

Netizen Response to Indonesian Mountain Climbing Accidents Through Network X Analysis

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Abstract

This study examines Indonesian netizens' responses to mountain climbing accidents on X (formerly Twitter) during June–July 2025 through a Social Network Analysis (SNA) approach. The findings reveal that online interactions were fragmented, one-directional, and dominated by a few central nodes, resulting in a network structure with a low average degree (0.67), near zero density, and high modularity (0.99). These metrics indicate limited connectivity, where users primarily engaged in isolated posts, retweets, or mentions without sustained dialogue. The analysis identifies a broadcast-centric communication pattern in which influential accounts acted as information hubs, while bridging roles or intermediary actors were largely absent. Consequently, information diffusion and emotional expressions such as grief, empathy, and anger diffused rapidly but lacked depth, cohesion, and collective resonance. Integrating Social Network Theory, Collective Emotion Theory, and Risk Society Theory, this study concludes that digital interactions during the incidents reflected individualized rather than collective engagement. Although social media facilitated quick awareness and emotional expression, it failed to foster long-term solidarity or participatory dialogue. The study recommends strengthening inter-community linkages and promoting empathetic, collaborative communication strategies to enhance digital disaster preparedness and resilience in Indonesia's mountain tourism sector.

Keywords: Budget Absorption, Budget Implementation, Budget Planning Documents, Human Resource Competence, Organizational Loyalty.

INTRODUCTION

Mountains have long served as prominent global tourist destinations due to their distinctive natural characteristics, including scenic landscapes, ecological diversity, and opportunities for outdoor recreation such as hiking, trekking, winter sports, and nature-based tourism. According to the UNWTO, mountain tourism generally occurs in specific geographical regions characterized by hilly or mountainous terrains, drawing visitors who seek natural and cultural experiences. This segment represents approximately 9% to 16% of total international tourist arrivals worldwide and has become increasingly attractive to travelers seeking open, less congested destinations an inclination that intensified during the COVID-19 pandemic. Regional variations are evident: the Asia-Pacific region attracts many visitors to nature reserves and parks, while Europe leads in skiing activities (UNWTO, 2023).

Between June and July 2025 the peak period of climbing activity a series of mountain accidents triggered widespread discussions across online platforms. Existing research underscores that social media serves as a critical instrument in disaster and risk communication by shaping public discourse, disseminating safety information, and enhancing community resilience (Hadikusuma & Azhar, 2023; Komarudin et al., 2023).

Technological advances have made human interaction easier through digital or virtual platforms. These technological advances have not only facilitated interaction, but also ushered in a new era of communication through the emergence of new media (Soekiman et al., 2025). Social media spaces have evolved into digital arenas for expressing grief, seeking social connection, and negotiating the collective meaning of tragic events. Users frequently emphasize systemic shortcomings associated with these incidents, demanding transparency and reform. Yet, some responses reveal skepticism toward the authenticity of public mourning or concern that

such tragedies are exploited to increase engagement (Alejandra Castellanos et al., 2025). These dynamics reveal a complex interplay between analytical and emotional responses, as individuals simultaneously grieve for victims, criticize institutional failures, and propose the adoption of digital tools to improve climbing safety (Park & Lim, 2024).

Communication is fundamental to human interaction, impacting all aspects of life and forming the basis for social relationships and networks (Lisdiantini et al., 2024). The occurrence of any interaction activity in a particular context depends on the presence of communication, because only through communication does the potential to influence individual behavior emerge (Rhamadona et al., 2024). Public reactions to tragedy manifest in multiple ways. Many individuals express sorrow through posts, hashtags, altered profile pictures, and information sharing about victims. Emotional expressions vary from sadness and sympathy to anger and frustration directed at perceived responsible parties. In addition, more organized responses, including fundraising, volunteerism, and awareness campaigns, also emerge (Ilyas & Sharifi, 2025).

At the same time, some users engage in critical reflection on the causes and management of such events, connecting them to broader systemic issues. However, not all digital expressions of grief stem from sincerity; the phenomenon of “performative grief” often occurs when public displays of sorrow serve personal or social visibility (Li et al., 2023). Hashtags such as #MountainSafety act as collective anchors for discourse, aggregating emotional and informational exchanges, while viral posts further amplify emotional resonance and public debate (Esti et al., 2020; Wiryanto et al., 2023). In general, online responses to tragic events comprise shared mourning, emotional expression, information circulation, and calls for accountability (Cao et al., 2022).

