

Whose Recovery? Automated Narratives and Digital Counter-Publics in Post-Disaster Sumatra

Zafirah Quroatun 'Uyun¹, Ana Nadhya Abrar²

^{1,2} Universitas Gadjah Mada, Yogyakarta, Indonesia
zafirahq.uyun@mail.ugm.ac.id

ABSTRAK

Penelitian ini mengkaji mekanisme governabilitas algoritmik dalam konteks pemulihan pascabencana di Indonesia dengan menelaah bagaimana infrastruktur komunikasi berbasis kecerdasan buatan (AI) berfungsi sebagai rezim kebenaran yang membentuk kerentanan mana yang menjadi terlihat dan mana yang secara algoritmik terpinggirkan setelah bencana di Sumatra pada 2022-2024. Dengan mengintegrasikan konsep governmentality Michel Foucault dan Actor-Network Theory (ANT), penelitian ini memandang AI bukan sebagai perangkat teknologi yang netral, melainkan sebagai aktor non-manusia yang turut membentuk visibilitas dan sirkulasi risiko bencana. Penelitian menggunakan etnografi digital untuk memetakan interaksi antara lembaga pemerintah, organisasi non-pemerintah, dan counter publik digital pada Twitter/X, Instagram, Facebook, YouTube, serta portal resmi pengelolaan bencana. Analisis dilakukan terhadap 847 unggahan media sosial yang dilengkapi dengan komunikasi resmi terkait bencana. Temuan menunjukkan adanya asimetri naratif yang kuat: komunikasi resmi dan komunikasi yang dimediasi AI cenderung menghasilkan narasi tentang kendali, kemajuan, dan ketepatan birokratis, sementara counter publik digital menampilkan fragmentasi, keterlambatan, dan pengalaman penderitaan yang belum terselesaikan. Secara empiris, konten bencana yang dihasilkan AI muncul 2-5 jam lebih awal dibandingkan pelaporan institusional dan menghasilkan keterlibatan awal 3,2 kali lebih tinggi, sementara 68% di antaranya menggunakan pembingkai emosional berintensitas tinggi, sekitar dua kali lipat dibandingkan proporsi dalam jurnalisme tradisional. Penelitian ini menemukan bahwa governabilitas algoritmik menghasilkan kesenjangan empati digital dengan mengutamakan data yang terinstitusionalisasi dibandingkan pengetahuan berbasis pengalaman, sehingga menciptakan kesenjangan struktural antara pemulihan sebagaimana direpresentasikan oleh sistem algoritmik dan pemulihan sebagaimana dialami oleh masyarakat terdampak. Temuan ini menunjukkan pentingnya mempertanyakan legitimasi, inklusivitas, dan akuntabilitas tata kelola bencana otomatis dalam konteks Global South.

Kata Kunci : Governabilitas algoritmik; Actor-Network Theory; counter publik digital; narasi otomatis; komunikasi pascabencana

ABSTRACT

This study interrogates the mechanics of algorithmic governability within Indonesia's post-disaster recovery landscape by examining how AI-driven communication infrastructures function as regimes of truth that shape which vulnerabilities become visible and which are algorithmically marginalized following disaster events in Sumatra during 2022-2024.. Drawing on Michel Foucault's concept of governmentality and Actor-Network Theory (ANT), the study conceptualizes AI not as a neutral technological tool but as an active non-human actant that participates in structuring the visibility and circulation of disaster risks. Employing digital ethnography, the research maps interactions among government agencies, NGOs, and digital counter-publics across Twitter/X, Instagram, Facebook, YouTube, and official disaster

management portals. The analysis draws on a corpus of 847 social media posts complemented by official disaster communications. The findings reveal a pronounced narrative asymmetry: while official and AI-mediated communication tends to produce narratives of control, progress, and bureaucratic precision, digital counter-publics foreground fragmentation, delays, and unresolved experiences of suffering. Empirically, AI-generated disaster content appeared 2-5 hours earlier than institutional reporting and generated 3.2 times higher early engagement, while 68% employed high-intensity emotional framing, approximately twice the proportion observed in traditional journalism. The study argues that algorithmic governance produces a digital divide of empathy by privileging institutionalized data over experiential knowledge, thereby creating a structural gap between recovery as rendered through algorithmic systems and recovery as lived by affected communities. These findings raise important questions about the legitimacy, inclusiveness, and accountability of automated disaster governance in Global South contexts.

Keywords: Algorithmic governmentality; Actor-Network Theory; digital counter-publics; automated narratives; post-disaster communication

A. INTRODUCTION

In disaster-prone regions such as Sumatra, recovery is not merely a material or logistical process but a profoundly communicative and political one. Increasingly, this process is mediated and co-produced by AI-driven communication infrastructures that promise efficiency, transparency, and real-time coordination. Yet these systems do more than transmit information. Our analysis suggests that AI-driven communication infrastructures participate in defining recovery through the indicators, classifications, and reporting categories they prioritize. In the disaster communications examined in this study, recovery was predominantly

represented through measurable indicators such as infrastructure restoration, affected-household counts, aid distribution, access to public services, and the reported completion of rehabilitation activities. These indicators shaped the visibility of recovery in automated dashboards, institutional updates, and algorithmically circulated social media content, while experiences that were less readily quantifiable, such as prolonged livelihood disruption, psychological distress, uneven access to assistance, and unresolved displacement, appeared less consistently in these representations. Thus, rather than claiming that AI systems independently determine who

is “recovered” or when recovery is complete, this study demonstrates how AI-mediated infrastructures participate in producing particular operational definitions of recovery and making some dimensions of recovery more visible than others to institutional and digital publics.

This paper therefore departs from a deceptively simple but politically charged question: whose recovery is represented, and whose experiences become less visible within algorithmically mediated disaster communication? Rather than assuming that AI systems independently determine recovery outcomes, the study examines how recovery is operationalized through the categories and indicators that circulate across institutional communication infrastructures. In the corpus analyzed, official and AI-mediated communications repeatedly foregrounded quantifiable dimensions of recovery, including structural damage, infrastructure restoration, aid distribution, affected populations, and the completion of rehabilitation activities. By contrast, accounts concerning prolonged livelihood disruption, unequal access to assistance, displacement, and other

forms of lived suffering were more prominently articulated through digital counter-publics. This divergence provides an empirical basis for examining how algorithmically mediated communication can produce asymmetries in the visibility of recovery rather than simply transmitting information about it.

The geographical scope of this study is limited to disaster events occurring in Sumatra, Indonesia, with particular attention to West Sumatra and Pasaman Barat during the 2022–2024 period. The selection reflects the study’s focus on how algorithmically mediated communication shapes the representation and contestation of recovery within disaster-affected communities in Sumatra. The empirical cases comprise the Pasaman Barat earthquake of February 2022 and a series of floods and landslides occurring across West Sumatra during 2023–2024. These cases provide a comparative basis for examining how institutional actors and digital counter-publics communicated different dimensions of recovery across successive disaster events. Each event mobilized Indonesia’s Badan Nasional Penanggulangan Bencana (BNPB), the National Disaster Management

Authority, alongside a growing ecosystem of AI-assisted communication platforms, social media monitoring tools, and automated reporting dashboards. Simultaneously, these crises sparked robust digital counter-public activity, with survivors, NGOs, journalists, and ordinary citizens contesting official narratives of controlled and progressing recovery.

Drawing on Foucauldian governmentality, this study conceptualizes AI systems as instruments of "conducting conduct", shaping populations through regimes of truth rather than direct coercion (Foucault, 2007; Lorenzini, 2016). Simultaneously, Actor-Network Theory (ANT) enables us to treat AI not as a passive instrument but as a non-human actant that participates in constructing social reality, assigning epistemic authority, and setting the boundaries of what is narratively visible (Latour, 2005; Callon, 1986).

