & Mishra, V. (2023). *The Pakistan flood of August 2022: Causes and implications. Earth's Future.* Advance online publication. https://doi.org/10.1029/2022EF003230 Google Scholar Worldcat Fulltext

Newsom, V. A., Lengel, L., Birzescu, A., & Vukasovich, C. (2022, August 24). *Editorial: Strategic narratives in political and crisis communication: Responses to COVID-19.* Frontiers in Communication, 7. https://doi.org/10.3389/fcomm.2022.973464 Google Scholar Worldcat Fulltext

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). *Purposeful sampling for qualitative data collection and analysis in mixed-method implementation research. Administration and Policy in Mental Health and Mental Health Services Research, 42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y Google Scholar Worldcat Fulltext

Preedaananthasuk Chatree (2014). Integrated Crisis Management: What Did We Learn from Flood Management in Thailand? Universal Journal of Industrial and Business Management. 2. https://doi.org/10.13189/ujibm.2014.020101 Google Scholar Worldcat Fulltext

Raza, M., Khalil, H., Fareed, M., Eneizat, M. F., Ab Ul Hassan, A., & Faizuddin, A. (2025). *Resilience or rhetoric? A framing analysis of flood disaster reporting in Pakistan's media. Journalism and Media, 6*(4), 185. https://doi.org/10.3390/journalmedia6040185 Google Scholar Worldcat Fulltext

Reuter, C., & Kaufhold, M.A. (2017). Fifteen years of social media in emergencies: A retrospective review and future directions. *Journal of Contingencies and Crisis Management, 26*(1), 41–57. https://doi.org/10.1111/1468-5973.12196 Google Scholar Worldcat Fulltext

Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication, 10*(1), 43–55. https://doi.org/10.1080/10810730590904571 Google Scholar Worldcat Fulltext

Roozenbeek, J., van der Linden, S., Goldberg, B., Rathje, S., & Lewandowsky, S. (2022). Psychological inoculation improves resilience against misinformation on social media. *Science Advances, 8*(34) https://doi.org/10.1126/sciadv.abo6254 Google Scholar Worldcat Fulltext

Sharif, H., Asif, S., Bashir, R., & Habib, A. (2024). Analyzing governmental and media risk communication strategies during the 2022 Pakistan floods: A study of message framing and crisis response coordination. *Journal of International Crisis and Risk Communication Research*, 452–462. https://doi.org/10.30658/jicrcr.7.3.6 Google Scholar Worldcat Fulltext

Sutton, J. (2021). Longitudinal risk communication: A research agenda for communicating in a pandemic. *Health Security, 19*(4), 363–371. https://doi.org/10.1089/hs.2020.0161

Google Scholar Worldcat Fulltext

UN OCHA. (2022). Pakistan Monsoon Floods Situation Reports. United Nations. https://reliefweb.int/report/pakistan/pakistan-monsoon-floods-situation-reports
Google Scholar Worldcat Fulltext

Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news. *Science*, 359(6380), 1146–1151. https://doi.org/10.1126/science.aap9559
Google Scholar Worldcat Fulltext

Wardle, C., & Derakhshan, H. (2017). *Information disorder: Toward an interdisciplinary framework for research and policymaking*. Council of Europe. https://rm.coe.int/information-disorder-toward-an-interdisciplinary-framework-for-researc/1680764277c
Google Scholar Worldcat Fulltext

Zeng, L., Starbird, K., & Spiro, E. (2016). Rumors at the speed of light? Modeling the rate of rumor transmission during a crisis. In *Proceedings of the 49th Hawaii International Conference on System Sciences (HICSS 2016)* (pp. 1969–1978). https://doi.org/10.1109/HICSS.2016.247
Google Scholar Worldcat Fulltext

Zhang, J., Piller, I., & Li, J. (2020). *Linguistic diversity in a time of crisis: Language challenges of the Covid-19 pandemic. Multilingua, 39*(5), 503–515. https://doi.org/10.1515/multi-2020-0116
Google Scholar Worldcat Fulltext