A post by the Indonesian Pop Base account on X (formerly Twitter) exemplifies this phenomenon. It reported the death of Brazilian climber Juliana Marins on Mount Rinjani, explaining that she passed away roughly twenty minutes after a fatal fall due to internal bleeding caused by severe spinal injuries, as reported by CNN Indonesia. The post received significant engagement, with users offering condolences such as “Rest in Peace for Juliana,” reflecting the immediacy and emotional reach of digital mourning practices.

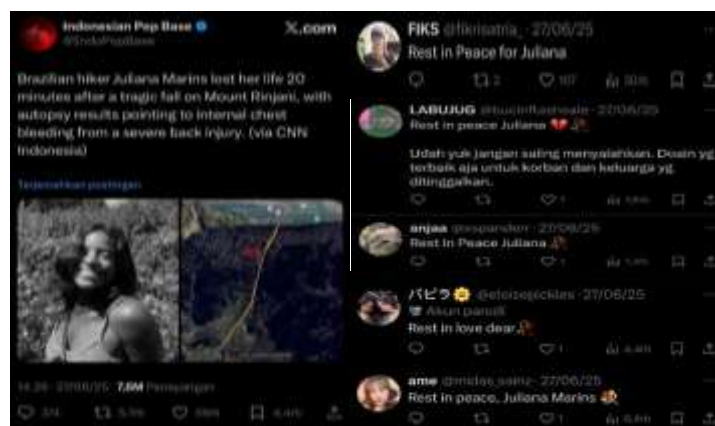


Figure 1. Netizens express their grief over the death of Brazilian climber Juliana Marins on Mount Rinjani

Source: (Indonesian Pop Base, 2025)

The hashtag #GunungRinjani functions not only as a geographical tag but also as a communal digital space where users share experiences, reflections, and emotions related to Mount Rinjani in West Nusa Tenggara. While typically associated with tourism promotion, adventure documentation, and natural aesthetics, the hashtag’s purpose shifts during crises, becoming a conduit for solidarity and public information. Users employ it to share updates, express empathy, raise safety concerns, and discuss institutional responsibilities (Bekeneva &

Lopushanskiy, 2024; La Rocca & Boccia Artieri, 2022). From a sociological perspective, this transformation illustrates how digital spaces evolve into participatory arenas for emotional and social engagement, where the public actively co-constructs collective narratives surrounding tragedy, nature, and human values (Sudirman et al., 2024).

The spread of information and emotional expression following such tragedies demonstrates the concept of “digital mourning,” where individuals express sympathy, solidarity, and reflection online even without personal connections to victims. Public sentiment frequently extends beyond grief to advocacy for improved regulations, enhanced safety infrastructure, and accountability among tour operators (Astuti & Rimawati, 2021; Dewantari et al., 2023). Netizens also display solidarity through online petitions, crowdfunding, and knowledge-sharing initiatives (Nazeli et al., 2023; Rojak & Handayani, 2023). This convergence of grief, critique, and mobilization underscores the need to analyze how collective emotions evolve within constrained temporal windows following crises.

The emergence of collective emotions during the 2025 climbing incidents can be explained through Collective Emotion Theory. (Bettarelli et al., 2022) and (Huang et al., 2023) assert, collective emotions arise when individuals share emotional evaluations of a common event and express them through interactions in shared communication spaces. On X, the dissemination of visual and textual information about the tragedy prompted rapid emotional contagion. Expressions of sadness, fear, and empathy spread through hashtags like #MountainSafety, while mechanisms such as retweets and comments fostered affective alignment, transforming individual grief into collective emotions of sadness, anger, and solidarity. This process illustrates that public emotions are not spontaneous but socially constructed through repetitive and interactive digital communication patterns (Park & Lim, 2024; von Scheve & Ismer, 2013).

Ulrich Beck's Risk Society Theory marks a significant shift in conceptualizing the nature and scope of contemporary hazards. Within this theoretical framework, the notion of a 'risk society' refers to a modern condition in which risks are no longer confined to individual or localized domains but have become systemic, transnational, and inherently linked to the processes of modernization. Beck contends that societal concerns have evolved from traditional industrial-era challenges, primarily centered on the allocation of resources toward the management of manufactured risks, including ecological degradation, public health emergencies, and technological failures (Andres et al., 2024; Jong, 2022). This transformation signifies a profound reorientation in the collective perception and governance of risk, where the uncertainties generated by modernization permeate everyday life and reshape institutional duties and social practices.