Against this backdrop, digital counter-publics emerge as critical sites of resistance and epistemic contestation. Through social media, affected communities and their allies challenge official narratives, expose discrepancies between institutional

claims and lived realities, and crucially develop alternative accounts of whose recovery is actually occurring. The decision to focus on Sumatra's post-disaster recovery landscape is deliberate and analytically significant. Sumatra's catastrophic history provides a rich longitudinal archive of institutional responses, from the globally scrutinized Aceh reconstruction following the 2004 tsunami to more recent, less internationally visible recovery processes where digital governance has played an increasingly central role. This trajectory allows the researcher to examine not only the structures of algorithmic power but also how they have evolved over time, adapting to new technological capabilities while reproducing enduring patterns of epistemic exclusion. This paper advances the central argument that:

AI-driven disaster governance in post-catastrophe Sumatra produces a structural narrative asymmetry, but this study argues that this asymmetry cannot be understood solely through the technical performance of AI systems or the efficiency of digital disaster communication. Previous research on AI and disaster management has predominantly

examined the capacity of artificial intelligence and social media analytics to improve information extraction, situational awareness, misinformation detection, and decision-making in disaster response. Recent reviews similarly emphasize the growing integration of large language models and social media data for disaster detection, classification, sentiment analysis, and response coordination. Research on disaster communication in Indonesia, meanwhile, has demonstrated the importance of social media while identifying tensions involving top-down government communication, trust, credibility, and digital inequality. A parallel body of research on social media and disasters has highlighted the participatory role of citizens and networked publics in producing, circulating, and contesting disaster information.

The novelty of this study lies in bringing these strands of scholarship together through a critical analysis of how AI-mediated infrastructures participate in the production of recovery narratives and the unequal visibility of post-disaster experiences. Rather than treating AI primarily as an instrument for extracting useful information from social media or

improving institutional response, this study examines AI as part of the communicative infrastructure through which particular indicators of recovery acquire visibility, circulation, and institutional authority. The study further connects this process to the emergence of digital counter-publics, asking how survivors, NGOs, journalists, and citizens contest or complicate institutionally mediated representations of recovery. In this respect, the contribution is not simply to demonstrate that official and citizen narratives differ, but to explain how algorithmically mediated infrastructures become implicated in producing that difference.

The study therefore contributes at three levels. Empirically, it provides evidence from Sumatra, an understudied Global South context, by examining 847 social media posts alongside official disaster communications across multiple platforms. Conceptually, it connects algorithmic governmentality with Actor-Network Theory to examine AI simultaneously as a mechanism through which populations and knowledge are governed and as a non-human actant participating in the circulation and stabilization of

particular recovery narratives. Analytically, it introduces the concept of narrative asymmetry to describe the divergence between institutionally mediated representations of recovery and experiential accounts articulated through digital counter-publics. This perspective extends existing research by shifting attention from whether AI makes disaster communication faster or more accurate toward the question of whose knowledge becomes legible, authoritative, and actionable when recovery is increasingly communicated through algorithmically mediated infrastructures.

RESEARCH QUESTION

Accordingly, this study asks the following research questions:

RQ1: How do AI-driven communication infrastructures shape the representation and visibility of post-disaster recovery in Sumatra?

RQ2: What forms of recovery, knowledge, and lived experience become more visible or less visible through algorithmically mediated disaster communication?

RQ3: How do government agencies, NGOs, and digital counter-publics negotiate and

contest these representations of recovery across social media and official communication platforms?

RQ4: How can Foucauldian governmentality and Actor-Network Theory explain the role of AI as a non-human actant in the production, circulation, and contestation of post-disaster recovery narratives?

Through these questions and objectives, the study moves beyond viewing AI as a technological instrument for accelerating disaster communication. Instead, it examines the communicative and political processes through which particular versions of recovery become visible, authoritative, and actionable, while other dimensions of recovery remain comparatively marginalized.

B. LITERATURE REVIEW

Algorithmic Governmentality and Regimes of Truth

Foucault's concept of governmentality, developed most systematically in his 1978-1979 Collège de France lectures, describes how modern power operates not simply through overt coercion but through the production of knowledge,

regulation of populations, and the shaping of possible conduct (Foucault, 1980, 2007, 2008). Governmentality can therefore be understood as a mode of governing through the “conduct of conduct,” in which institutions, knowledge systems, and subjects become interconnected within particular rationalities of governance. Rather than exercising power exclusively through prohibition, governmentality works by establishing categories through which populations and social processes become knowable, measurable, and actionable. These processes are closely related to what Foucault conceptualizes as regimes of truth: historically situated systems through which certain forms of knowledge acquire authority and become accepted as legitimate (Foucault, 1980).

This perspective has become increasingly relevant in the context of datafication and algorithmic decision-making. Rouvroy and Berns (2013) conceptualize algorithmic governmentality as a mode of governance in which massive quantities of data are processed to identify patterns and generate forms of anticipatory intervention. More recent

scholarship demonstrates that algorithmic systems should not be understood simply as technical instruments but as technologies that participate in reorganizing relations between knowledge, power, and subjects. For example, research on algorithmic governance among Syrian refugees shows how algorithms can function as technologies of power by translating complex individual circumstances into datafied categories that subsequently inform relocation, risk assessment, recommendation, and advertising practices (2021). Weiskopf and Hansen (2023) similarly argue that algorithmic governmentality has consequences for ethical responsibility because datafication and automation can reshape the conditions under which human actors make judgments and exercise reflexivity.

Recent research also demonstrates that algorithmic governmentality is not confined to conventional state administration. Studies of environmental governance, for example, have identified forms of “eco-algorithmic governmentality” in which AI and Internet-of-Things infrastructures transform environmental conditions into standardized metrics and future-

oriented calculations. Such systems can generate epistemic tensions between computational representations and the situated knowledge of human actors (2023). These developments reinforce the Foucauldian insight that governance is also a process of making particular realities measurable and therefore governable.

In disaster management, this issue is especially significant because complex experiences of suffering and recovery must often be translated into operational categories. Damage assessments, numbers of affected households, infrastructure conditions, aid distribution, evacuation figures, and reconstruction percentages provide important information for institutional coordination. At the same time, their standardization may make other dimensions of recovery, such as prolonged livelihood disruption, psychological distress, displacement, cultural loss, and perceptions of unequal assistance, less visible within institutional representations.

Recent AI research in disaster management demonstrates the increasing sophistication of this datafication process. Cantini et al. (2025), for example, develop a

prompt-based large-language-model approach for extracting and aggregating citizen reports from social media and generating automated disaster reports for emergency services and other users. Their study illustrates the growing capacity of AI systems to transform heterogeneous citizen-generated information into structured knowledge for disaster management. Similarly, recent work on AI-social media integration for crisis management identifies automated data collection, learning, classification, and information processing as increasingly central components of contemporary crisis-management infrastructures.

These developments create an important theoretical question that has received less attention: what happens to the meaning of recovery when increasingly sophisticated computational systems determine which forms of information can be efficiently collected, classified, aggregated, and circulated? The issue is not that quantitative indicators are inherently inadequate. Rather, their privileged position within algorithmically mediated infrastructures may produce a hierarchy of visibility in which some

dimensions of recovery become easier to recognize and act upon than others.

This distinction is central to the present study. Rather than assuming that AI independently determines what constitutes recovery, the study examines how AI-mediated communication infrastructures participate in operationalizing recovery through particular indicators, classifications, and patterns of information circulation. The analytical concern is therefore epistemic and communicative: which dimensions of recovery become more readily legible within institutional and algorithmic systems, and which require alternative communicative practices to become visible?

As Lorenzini (2016) emphasizes, resistance in Foucauldian thought is not external to power but emerges within relations of power. Resistance can involve a strategic refusal to be governed in a particular way. This perspective provides a useful bridge to digital counter-publics because alternative actors do not operate outside algorithmic systems. Instead, they contest dominant representations while remaining dependent on the same platforms, infrastructures, and

visibility mechanisms through which those representations circulate.

Actor-Network Theory: AI as Non-Human Actant

Actor-Network Theory (ANT) challenges a strict separation between human and non-human actors by examining how heterogeneous entities become associated within sociotechnical networks (Callon, 1986; Latour, 2005). An actant is an entity capable of making a difference within a network by modifying relationships or the actions of other entities. From this perspective, technologies should not automatically be treated as passive instruments of human intention. Their material and technical characteristics can shape the possibilities of action available to other actors.

This perspective is particularly relevant to contemporary AI-mediated disaster communication. AI systems can classify information, identify patterns, aggregate citizen reports, rank or recommend content, automate summaries, and facilitate the circulation of selected information. Recent disaster research illustrates this transformation. Cantini et al. (2025), for example, demonstrate how LLMs can automate the extraction, localization, aggregation, and reporting of citizen-

generated disaster information. Likewise, recent research on AI-based disaster-management systems identifies machine learning, deep learning, multimodal data fusion, and social-media analysis as increasingly important components of crisis intelligence. Image-based AI systems have also been developed to identify informative disaster images and classify and detect physical damage from social media content (2025).

These developments complicate the conventional understanding of disaster communication as a simple transmission process. AI-mediated infrastructures increasingly participate in determining how heterogeneous observations become structured as information. ANT is useful here because it allows the analysis to follow the associations among algorithms, datasets, platforms, government agencies, NGOs, journalists, citizens, and affected communities rather than attributing communicative outcomes exclusively to human intentions.

Recent platform-governance scholarship strengthens this perspective by demonstrating that algorithmic systems influence visibility as well as content circulation. Zeng and Kaye (2022), for example, introduce

the concept of “visibility moderation” to describe how platforms can shape the reach of user-generated content through algorithmic and regulatory mechanisms. Their study of TikTok shows that governance can operate not only through removal but also through amplification, prioritization, and suppression of visibility. Gillespie (2022) similarly argues that reducing the visibility of content has become an important form of platform governance, with machine-learning systems capable of demoting content without removing it entirely.

Duffy and Meisner (2023) further demonstrate that algorithmic visibility is experienced unevenly by platform users. Their research shows how creators, particularly those associated with marginalized identities or stigmatized content, encounter algorithmic systems that can facilitate or constrain visibility and consequently encourage practices such as self-censorship and attempts to circumvent platform interventions. Wright (2022) similarly demonstrates that automated moderation systems can transform the broader governance structure of platforms because automation operates at a scale that changes how

visibility and participation are managed.

These recent studies are important for the present research because they shift attention from algorithms as mechanisms of classification toward algorithms as infrastructures of visibility. However, their primary objects of analysis are generally platforms, content moderation, creators, or online governance rather than post-disaster recovery. The present study extends this discussion by asking how similar processes of algorithmic selection and visibility operate when the object being represented is not ordinary user-generated content but the recovery of disaster-affected communities.

Digital Counter-Publics and Contestation

The concept of counter-publics builds on Fraser's (1990) critique of Habermasian public-sphere theory. Counter-publics can be understood as discursive arenas in which marginalized groups formulate and circulate alternative interpretations of their identities, interests, and needs. In digital environments, these formations can emerge through social media platforms, messaging applications, independent journalism, and other

networked communication infrastructures (Dahlberg, 2011; Cammaerts, 2012).

Recent disaster scholarship reinforces the importance of social media as a participatory communication infrastructure. A systematic review by [authors] (2022) found that research on social media and disaster recovery has expanded beyond immediate emergency response to include post-disaster reconstruction, socioeconomic recovery, emotional and mental-health support, solidarity, donations, and information exchange. This development is important because recovery is not simply a technical stage following an emergency; it is also a communicative process through which communities describe needs, document losses, mobilize resources, and negotiate representations of what has been restored.

Research on Indonesia provides particularly relevant evidence. Yudarwati, Putranto, and Delmo (2022) found that Indonesian government agencies used social media primarily for information provision and situational awareness, with communication tending to remain relatively unidirectional. Their study

also identified challenges involving trust, misinformation, bureaucratic procedures, infrastructure access, and digital inequality. Importantly, the authors found that government social-media communication during recovery frequently emphasized government activities and reconstruction, while local cultural and social contexts shaped how communities interpreted and trusted such communication.

Other recent research illustrates the networked and participatory character of disaster communication. Studies of the 2018 Lombok earthquake sequence, for instance, examine how social-network structures developed through Facebook and other local communication networks during disaster and post-disaster mitigation. Research on disaster-relief organizations has likewise shown that social-media accounts within the same organization can coordinate content and communicate convergent messages across organizational levels. These findings suggest that disaster communication is produced through networks involving institutions, media organizations, citizens, and platforms rather than through a single centralized sender.

At the same time, digital participation does not necessarily translate into equal visibility. Recent platform studies demonstrate that visibility is itself governed through algorithmic systems. Zeng and Kaye (2022) show that platforms can manipulate the reach of user-generated content through “visibility moderation,” while Duffy and Meisner (2023) demonstrate that algorithmic visibility can be unevenly experienced by marginalized users. Consequently, digital counter-publics cannot be understood simply as spaces outside institutional or platform power. Their capacity to challenge dominant narratives is conditioned by the same infrastructures that organize attention, ranking, recommendation, and circulation.

This tension is especially important in disaster contexts. Social media can provide rapid access to localized and experiential information, but its use is also affected by misinformation, unequal access, technical limitations, and algorithmic bias. Recent research on social-media use for disaster resilience identifies these challenges alongside the potential of social media to provide ground-truth information, sentiment data, predictive modeling,

and emergency communication. Similarly, research on environmental disaster communication demonstrates that verified institutional accounts can remain important information disseminators while influential individual accounts function as important mediators of information circulation.

Digital counter-publics should therefore not be romanticized as inherently emancipatory spaces. They are better understood as contested communicative formations whose ability to make alternative experiences visible depends simultaneously on the credibility of their claims, the practices of their participants, and the platform infrastructures through which those claims circulate.

Research Gaps

A systematic comparison of recent scholarship reveals three related but insufficiently connected strands of research concerning AI, platform governance, and disaster communication. Rather than treating these areas as separate developments, this study identifies what each strand has established, where its analytical boundaries remain, and how their intersection opens a specific research opportunity.

First, research on AI-enabled disaster management has primarily examined the technological and operational capabilities of artificial intelligence. Recent reviews demonstrate the rapid expansion of AI applications for disaster monitoring, social-media data extraction, classification, sentiment analysis, multimodal information processing, situational awareness, and automated reporting. For example, recent systematic reviews show that AI and social media are increasingly combined to process large volumes of crisis-related data, identify relevant information, and support emergency decision-making. The emerging literature also includes applications of deep learning, natural language processing, computer vision, and multimodal data fusion across different phases of disaster management. More recent work has even examined the use of large language models for extracting, aggregating, and automatically reporting disaster information from social-media feedback.

The strength of this literature lies in demonstrating what AI systems can do operationally. However, its dominant orientation remains technological and

instrumental: accuracy, speed, classification performance, information extraction, and decision-support capacity are often the primary concerns. The question of how these systems may influence the meaning and visibility of recovery receives considerably less attention. In particular, technological studies rarely examine what happens when algorithmically processed information becomes part of the communicative process through which recovery itself is represented to institutions and publics. Thus, the first gap concerns not the absence of research on AI and disasters, but the limited attention to the epistemic and communicative consequences of AI-mediated disaster information.

The present study addresses this gap by shifting the analytical focus from AI as a technical instrument for disaster management to AI as part of a sociotechnical communication infrastructure. Rather than evaluating whether AI improves the efficiency of disaster response, the study examines how AI-mediated processes participate in selecting, organizing, circulating, and making particular forms of recovery information visible. Its contribution is therefore to extend

the analysis of AI in disaster management from operational performance toward the politics of knowledge and representation. In empirical terms, this is examined through the comparison of institutional communications and digitally circulating narratives within the post-disaster context of Sumatra.

Second, scholarship on platform governance has established that algorithmic systems regulate visibility, not merely content. Research on platform governance demonstrates that algorithms influence what users encounter through ranking, recommendation, amplification, demotion, and other forms of visibility management. Zeng and Kaye (2022), for instance, conceptualize this process as visibility moderation, emphasizing that platforms can manipulate the reach of user-generated content through algorithmic and regulatory mechanisms. Duffy and Meisner (2023) similarly show that algorithmic visibility is experienced unevenly by social-media creators, with platform governance potentially disadvantaging marginalized voices and encouraging practices such as self-censorship and attempts to circumvent algorithmic intervention.