Social Network Analysis (SNA) further elucidates how actors shape these collective emotions. Influencers, journalists, and environmental advocates act as central nodes that amplify emotional narratives and promote safety awareness. Institutional accounts, including disaster management agencies and tourism authorities, moderate public discourse by disseminating verified information and practical guidelines, grounding emotional reactions in rational frameworks. Grassroots actors, such as climbers and volunteer communities, contribute authenticity through personal testimonies and solidarity initiatives (Rojak & Handayani, 2023). Consequently, social media networks operate not merely as communication channels but as structural frameworks regulating the flow and intensity of public emotions (Christian et al., 2023; Sayah et al., 2023).

Throughout June and July 2025, public emotions evolved dynamically. In early June, widespread expressions of shock and sorrow dominated online discourse. As discussions about causality and accountability intensified, emotional tones shifted toward anger and moral outrage, particularly concerning safety management and regulatory shortcomings. By late July, the discourse transitioned toward solidarity and advocacy, with users promoting safety awareness,

supporting victims' families, and calling for policy reforms. This progression from grief to anger to solidarity represents an emotional trajectory of adaptation and resilience within digital communities (Bettarelli et al., 2022; Huang et al., 2023; Muthmaina et al., 2024).

Overall, this phenomenon underscores that social media functions not only as a medium for information dissemination but also as a social environment where individuals collectively construct emotional meaning around crises (Cmeciu & Coman, 2018). Through digital participation, users merge grief, critique, and solidarity into an emergent form of online social resilience, reaffirming the applicability of Collective Emotion Theory to the study of disaster communication in highly networked environments.

Research by Erokhin & Komendantova (2024) explain that the effectiveness of disaster communication among regional authorities hinges on the ability of communicators to foster situational awareness and establish media partnerships to ensure accurate information dissemination. Danzi et al (2024) explain that in the context of mountain tourism, timely and coordinated communication is critical, as communication lapses can exacerbate emergencies, delay rescues, and heighten casualty risks. The climbing accidents of June–July 2025 generated intense conversations on X; however, the structure of these interactions specifically who influenced the narrative (Erokhin & Komendantova, 2024; Maldeniya et al., 2023). This study addresses that gap by examining how Indonesian netizens constructed, transmitted, and clustered around narratives related to these events.

The study contributes both theoretically and practically. Theoretically, it extends current understanding of digital communication dynamics and collective emotion formation in disaster contexts by integrating Social Network Theory, Collective Emotion Theory, and Risk Society Theory (Bettarelli et al., 2022; Christian et al., 2023; Andres et al., 2024). This integration elucidates how social relations, emotional contagion, and risk perception interact within digital ecosystems, enriching the limited Indonesian scholarship on digital mourning, online solidarity, and network-based crisis communication.

Practically, the findings provide actionable insights for governmental institutions, tourism managers, and mountaineering communities to enhance risk management and safety communication on social media. Network mapping enables the identification of key actors capable of disseminating safety messages rapidly and credibly (Amro & Purohit, 2023). Furthermore, understanding patterns of emotional diffusion and digital solidarity offers valuable foundations for designing empathetic, participatory, and emotionally attuned public communication strategies (Ilyas & Sharifi, 2025).

Socially, this research contributes to raising public consciousness about safety and collective responsibility in mountain climbing. By analyzing digital behavior and narrative construction, it encourages collaboration between online communities and formal institutions, fostering a culture of safety and disaster preparedness in Indonesia's nature tourism sector.

RESEARCH METHODS

This study adopts Social Network Analysis (SNA) as its principal quantitative methodology. The SNA framework facilitates a systematic examination of interaction patterns, behavioral dynamics, and influence structures by modeling entities as nodes interconnected through edges or links. Rawlings et al (2023) explain these ties may represent various forms of affiliation, including friendships, professional associations, or shared interests, enabling the quantification of network attributes such as centrality, density, and connectivity. The analytical focus centers on mapping and interpreting the structural relationships, degrees of connectivity, and the emergence of online communities in digital conversations concerning mountain climbing accidents in Indonesia during June–July 2025. By integrating numerical network indicators with

discourse-based interpretive insights, this approach advances a more comprehensive contextual understanding of how emotions and information circulate within digital ecosystems.