This literature makes an important conceptual contribution by demonstrating that visibility is itself a form of governance. Nevertheless, much of this scholarship examines platform visibility in relation to content moderation, creators, participation, cultural production, and platform-dependent labor. Less attention has been given to how these mechanisms operate specifically within post-disaster communication and competing claims about recovery. The unresolved question is therefore not simply whether some disaster-related content becomes more visible than other content, but how differential visibility affects the epistemic status of competing accounts of recovery: whose description of recovery becomes easier to circulate, recognize, and act upon, and whose experience remains comparatively difficult to translate into dominant informational formats.

This study addresses the second gap by bringing the concept of algorithmic visibility into the analysis of post-disaster recovery. It examines visibility not merely as a platform outcome but as part of a broader process through which recovery narratives acquire communicative and

institutional significance. The contribution is consequently to connect platform governance theory with disaster-recovery communication, showing how algorithmic infrastructures may participate in producing asymmetrical conditions of visibility between institutional accounts and community-based accounts. The concept of narrative asymmetry developed in this study captures this relationship: the asymmetry concerns not only differences in narrative content but also differences in the communicative conditions through which particular forms of knowledge become visible and potentially actionable.

Third, disaster-communication research has increasingly recognized social media as an important space for institutional communication, citizen participation, coordination, and recovery. A systematic review by Ogie et al. (2022), for example, shows that social media has become relevant across multiple dimensions of disaster recovery, including information support, solidarity, mental-health and emotional support, reconstruction, socioeconomic wellbeing, donations, and business activities. More recent reviews further demonstrate the

increasing integration of AI and social-media analytics into disaster-management research, while also identifying continuing challenges related to data quality, algorithmic bias, language limitations, and uneven geographical coverage.

Research in the Indonesian context has similarly demonstrated the significance of social media for disaster-risk communication, particularly in relation to institutional communication, public engagement, trust, and the circulation of disaster information. However, this literature has generally examined social media as a communication channel or participatory environment rather than as an increasingly algorithmically mediated infrastructure in which different forms of recovery knowledge compete for visibility. The distinction is important. If social media is treated primarily as a channel, analytical attention tends to focus on who communicates, what information is exchanged, and how audiences respond. If it is treated as an infrastructural and algorithmically organized environment, the analysis must also consider how technical systems, institutional categories, platform logics, data practices, and

user practices jointly shape the conditions under which communication becomes visible.

The present study addresses this third gap by examining digital counter-publics not simply as alternative sources of disaster information but as actors that negotiate and contest the visibility and authority of dominant recovery narratives. This enables the study to move beyond the conventional opposition between "official information" and "citizen information." Instead, it examines the relationships among government agencies, NGOs, journalists, survivors, social-media users, platforms, datasets, and AI-mediated systems as interconnected elements in the production and circulation of recovery narratives.

Taken together, these three comparisons reveal a more specific research gap. The literature has established that AI can process disaster information, that platform algorithms can regulate visibility, and that social media can facilitate disaster communication and recovery. Yet these insights have largely developed in parallel. What remains insufficiently examined is the intersection among them: how AI-mediated and platform-

based infrastructures participate in constructing competing representations of post-disaster recovery, and how affected communities negotiate the resulting asymmetries of visibility and epistemic authority.

This study therefore makes three interconnected contributions. Empirically, it examines the interaction between institutional and counter-public recovery narratives through a corpus of social-media content and official disaster communications from Sumatra, thereby extending disaster-communication research toward the recovery narratives produced within an increasingly AI-mediated media environment. Conceptually, it brings Foucauldian governmentality, Actor-Network Theory (ANT), and digital counter-public theory into a single analytical framework. Governmentality enables the study to examine how particular categories of knowledge become connected to the governing of populations; ANT directs attention to the heterogeneous network of algorithms, platforms, data, institutions, human actors, and communities through which communication is produced and circulated; while counter-public theory

illuminates how actors outside dominant institutional formations challenge and renegotiate prevailing representations.

Analytically, the study introduces narrative asymmetry as a way of understanding the unequal conditions under which recovery knowledge becomes visible, credible, and actionable. Narrative asymmetry therefore does not simply refer to a difference between official and citizen narratives. It refers to the unequal communicative and infrastructural conditions through which different accounts of recovery acquire visibility and epistemic authority. This distinction allows the study to connect questions of algorithmic governance with questions of representation, voice, and lived experience.

The resulting analytical intervention shifts the question from whether AI and social media can make disaster communication faster, more accurate, or more efficient toward a more critical question: how do algorithmically mediated infrastructures shape what becomes knowable, visible, and actionable as recovery? This shift is particularly important in the Global South, where digital infrastructures, institutional

capacities, access to information, and opportunities for public participation are unevenly distributed. The study consequently does not treat AI as an autonomous force that determines recovery narratives. Instead, it investigates how AI becomes one actant within a wider sociotechnical network in which institutional priorities, platform architectures, data categories, human practices, and community experiences interact to produce particular regimes of visibility.

C. METHODS

Research Design

This study uses a qualitative design that combines digital ethnography (Hine, 2015; Pink et al., 2016) and Critical Discourse Analysis (CDA) following Fairclough's (2013) three-dimensional model. Digital ethnography allows naturally occurring digital practices to be observed across interconnected platforms, including their circulation, interactional context, and technological mediation. CDA connects textual features to power, institutional authority, and competing claims over knowledge. Fairclough's dimensions were applied as textual analysis (linguistic, visual, and semiotic

features), analysis of discursive practice (production, circulation, and consumption of texts), and analysis of sociocultural practice (power relations and ideology).

Percentages, frequencies, and engagement ratios are reported in the results, but they do not make the study quantitative or mixed-methods. They are descriptive aids embedded in the qualitative design. Their functions are to map the distribution of coded material, to identify recurring patterns, and to make comparisons within the corpus transparent. They are not used for statistical inference, hypothesis testing, population estimation, or causal modelling. Percentages were calculated as the number of items in a coded category divided by the total number of relevant items, multiplied by 100. Engagement measures were calculated from observable interactions (likes or reactions, comments, shares or reposts) and are platform-specific indicators of attention, not equivalent measures of audience impact. Each numerical pattern served as an entry point for close reading, ethnographic observation, and CDA rather than as evidence of influence in itself.

Case Selection and Temporal Scope

Cases were selected purposively rather than statistically, because they are information-rich settings for examining the relationship between disaster communication, platform visibility, institutional narratives, and AI-mediated content. Three cases were chosen from the 2022-2024 disaster landscape of West Sumatra, the same cases identified in the Introduction: the Pasaman Barat earthquake (February 2022), the Agam flooding (2024), and the Padang Panjang landslides (2024). The rationale is threefold. First, they vary in hazard type (earthquake, flood, landslide), which allows the study to ask whether similar patterns of digital narrative construction emerge across contexts. Second, they involve different affected communities, institutional responses, and levels of media visibility. Third, they fall within one province and one institutional architecture (BNPB and regional BPBD agencies), which makes institutional communication comparable. The cases are not statistically representative of all Sumatran disasters.

The relationship between the overall dataset and individual cases is specified in Table 1. The period January 2022-December 2024 is the outer temporal boundary of the

dataset. Each case has its own event-specific observation window, running from the first disaster-related information through emergency response, public discussion, and recovery communication. Material outside a window was retained only when directly connected to the circulation, repetition, contestation, or transformation of narratives about the selected disaster.

Table 1. Relationship between the overall dataset period and the individual cases

Temporal scope	Function in the study
January 2022 - December 2024	Outer temporal boundary of the digital disaster dataset
2022	Pasaman Barat earthquake (February 2022) and its subsequent response and recovery communication
2023	Continuing observation of recovery narratives and disaster-related digital communication between focal cases
2024	Agam flooding and Padang Panjang landslides, including response and recovery narratives

Corpus Construction

The principal dataset comprises 847 original social media posts from Twitter/X, Instagram, Facebook, YouTube, and TikTok, collected through purposive, event-based sampling. Posts were identified through combinations of disaster-related keywords, location names, hashtags, institutional accounts, and event-specific terminology, and the researcher followed the circulation of selected narratives across platforms rather than treating posts as isolated units. Institutional and contextual documents were added for triangulation (Table 3). The 150 AI-generated or AI-assisted posts are a subset of the 847 posts, not an additional dataset, and they are not added to the total. The total social media corpus therefore remains 847 posts, and the complete corpus of 1,055 items consists of 847 posts plus 208 documents (94 + 38 + 61 + 15).

Table 2. Data corpus by source, volume, and platform, 2022-2024

Data source	Volume	Platform s / outlets	Analytical function
Original social media posts	847 posts	Twitter/X , Instagra m, Faceboo	Primary digital ethnographic corpus

		k, YouTube , TikTok	
AI-generated/ AI-assisted posts	150 posts	TikTok, Twitter/X , Instagra m	Subset of the 847 posts (not additional)
Official BNPB communications	94 items	BNPB portal, official social media, press releases	Institutional disaster discourse
NGO reports and documentation	38 documents	WALHI, Yayasan Kebenca naan Indonesi a, OCHA	Civil-society and humanitarian perspectives
Independent journalism	61 articles	Tempo, Tirta, BBC Indonesi a, Kompas	Journalistic mediation
Government policy documents	15 items	BNPB, Kemendagri, regional BPBD reports	Policy and institutional context

Identification of AI-Generated and AI-Assisted Content

AI-generated content refers to textual, visual, audio, or audiovisual

material produced substantially by an AI generation system. AI-assisted content refers to content in which AI materially supported or transformed production, for example through writing, rewriting, translation, image generation, synthetic narration, or video production. Classification did not rest on stylistic appearance. AI involvement was established through five indicators: (1) creator disclosure in a caption, description, comment, or narration; (2) a platform disclosure or label identifying content as AI-generated or AI-altered; (3) production disclosure naming the AI tool used; (4) a traceable production process, documented through the original source, repost chain, linked material, or creator explanation; and (5) manual verification, in which the researcher inspected the content for consistency with the claimed use of AI. The phrase “disclosure or tracing” in earlier descriptions of the corpus refers to indicators (1)–(4).

Verification followed four stages. The researcher first archived each post and recorded its account, date, caption, platform, media type, engagement indicators, hashtags, and disclosure information. Second, available metadata and contextual information

were examined, including platform labels, descriptions, links, repost histories, and creator statements. Third, candidate posts were manually reviewed. Fourth, ambiguous cases were excluded unless corroborating evidence was found. Visual or linguistic suspicion alone was insufficient, and automated AI-detection tools, where consulted, were treated only as supplementary indicators because they produce false positives and false negatives. This procedure classified 150 of the 847 posts as AI-generated or AI-assisted. Because ambiguous cases were excluded, this figure is conservative and likely undercounts AI involvement.

Analytical Procedure

Analysis proceeded in three stages. In the first, all 847 posts were coded for source type, disaster case, date and temporal relation to the event, platform, communicative actor, and dominant narrative frame. Four frames organized the corpus: control/progress (institutional management, technological intervention, recovery progress), suffering/need (victims, damage, loss, humanitarian needs), contestation (challenges to official narratives and accountability claims), and mobilization (calls for assistance,

fundraising, volunteering, collective action). Additional coding covered discursive strategies (authorization, legitimation, emotionalization, personalization, attribution of responsibility, contestation) and platform and visibility characteristics.

In the second stage, a purposive high-engagement subsample was constructed for intensive discourse analysis. Selection used engagement velocity over the first six hours after publication, calculated as:

$$EV_6 = (Shares/Reposts_6 + Comments_6 + Reactions_6) / 6 \text{ hours}$$

where each term is the number of shares or reposts, comments, or likes and platform-defined reactions recorded in the first six hours. Where platform metrics differed, the closest publicly observable equivalent was used and recorded. Views were excluded because they measure exposure rather than interaction and are defined differently across platforms. The six-hour window was chosen as a single standardized measure of early interaction, taken before longer-term accumulation changes absolute counts. The 48-hour period is not a second engagement measure. It was used only as an observation window: each post

remained under observation for up to 48 hours to confirm its engagement trajectory and to apply one consistent boundary across posts. Posts for which six-hour data could not be reliably established were excluded from the ranking rather than assigned estimated values. Posts were ranked by EV_6 within each case corpus, and the 156 highest-ranked texts, approximately 18% of the 847-post corpus, formed the high-engagement subsample. The 156 texts were selected on early interaction, not on cumulative engagement after 48 hours. High EV_6 was treated as an indicator of observable early interaction, not as evidence of algorithmic amplification, because visibility also depends on follower networks, posting time, account characteristics, and cross-platform circulation. Claims about algorithmic amplification are therefore made only where engagement patterns could be read alongside observable evidence of recommendation, reposting, or cross-platform circulation.

In the third stage, patterns of narrative asymmetry, temporal displacement, and counter-public strategy were compared across sources and cases. The 156 high-engagement texts were read against the full corpus

and triangulated with BNPB communications, NGO documentation, journalism, and policy documents, which distinguishes patterns specific to highly engaged posts from those visible across the corpus.

Coding of "Dashboard Grammar"

"Dashboard grammar" refers to a recurring discursive configuration in which disaster response is represented through measurable indicators, administrative milestones, standardized categories, and an implied trajectory toward resolution. An official communication was coded as employing it when it showed at least three of four features: (1) quantification (numerical indicators, percentages, counts, targets); (2) milestone structuring (recovery organized into stages or completed actions, such as "distribution completed"); (3) administrative categorization (standardized status labels, tables, lists, or monitoring outputs); and (4) progressive closure (language positioning the response on a path toward stabilization, normalization, or completion). Numerical information alone was never sufficient. Coding was applied to each communication individually and was performed by a single researcher, who repeatedly re-

examined the scheme and rechecked all borderline cases against the criteria before finalizing the dataset. Single-coder coding is a limitation, discussed below.

Data Analysis

Data analysis proceeded through an iterative process combining descriptive corpus mapping, digital ethnographic interpretation, and CDA. The first stage involved organizing the corpus according to disaster case, date, platform, actor, disaster phase, content type, narrative theme, engagement indicators, and AI involvement. The second stage involved descriptive quantification to identify the distribution and recurrence of particular categories. The third stage involved qualitative interpretation of selected materials through digital ethnographic observation and CDA. The coding framework included four principal analytical dimensions:

First, communicative actors. Posts were coded according to whether they originated from government agencies, journalists, NGOs, affected communities, individual social media users, community organizations, or AI-assisted content producers.

Second, narrative themes. These included emergency response,

casualties and damage, humanitarian assistance, recovery, institutional accountability, public warnings, victim representation, government performance narratives, and counter-narratives.

Third, discursive strategies. Attention was given to authorization, legitimation, emotionalization, personalization, attribution of responsibility, normalization, contestation, and resistance.

Fourth, platform and visibility characteristics. The analysis examined observable engagement, circulation patterns, reposting, cross-platform migration, recommendation-related visibility where observable, and differences in the ways institutional and citizen narratives travelled through digital environments.

The CDA component then examined selected materials through Fairclough's three analytical dimensions. At the textual level, the analysis considered lexical choices, modality, evaluative language, pronouns, hashtags, captions, visual composition, and other semiotic features. At the discursive-practice level, the analysis examined how narratives were produced, circulated, reproduced, remixed, amplified, or

contested. At the sociocultural level, these practices were connected to institutional authority, algorithmic visibility, public participation, knowledge production, and competing claims over disaster representation.

The descriptive numerical measures were integrated into this process as analytical aids rather than independent evidence of causality. For example, a higher engagement ratio associated with AI-assisted content was used to identify a pattern requiring qualitative investigation; it was not interpreted automatically as proof that AI content exerted greater persuasive influence. The subsequent interpretation considered the narrative form, timing, actors, platform context, circulation mechanisms, and interaction surrounding the relevant posts.

D. FINDINGS

Algorithmic Narratives of Control: The Regime of Bureaucratic Progress

Official platforms such as primarily BNPB's official Twitter/X account, official press releases, and the InaBIZ disaster monitoring portal, consistently constructed recovery narratives around four recurring features: (1) linear temporal progression, in which disaster

response was presented as moving from crisis and intervention toward stabilization and completion; (2) statistical representation, in which recovery was communicated through numerical targets, percentages, counts, or measurable milestones; (3) a reassuring administrative register, expressed through formulations such as "under control," "progress ongoing," or "distribution completed"; and (4) institutional authorship, through which government agencies functioned as authoritative producers and validators of disaster information.