Data were primarily collected from X (formerly Twitter), encompassing posts, replies, retweets, mentions, and hashtags related to mountain climbing accidents during the specified period. The collection focused on event-driven interactions identified through hashtags and keywords such as #GunungRinjani, #Marapi, and #MountainSafety. Analytical techniques, including automated scripting, must align with the structural and contextual properties of network data, such as edgelist configurations, adjacency matrices, data incompleteness, temporal dynamics, and multilayered architectures, as emphasized by Rawlings et al. (2023). The use of Python in this context facilitates the preprocessing of raw digital traces into analytically compatible formats and applies tailored filtering procedures to ensure methodological precision in subsequent network analysis. Secondary data from Instagram, Facebook, and Reddit were selectively incorporated to validate thematic consistency and confirm discourse alignment across platforms. Automated tools and Python scripts facilitated data collection and filtering to ensure relevance, timeliness, and representativeness.

Logan et al (2023) explain that quantitative analysis applied several SNA metrics to map user interactions and influence dynamics. Key indicators included degree centrality (interaction frequency), betweenness centrality (bridging roles), and eigenvector centrality (network influence). Network modularity and density were computed to assess community segmentation and overall cohesion. Community detection algorithms were employed to identify discourse clusters, exposing subgroups that shared similar narratives or emotional expressions. Network visualization was conducted using Gephi, NodeXL, and Python (NetworkX) to illustrate relationships, highlight influencers, and trace information flows. Complementary thematic analysis of selected tweets was performed to interpret dominant emotional and informational frameworks emerging from the quantitative mapping.

The target population consisted of Indonesian X users actively engaging in discussions about mountain climbing accidents during the June–July 2025 period. A purposive sampling technique was employed, focusing on conversations surrounding incidents on Marapi, Semeru, Rinjani, and other major peaks that garnered significant online attention. Temporal sampling was confined to the two-month timeframe to capture real-time dynamics of public response. Only tweets and public posts containing relevant hashtags, mentions, or keywords were included to ensure ethical and replicable data acquisition.

All collected data were cleaned and processed to remove duplicates, spam, and irrelevant content. User IDs were anonymized to protect privacy. Quantitative SNA outputs including centrality scores, community clusters, and modularity indices were statistically summarized and visualized. The interpretation phase integrated network findings with qualitative insights derived from thematic coding, providing a comprehensive understanding of how information, emotions, and solidarity circulated within digital networks. The combination of network metrics and thematic context produced a data-driven explanation of digital grief, public accountability, and collective emotions in Indonesian online discourse during mountain climbing accident events.

RESULT AND DISCUSSION

The hashtag #GunungRinjani serves not merely as a geographical identifier but as a dynamic digital locus for communal interaction, where individuals articulate personal experiences, emotional responses, and reflections concerning Mount Rinjani in West Nusa Tenggara. Although its conventional use revolves around tourism promotion, adventure storytelling, and the aesthetic portrayal of natural landscapes, the hashtag assumes a critical communicative role during crisis events. In such contexts, it facilitates real-time updates,

expressions of empathy, public scrutiny regarding safety conditions, and discussions on institutional accountability (Bekeneva & Lopushanskiy, 2024; La Rocca & Boccia Artieri, 2022). Sociologically, this shift exemplifies the transformation of digital platforms into participatory arenas, enabling users to co-construct collective narratives that integrate tragedy, ecological consciousness, and shared human values (Sudirman et al., 2024).

The dissemination of information and affective responses following such incidents aligns with the notion of *digital mourning*, wherein individuals regardless of direct personal involvement engage in online expressions of grief, solidarity, and moral reflection. These emotional articulations often escalate into civic engagement, manifested through advocacy for regulatory reforms, improvements in safety protocols, and heightened accountability within the tourism industry (Astuti & Rimawati, 2021; Dewantari et al., 2023). Furthermore, netizens frequently demonstrate digital solidarity through mechanisms such as online petitions, collaborative fundraising, and public knowledge dissemination (Nazeli et al., 2023; Rojak & Handayani, 2023). This confluence of grief, critical discourse, and collective mobilization illustrates the temporal intensity of emotional publics and underscores the importance of examining how digital communities navigate and negotiate crisis-driven affective landscapes.