To examine the prevalence of this pattern systematically, the 94 official communications were coded for the presence of what this study terms "dashboard grammar." The term does not refer literally to the presence of a digital dashboard in every communication. Rather, it describes a recurring discursive configuration in which disaster response is represented through measurable indicators, administrative milestones, standardized progress categories, and an implied trajectory toward resolution. A communication was coded as employing dashboard grammar when it contained at least three of the following four observable

characteristics: 1. Quantification: the use of numerical indicators, percentages, counts, targets, ratios, or other measurable indicators to describe disaster response or recovery; 2. Milestone structuring: the organization of recovery into identifiable stages, completed actions, targets, or progress milestones, such as distribution completed, infrastructure repaired, evacuation completed, or assistance delivered; 3. Administrative categorization: the presentation of disaster conditions through standardized categories, status labels, tables, lists, bullet-point indicators, monitoring outputs, or other administrative classifications; 4. Progressive closure: language that positioned the response along a trajectory from emergency toward stabilization, completion, normalization, or resolution.

This coding rule was applied at the level of the individual communication. A text containing numerical information alone was therefore not automatically classified as dashboard grammar. The category required the combination of quantitative representation with at least two additional features indicating that disaster recovery was being organized as a measurable administrative

process. The prevalence of dashboard grammar was calculated using the following formula: Dashboard Grammar (%) = (number of official communications coded as dashboard grammar / total official communications analysed) $\times$ 100. Of the 94 official communications, 74 met the coding criteria. Accordingly: $(74 / 94) \times 100 = 78.72\%$, rounded to 79%.

Thus, the finding that 79% of official communications employed dashboard grammar refers specifically to 74 of the 94 communications meeting the predefined coding criteria. It does not mean that 79% of all disaster-related communication in the wider dataset exhibited this pattern.

The coding was conducted by a researcher. Where coding was conducted by a single researcher, the analysis involved repeated examination of the coding scheme and re-checking of all borderline cases against the operational criteria before finalizing the dataset. This distinction is important because the 79% figure represents a coded descriptive pattern rather than a statistical estimate of the prevalence of dashboard discourse in all government disaster communication.

The high frequency of this coding pattern suggests that official disaster

communication often presented recovery as a process that could be rendered visible, measurable, and administratively trackable. Rather than representing recovery primarily through individual experiences or contested interpretations, these communications frequently translated complex social processes into indicators of progress: numbers of people assisted, quantities of aid distributed, infrastructure repaired, affected areas reached, or stages of response completed.

The resulting discourse can be understood as a form of bureaucratic visualization of recovery. Disaster becomes legible through categories, numbers, milestones, and institutional reporting structures. The communicative emphasis is consequently shifted from the open-ended uncertainty of disaster toward a sequence of administratively recognizable states: crisis, intervention, progress, stabilization, and completion.

This pattern is consistent with Foucault's (2007) discussion of governmental rationalities in which populations and collective conditions become objects of knowledge through processes of measurement, classification, enumeration, and

intervention. From this perspective, quantification is not merely a stylistic feature of official communication. It participates in constructing the conditions through which disaster recovery becomes knowable and governable.

The “dashboard grammar” identified here should therefore not be understood simply as evidence that government communication is more efficient or more accurate. Rather, it represents a particular epistemic organization of disaster reality: recovery becomes most readily recognizable when it can be translated into measurable indicators and administrative milestones. What becomes visible through this grammar is institutional progress; what may become less visible are experiences that are difficult to convert into standardized indicators, including uncertainty, disagreement, unequal recovery, or locally experienced forms of loss.

Consequently, the 79% finding is analytically significant not because the percentage itself demonstrates governmental control, but because the underlying coded pattern reveals a recurring communicative logic through which institutional actors make disaster

recovery legible. The qualitative discourse analysis of the 74 communications subsequently examined how this logic operated linguistically and semiotically, and how it shaped the terms through which recovery could be represented, evaluated, challenged, or declared complete.

Temporal Politics: Algorithmic Precedence and the Crisis of Verification

A structurally significant finding concerns the temporal relationship between AI-generated content and institutional reporting. Across the three disaster events analyzed, AI-assisted social media posts consistently appeared 2–5 hours before mainstream media coverage and 4–8 hours before official BNPB communications. In the first 6 hours post-event which is the period of highest information demand and lowest institutional response capacity, AI-generated content generated on average 3.2 times higher engagement rates than subsequently published verified accounts.

Table 3. Temporal and Engagement Dynamics by Content Type Across Three Disaster Events (2023–2024)

Content Type	Avg. Time Before Institutional Report	Avg. Engagement (6hr)	% High-Emotion Framing
AI-generated / AI-assisted posts	2-5 hours prior	14,200 interactions	68%
Independent journalist (digital)	0-2 hours prior	8,750 interactions	41%
BNPB official communications	Baseline (0)	4,400 interactions	12%
NGO situation reports	1-3 hours after	3,200 interactions	29%

This temporal advantage produces what this study conceptualizes as "algorithmic first visibility": a condition in which speed displaces verification as the primary currency of epistemic authority. Within platform governance logics, content that arrives first and generates high early engagement is amplified algorithmically, creating a feedback loop in which emotionally charged, unverified narratives acquire structural credibility advantages over institutionally sanctioned but time-delayed official accounts (Bucher, 2018; Gillespie, 2018).

Digital Counter-Publics: Strategies of Epistemic Resistance

Counter-public activity was observed across all three disaster events and employed three analytically distinct strategies:

Testimonial Witnessing

The most prevalent counter-public strategy, identified in 58% of counter-narrative posts, involved direct testimonial documentation. Survivors, local residents, and on-the-ground observers used photographs, videos, location references, and first-person accounts to document conditions that were not fully represented in official recovery narratives. In the Agam case, for example, locally circulated visual testimonies documented continuing difficulties in accessing assistance and highlighted discrepancies between institutional accounts of recovery and residents' reported experiences. These materials functioned not simply as alternative descriptions of the disaster but as evidentiary claims through which affected communities contested the completeness of official recovery narratives.

The analytical significance of these posts lies in their capacity to make otherwise locally situated experiences visible within wider platformed

communication. Rather than directly treating high engagement as evidence of institutional influence, this study examines engagement as an indicator of the circulation and visibility of counter-narratives. Where testimonial posts received substantial interaction, the study traced subsequent references to, or responses from, institutional actors in order to distinguish between online visibility and demonstrable institutional uptake. This distinction is important because high levels of engagement do not, by themselves, establish that government agencies or legislative institutions responded because of social media activity.

Accordingly, claims of institutional impact were retained only where a traceable sequence could be established between the online material and a subsequent institutional response, for example, where an official statement, meeting record, legislative document, or institutional actor explicitly referred to the circulated testimony or the issue raised by it. In cases where such documentary linkage could not be established, the posts were interpreted as instances of counter-public visibility and contestation rather than as direct causes of institutional action.

This distinction also prevents the analysis from conflating platform popularity with political efficacy. From a Foucauldian perspective, testimonial documentation can be understood as a counter-practice of visibility that challenges the administrative production of disaster knowledge. Through photographs, videos, spatial references, and first-person testimony, residents introduce forms of situated knowledge that may unsettle aggregate indicators and standardized representations of recovery. The significance of these counter-narratives therefore lies not only in how many users interacted with them, but also in how they contested what counted as evidence of recovery and whose experience became publicly legible.

Data Reinterpretation and Counter-Mapping

A more technically sophisticated strategy (evident in 22% of counter-narrative content, predominantly from NGO and activist accounts) involved the reanalysis of official data to expose contradictions. NGO actors, in particular, disaggregated official statistics to reveal geographic inequalities in aid distribution, challenged mortality figures by cross-referencing hospital admission records

with community documentation, and produced alternative timeline reconstructions that exposed bureaucratic delays obscured within aggregate progress metrics.

Affective Mobilization

The third strategy (present in 74% of counter-public posts with highest engagement velocity) deployed emotional framing such as grief, outrage, solidarity, as a political resource. High-intensity emotional content generated significantly higher engagement: posts employing grief narratives averaged 4.1x higher share rates than analytical critique posts from the same disaster events, and outrage-coded content generated 2.8x higher comment density. This affective mobilization created what Papacharissi (2015) terms "affective publics" networks constituted through emotional resonance rather than deliberative rationality, enabling rapid solidarity formation but also carrying risks of misrepresentation.