Figure 1. Social Network Map of X Conversations on Mount Rinjani Climbing Accident (June–July 2025)

Source: SNA, 2025

Table 1. Summary of Social Network Metrics for the ‘Rinjani’ Conversation Network (June–July 2025)

Label	Score
Average Degree	0.67
Network Diameter	1
Graph Density	0
Modularity	0.99
Avg. Path Length	1

Source: SNA, 2025

The refined interaction network surrounding the “Rinjani” discourse exhibits a markedly radial and minimally connected topology. Within the visual representation, the account *tanyakanrl* stands out as the most central and dominant node, while peripheral entities such as *KedaiPenaCom* and *Mdy_Asmara1701* appear weakly connected and marginal. This visual observation is corroborated by quantitative metrics generated through Gephi: the network displays an Average Degree of 0.677, a Network Diameter of 1, a Graph Density approaching zero, a Modularity score of 0.99, and an Average Path Length of 1. Moreover, node-level betweenness centrality values are near zero for the vast majority of accounts. Collectively, these

metrics characterize the network as sparse, highly modular, and composed predominantly of isolated, one-step interactions rather than extended conversational chains.

The low Average Degree is the clearest indicator of how each participant engages with the discourse. A value of 0.677 means that, on average, a user connects to fewer than one other user. In practical terms, this pattern is consistent with isolated actions an account posts a single reply, performs a one-off retweet, or tags another user once without engaging in reciprocal exchange or branching out to additional contacts. If the average degree were higher, we would expect to see thicker fabrics of interaction, where users repeatedly connect to multiple others, fostering redundancy and dialogue. Instead, the present value implies that an archetypal participant contributes a solitary edge and then falls silent. This single-edge behavior aggregates into the faint halo of dyads and tiny stars surrounding the largest nodes in the figure, conveying a broadcast dynamic rather than a conversation.

The Network Diameter and Average Path Length, both equal to 1, reinforce this interpretation. In a setting where messages cascade through intermediaries, the longest and mean geodesic distances would be larger than one; information would traverse sequences of accounts, producing path lengths of two, three, or more. Here, distances collapse to a single step. Such an outcome is typical of dyadic fragments or highly radial subgraphs in directed data: one user addresses another, and the interaction terminates there. Even a visually dominant node can coexist with this metric profile if most ties are terminal rather than chaining; that is, edges point toward (or away from) a prominent account, but do not continue onward to a third party. Larger diameter and path-length values would have signaled layered diffusion and the presence of intermediaries who relay messages across the network. Their absence underscores the predominance of immediate, unmediated contact.

The near-zero Graph Density quantifies the overall scarcity of ties. Density measures the realized fraction of all possible connections; a dense graph indicates that many pairs of users are linked, typically yielding faster diffusion, repeated exposures, and robust reinforcement. By contrast, the density here is effectively zero, revealing a graph where most possible connections are unrealized and where the existing ones are thinly scattered. This scarcity dovetails with the low degree: most users touch the conversation only once, and they do not connect to each other in lateral fashion. As a result, the network cannot capitalize on collective reinforcement or on the “many roads lead to Rome” property that characterizes dense structures; exposure is singular and local.

At the mesoscopic level, the Modularity of 0.99 reveals extreme segmentation. Community detection partitions the graph into many small modules with minimal cross-linking, which in this context typically coincide with dyads, tiny stars, or small ego-centric clusters. A lower modularity would have indicated a more integrated discussion space in which groups interweave and cross-reference one another. The present value instead indicates that conversation is compartmentalized into micro-arenas: a user directs attention to a visible account, or two users exchange a single interaction, and the episode ends. Such segmentation has important implications for how narratives travel. In a highly modular network, diffusion tends to stall at community boundaries unless explicit bridging ties are formed. The data here offer little evidence of such bridges, explaining why the structure retains its fragmented appearance even around the most prominent nodes.

The distribution of betweenness centrality further clarifies the absence of brokerage. In settings where information flows through chains, some actors naturally lie on many shortest paths and therefore accumulate high betweenness: they act as brokers who connect otherwise separate groups. In the Rinjani network, betweenness is approximately zero for most nodes. This indicates that shortest paths rarely pass through intermediaries because paths themselves are almost always of length one. Even the visually salient accounts do not function as bridges in a multi-step sense; they act as endpoints for direct, one-hop interactions rather than as conduits through which

messages pass from one neighbor to another. Were betweenness higher for a handful of actors, we would infer the presence of structural brokers able to stitch communities together and accelerate cross-group diffusion. The measurements instead point to the opposite: brokerage is negligible.