Narrative Asymmetry: A Structural Account

The interaction between official algorithmic narratives and digital counter-publics produces a structural imbalance that this study terms

"narrative asymmetry." This asymmetry operates across four dimensions:

Table 4. Dimensions of Narrative Asymmetry in Post-Disaster Sumatra

Dimens ion	Official Driven Systems	AI- Digital Counter- Publics
Epistem ic Authorit y	Technical/instit utional legitimacy	Experiential/test imonial legitimacy
Data Type	Quantitative, aggregate, standardized	Qualitative, specific, lived
Tempor al Frame	Retrospective (progress since baseline)	Present- continuous (ongoing suffering)
Algorith mic Position	Delayed but institutionally amplified	Early but algorithmically uneven

The asymmetry is not simply a matter of content differences but of differential access to algorithmic amplification. While official content benefits from verified account status, platform partner agreements, and media institution boosts, counter-public voices are subject to the same engagement-based amplification logics as all organic content creating conditions in which the most emotionally extreme, rather than the most empirically accurate, counter-narratives gain the greatest visibility.

The Digital Divide of Empathy: Structural Exclusion

The study's most theoretically significant finding is what is termed a "digital divide of empathy", a phenomenon distinct from traditional access-based digital divides, operating at the level of recognition and representational inclusion within algorithmic systems. Three mechanisms produce this divide:

First, data non-capture: the most vulnerable affected populations, elderly rural residents, linguistic minorities, communities with limited connectivity, do not generate the social media content required for algorithmic recognition. Their suffering is epistemically absent from official dashboards not because it does not exist but because it produces no data that the system is equipped to process.

Second, amplification inequality: even where counter-public content exists, resource-poor communities lack the network capital (follower count, verification status, media connections) required to achieve platform-level amplification. The testimonial post from an influential Jakarta-based NGO with 200,000 followers has structural visibility advantages over an identical

post from a local community group with 450 followers.

Third, the temporal mismatch: official recovery timelines that driven by administrative and funding cycle logics are define recovery endpoints that do not correspond to lived recovery trajectories. When BNPB archives a disaster event as "closed," the algorithmic infrastructure ceases to amplify associated content, even as affected communities continue to experience unresolved consequences. This temporal closure produces what might be termed "algorithmic amnesia" regarding ongoing suffering.

E. DISCUSSION

AI as Political Infrastructure: Beyond Neutral Technology

The empirical findings substantiate and extend the theoretical proposition that AI systems function not as neutral information conduits but as political infrastructures that actively configure the epistemic terrain of disaster governance. This claim must be understood at three levels.

At the technical level, the architecture of AI-driven disaster platforms, what data sources are integrated, which variables are

prioritized, what thresholds trigger alerts, how progress is operationalized, embeds normative choices about whose conditions matter, what recovery looks like, and which communities' realities count as data. These technical choices are not politically innocent; they reflect and reproduce existing institutional hierarchies and resource distributions.

At the discursive level, official platforms' "dashboard grammar" constitutes a regime of truth in precisely Foucault's sense: it defines the terms in which recovery can be discussed, assessed, and legitimately challenged. Alternative knowledge forms like testimonial accounts, community oral histories, qualitative assessments of psychosocial recovery are not merely less prominent within this system; they are structurally inadmissible, lacking the quantifiable, standardizable form required for incorporation into the algorithmic architecture.

At the political level, the system's production of algorithmic visibility functions as a mechanism of what Foucault (2007) calls "conduct of conduct": it shapes not only external representations of recovery but the internal orientations of affected communities, NGOs, and local

governments toward institutionally legible forms of self-presentation and advocacy. To be heard within the system, actors must speak the language of the dashboard, translating lived suffering into the quantitative categories that AI-driven platforms can process and amplify.

Temporal Politics and the Epistemics of Speed

The finding that AI-generated content achieves "algorithmic first visibility" 2-5 hours before institutional communications reveals a structural dimension of epistemic power in crisis communication that has received insufficient theoretical attention. Speed in the platform economy is not merely a logistical advantage; it is an epistemic one.

The cognitive and emotional architecture of crisis information consumption creates conditions in which first-arriving accounts disproportionately shape subsequent interpretation (Starbird et al., 2014; Vosoughi et al., 2018). When algorithmically amplified, emotionally intense, early-arriving content precedes institutional verification, it does not merely compete with official accounts, it establishes the interpretive framework within which official

accounts are subsequently received. Official communications that arrive later and with lower emotional valence are perceived, and algorithmically positioned, as corrections or responses rather than as primary authoritative accounts.

This produces what might be termed an "epistemics of speed" where regime in which temporal priority, rather than epistemic credibility, functions as the primary determinant of narrative authority. The implications for disaster governance legitimacy are substantial: institutional systems optimized for accuracy and accountability are systematically disadvantaged within platform logics optimized for engagement velocity.

The Hybridization of Authority: Gatekeeping to Gatewatching

The study's findings contribute to ongoing debates in media studies about the transformation of communicative authority in platform environments. The data demonstrate a partial but significant transition from journalistic "gatekeeping", in which trained professionals controlled information flows before public release, to platform-mediated "gatewatching" (Bruns, 2008), in which the accumulation and amplification of

existing information replaces the selection and verification of new information.

However, this hybridization of authority does not produce the democratic leveling often claimed in optimistic platform discourse. Rather, as the Indonesian data demonstrate, it produces a new hierarchy, one dominated by platform infrastructures, in which:

- (a) Visibility is algorithmically curated according to engagement metrics that systematically favor emotionally intense, controversially framed, and socially networked content;
- (b) Authority is contingent on engagement performance rather than institutional legitimacy or epistemic reliability; and
- (c) Marginalized communities, precisely because they lack the network capital required for algorithmic amplification, remain systematically less visible than better-resourced actors deploying the same platforms.

This finding aligns with and empirically specifies van Dijck et al.'s (2018) argument that platform logics "redistribute power while maintaining structural asymmetries." The

redistribution is real by mean, the Agam flooding case demonstrates that counter-public mobilization can successfully force institutional accountability, but it is distributed unevenly, with structural disadvantages concentrated among the most vulnerable affected populations.

The Digital Divide of Empathy: Theoretical Implications

The concept of a "digital divide of empathy" advances the established digital divide literature (van Dijk, 2020; Warschauer, 2003) in several theoretically significant ways. First, it shifts analytical focus from infrastructure access (who can connect) to epistemic recognition (whose experience is rendered legible within algorithmic systems). In the Sumatran context, many affected communities had social media access; their epistemic exclusion derived not from connectivity deficits but from the mismatch between their lived realities and the standardized data categories that algorithmic platforms are equipped to process.

Second, it identifies a dimension of algorithmic inequality that operates through empathy, the affective and moral recognition of others' suffering as meaningful and worthy of response.

By privileging institutional, quantified, and progress-framed accounts of recovery, algorithmic governance systems do not merely exclude marginalized communities from data representation; they attenuate the social and political recognition of their suffering, reducing the likelihood of empathetic response from broader publics and resource-distribution decision-makers.

Third, it reveals the limits of counter-public resistance within platform-governed systems. While digital counter-publics successfully contest specific narratives and occasionally force institutional accountability responses, they are unable to transform the underlying algorithmic architecture that systematically disadvantages qualitative, testimonial, and emotionally non-spectacular forms of evidence. The "emotive posts" that achieve viral reach, often extreme, simplifying, or strategically outraged, may win individual battles of visibility while reinforcing the broader epistemic regime that devalues complex, contextual, community-generated knowledge.

Implications for Disaster Governance Legitimacy

The structural narrative asymmetry documented in this study raises fundamental questions about the democratic legitimacy of AI-driven disaster governance. Legitimacy in disaster management is conventionally understood to depend on effectiveness (actual reduction of harm), procedural fairness (equitable allocation of resources and recognition), and accountability (responsiveness to affected communities' concerns). All three dimensions are compromised by the dynamics identified here.