These metrics cohere into a consistent structural narrative. The network is a star-and-dyad mosaic: many tiny components formed by single edges, and a few larger ego-centric clusters anchored by visible accounts. The dominant communication mode is broadcast. Users direct an interaction at a prominent account and stop. They do not typically reply to one another, retweet each other's mentions, or engage in loops that would create multi-step paths, raise average degree, or thicken density. Consequently, exposure is quick but narrow. Messages reach a hub in a single hop or depart from a hub in a single hop, but they do not fan outward through peers to generate sustained cascades. This pattern explains why the figure shows a large central name yet the distance metrics are minimal: the edges accumulate on that central node without forming the chains that would elevate path lengths or produce appreciable brokerage.

In sum, the Rinjani network is best interpreted as an assemblage of direct contacts oriented around a small number of visible accounts. The numerical profile low average degree, diameter and mean path length of one, vanishing density, extreme modularity, and negligible betweenness converges on a single conclusion: the discourse is broadcast-centric and segmented. It excels at rapid, one-hop delivery to high-visibility nodes but falls short at cultivating multi-step diffusion, cross-community exchange, and sustained dialogue. Any shift toward broader conversational engagement would require the emergence of additional lateral ties among peripheral users and the development of genuine bridges that connect the small modules into a more integrated conversation space.

Discussion

The social network analysis of online discussions concerning “Rinjani” reveals fragmented and superficial interaction patterns concentrated around a few dominant nodes. Network metrics including an average degree of 0.67, a diameter and average path length of 1, a graph density approaching zero, and a modularity score of 0.99 indicate a highly radial and segmented communication structure. These findings suggest that user engagement is predominantly unidirectional, characterized by broadcast-style interactions in which most users participate only once without sustained dialogue.

Within the framework of Social Network Theory (SNT), the structural configuration of a social network determines the trajectory, intensity, and effectiveness of information dissemination within a community (Friedkin & Johnsen, 2011). Empirical evidence from the “Rinjani” network illustrates a mosaic-like formation of star and dyadic structures, comprising multiple small components with single connections and a few central nodes serving as focal points of interaction. Accounts such as @tanyakanrl occupy these central positions, functioning as information hubs with minimal lateral engagement among users. This structure demonstrates the dominance of vertical relationships (followers engaging with central accounts) over horizontal peer-to-peer connections. From an SNT perspective, this pattern reflects the absence of bridging ties and weak inter-community cohesion, resulting in communication that is rapid yet limited in scope (Kleinberg et al., 2008). The low betweenness centrality underscores the lack of intermediary actors capable of linking otherwise disconnected groups. Consequently, although certain nodes exhibit high visibility, the overall network does not facilitate multidirectional dialogue or the diffusion of narratives across communities.

Viewed through the Diffusion of Innovation Theory (DOI), the fragmented network structure illustrates significant barriers to information diffusion and the formation of shared opinions. DOI posits that effective dissemination of ideas requires sufficient social connectedness to enable messages to progress from awareness to persuasion and adoption (Beaton & Freeman, 2015). However, the “Rinjani” network, characterized by an average path

length of one and a modularity score nearing one, exhibits communication that halts at central nodes and fails to cross community boundaries. The absence of bridging users suggests passive audience behavior users act as receivers rather than disseminators of information. This results in shallow diffusion, where awareness spreads rapidly but without depth, failing to translate into value internalization or collective action. The lack of opinion leaders who bridge social clusters prevents the development of sustained public discourse on mountain safety and risk issues, confining communication to mere information exposure.

From the perspective of Collective Emotion Theory (CET) (Páez et al., 2015), the observed network dynamics also indicate a failure to generate collective emotional resonance. Limited inter-user connections hinder the accumulation of shared emotions such as grief, empathy, or anger, which could otherwise strengthen social cohesion. Emotional expression within the network appears fragmented and individualistic, confined to isolated modules. Consequently, emotional communication remains reactive and transient: users express fleeting sympathy or outrage but rarely engage in deeper dialogue that fosters emotional unity (Goldenberg et al., 2014). The absence of horizontal connectivity suppresses emotional contagion, preventing the emergence of organized digital solidarity. These findings align with García and Rimé's (2019) argument that collective emotions require repeated social interactions and sustained shared engagement conditions not evident in the "Rinjani" discourse.

Applying the Risk Society Theory, the network's fragmentation reflects the phenomenon of reflexive modernity, wherein individuals are increasingly aware of risks yet respond to them in isolation. The discourse surrounding accidents on Mount Rinjani exemplifies the social construction of risk in digital spaces how people interpret, discuss, and negotiate danger collectively. However, as (Mythen, 2005) suggest, awareness of risk in modern societies often produces reflexive individualization rather than collective solidarity. In this case, users express concern, fear, or criticism primarily on personal levels, lacking interconnection that could foster collective understanding. The network's high modularity and low density indicate localized risk interpretation within small communities, reinforcing the shift from collective awareness to individualized perception. Consequently, risk is understood emotionally and personally but not collaboratively addressed through shared discourse, posing a challenge for cultivating digital risk literacy.

Overall, the social network analysis demonstrates that online discussions concerning "Rinjani" remain centralized yet fragmented, characterized by one-way communication that restricts information exchange, emotional resonance, and collective awareness of risk. From the SNT perspective, the absence of lateral linkages limits social reinforcement and message replication. DOI analysis reveals that diffusion is rapid yet shallow, constrained by centralization. CET indicates that emotional fragmentation inhibits the formation of shared affect capable of mobilizing social action. RST highlights the persistence of individualized, reflexive responses to risk rather than collective, communicative engagement. These findings confirm that digital communication on disaster-related issues has not evolved into an inclusive dialogic space. To foster a resilient and collaborative communication ecosystem, it is imperative to strengthen bridging ties, promote inter-community collaboration, and facilitate shared narratives that support layered, participatory dialogue among users.

CONCLUSION

The study demonstrates that Indonesian netizens' responses on X (formerly Twitter) to mountain climbing accidents between June and July 2025 exhibited fragmented and unidirectional communication patterns dominated by a few central nodes. The overall structure of online interaction revealed a low average degree (0.67), an almost negligible graph density,

and a very high modularity value (0.99), indicating that the discourse was highly segmented and oriented toward broadcast communication rather than dialogic exchange.

The structural analysis shows that online conversations followed a predominantly radial and nonreciprocal pattern. Most users engaged in isolated interactions posting, retweeting, or replying only once without further involvement. This communication behavior limited the development of sustained dialogue, resulting in a network that facilitated rapid information dissemination but lacked depth, cohesion, and mutual feedback.

The analysis identified several key actors who served as influencers and amplifiers, such as @tanyakanrl, which occupied central positions within the network and acted as hubs for information distribution. However, the absence of bridging actors users capable of linking distinct communities and enabling cross-group communication was evident. The low betweenness centrality values indicate that intermediary roles or brokers were largely missing, restricting the diffusion of information across different clusters.

Community detection revealed multiple micro-clusters and ego-centric modules centered on small-scale interactions or particular emotional narratives. These clusters constructed diverse frames of the climbing accidents: some emphasized grief and empathy, while others focused on accountability, risk management, and institutional criticism. Despite this thematic diversity, limited cross-linking among clusters prevented the emergence of a cohesive and unified discourse.

The diffusion of information and emotional narratives across X networks occurred swiftly but superficially. Emotional expressions such as sadness, sympathy, anger, and solidarity appeared spontaneously yet failed to develop into collective emotional resonance or sustained social mobilization. From the perspective of Collective Emotion Theory, this pattern illustrates weak emotional contagion due to limited horizontal connectivity. Similarly, based on Diffusion of Innovation Theory, information flow tended to stagnate at central nodes, preventing broader social adoption and engagement.

By integrating perspectives from Social Network Theory, Collective Emotion Theory, and Risk Society Theory, the study concludes that Indonesian netizens exhibited individualized and reflexive behaviors rather than collective collaboration. Although the discourse effectively generated immediate awareness and emotional reactions, it lacked the structural integration required to foster long-term solidarity or digital risk literacy.

To improve digital disaster communication and enhance societal resilience, future efforts should focus on strengthening bridging ties, encouraging collaboration among digital communities, and cultivating shared narratives that promote dialogic and participatory engagement. Establishing interconnected, empathetic, and communicative online spaces will enable a more unified and informed public response to future crises within Indonesia's mountain tourism sector.

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