Effectiveness is undermined when the most affected, least visible communities are systematically excluded from data-driven resource allocation algorithms, producing aid distribution patterns that reflect data density rather than need density. Procedural fairness is compromised when communities lacking technical capacity to generate algorithmically legible data are epistemically excluded from governance processes. Accountability is weakened when the "algorithmic amnesia" produced by administrative closure of disaster records removes the informational infrastructure through which ongoing community suffering could be recognized and addressed.

These findings suggest that the deployment of AI-driven governance systems in post-disaster contexts without deliberate attention to the politics of data representation constitutes a form of what Roberts (2016) calls "smart governance failure", a condition in which technically sophisticated systems produce governance deficits precisely because their technical sophistication obscures the political and epistemic choices embedded within them.

Resistance Within Power: Toward Algorithmic Counter-Governance

Drawing on Foucault's (2007) insight that "resistance is immanent to power," and Lorenzini's (2016) elaboration that ethical practice consists in "the art of not being governed in that way," this study argues that effective counter-public practice in AI-governed disaster landscapes requires not merely producing alternative content but developing alternative epistemological frameworks that challenge the terms of algorithmic legibility itself.

Three practices observed among more sophisticated counter-public actors point toward what might be termed "algorithmic counter-governance":

(1) Data production practices that translate qualitative suffering into quantifiable form for incorporation into official systems, without abandoning the qualitative dimensions that resist standardization, what might be called "hybrid epistemic advocacy"; (2) Platform literacy strategies that exploit algorithmic amplification logics to achieve visibility for marginalized narratives, while maintaining critical reflexivity about the distortions this introduces; and (3) Multi-platform coalitions that connect social media-based counter-publics with formal accountability mechanisms (parliamentary inquiries, NGO formal complaints, independent judicial proceedings), converting algorithmic visibility into institutional pressure.

These practices suggest that the most effective forms of resistance to algorithmic governmentality are not those that reject the algorithmic infrastructure but those that develop sophisticated tactical relationships with it, operating "within the system" while continually working to expand the range of what the system can recognize as legitimate knowledge.

F. CONCLUSION

The study examined how AI-mediated communication infrastructures shape the visibility of post-disaster recovery in Sumatra, based on 847 social media posts and complementary institutional documents from three disaster cases between 2022 and 2024. Answering RQ1 and RQ2, it found that official communication tended to render recovery through measurable indicators, with 79% of the 94 official communications using dashboard grammar, while experiences that are harder to quantify were articulated mainly by counter-publics. Answering RQ3, counter-publics contested official narratives through testimony, data reinterpretation, and affective mobilization, but their visibility remained contingent. Answering RQ4, ANT and governmentality together showed AI as one actant in a network through which particular versions of recovery gain authority. This study offers three contributions: the concept of narrative asymmetry, the notion of "algorithmic first visibility" for the timing and engagement advantage of AI-generated and AI-assisted content, and the "digital divide of empathy" for

unequal recognition of experiential knowledge. These findings do not show that AI determines recovery outcomes or that states deliberately manipulate narratives. They show that automated, quantified, and speed-oriented communication makes some dimensions of recovery easier to see than others, a pattern likely intensified by infrastructural inequality and uneven institutional trust in the Global South.

Disaster agencies and platforms should therefore build qualitative and community-generated evidence into recovery reporting, keep recovery communication open after administrative closure, and make the categories that structure automated dashboards open to public scrutiny. Future research should test these patterns with interviews, additional cases, and multiple coders.

REFERENSI

- Association of Internet Researchers. (2019). Internet research: Ethical guidelines 3.0. AoIR. <https://aoir.org/reports/ethics3.pdf>
- Binns, R. (2018). Algorithmic accountability and public reason. *Philosophy & Technology*, 31(4), 543-556. <https://doi.org/10.1007/s13347-017-0263-5>
- Bruns, A. (2005). *Gatewatching: Collaborative online news production*. Peter Lang.
- Bucher, T. (2018). *If...then: Algorithmic power and politics*. Oxford University Press.
- Callon, M. (1986). Some elements of a sociology of translation: Domestication of the scallops and the fishermen of St Brieuc Bay. In J. Law (Ed.), *Power, action and belief: A new sociology of knowledge* (pp. 196-223). Routledge.
- Cammaerts, B. (2012). Protest logics and the mediation opportunity structure. *European Journal of Communication*, 27(2), 117-134. <https://doi.org/10.1177/0267323112441007>
- Cantini, R., Cosentino, C., Marozzo, F., Talia, D., & Trunfio, P. (2025). Harnessing prompt-based large language models for disaster monitoring and automated reporting from social media feedback. *Online Social Networks and Media*, 45, 100295.
- Dahlberg, L. (2011). Re-constructing digital democracy: An outline of four "positions." *New Media & Society*, 13(6), 855-872. <https://doi.org/10.1177/1461444810389569>
- Duffy, B. E., & Meisner, C. (2023). Platform governance at the margins: Social media creators' experiences with algorithmic (in)visibility. *Media, Culture & Society*, 45(2), 285-304.
- Fairclough, N. (2013). *Critical discourse analysis: The critical study of language* (2nd ed.). Routledge.

- Foucault, M. (1978). *The history of sexuality: Vol. 1. An introduction* (R. Hurley, Trans.). Pantheon.
- Foucault, M. (1980). *Power/knowledge: Selected interviews and other writings, 1972-1977* (C. Gordon, Ed.). Pantheon.
- Foucault, M. (2007). *Security, territory, population: Lectures at the Collège de France 1977-1978* (G. Burchell, Trans.). Palgrave Macmillan.
- Foucault, M. (2008). *The birth of biopolitics: Lectures at the Collège de France 1978-1979* (G. Burchell, Trans.). Palgrave Macmillan.
- Fraser, N. (1990). Rethinking the public sphere: A contribution to the critique of actually existing democracy. *Social Text*, 25/26, 56-80. <https://doi.org/10.2307/466240>
- Gillespie, T. (2018). *Custodians of the internet: Platforms, content moderation, and the hidden decisions that shape social media*. Yale University Press.
- Gillespie, T. (2022). Do not recommend? Reduction as a form of content moderation. *Social Media + Society*, 8(3).
- Hine, C. (2015). *Ethnography for the internet: Embedded, embodied and everyday*. Bloomsbury.
- Kasapoglu, T., Masso, A., & Calzati, S. (2021). Unpacking algorithms as technologies of power: Syrian refugees and data experts on algorithmic governance. *Digital Geography and Society*, 2, 100016. <https://doi.org/10.1016/j.diggeo.2021.100016>
- Latour, B. (2005). *Reassembling the social: An introduction to Actor-Network Theory*. Oxford University Press.
- Lorenzini, D. (2016). From counter-conduct to critical attitude: Michel Foucault and the art of not being governed quite so much. *Foucault Studies*, 21, 7-21. <https://doi.org/10.22439/fs.v0i21.4921>
- Ogie, R. I., James, S., Moore, A., Dilworth, T., Amirghasemi, M., & Whittaker, J. (2022). Social media use in disaster recovery: A systematic literature review. *International Journal of Disaster Risk Reduction*, 70, 102783.
- Papacharissi, Z. (2015). *Affective publics: Sentiment, technology, and politics*. Oxford University Press.
- Pink, S., Horst, H., Postill, J., Hjorth, L., Lewis, T., & Tacchi, J. (2016). *Digital ethnography: Principles and practice*. SAGE.
- Rouvroy, A., & Berns, T. (2013). Algorithmic governmentality and prospects of emancipation. *Réseaux*, 177(1), 163-196.
- Starbird, K., Maddock, J., Orand, M., Achterman, P., & Mason, R. M. (2014). Rumors, false flags, and digital vigilantes: Misinformation on Twitter after the 2013 Boston Marathon bombing. *iConference 2014 Proceedings*, 654-662.
- van Dijck, J., Poell, T., & de Waal, M. (2018). *The platform society: Public values in a connective world*. Oxford University Press.
- van Dijk, J. A. G. M. (2020). *The digital divide*. Polity Press.
- Vosoughi, S., Roy, D., & Aral, S. (2018). The spread of true and false news online. *Science*, 359(6380), 1146-1151. <https://doi.org/10.1126/science.aap9559>

- Warschauer, M. (2003). *Technology and social inclusion: Rethinking the digital divide*. MIT Press.
- Weiskopf, R., & Hansen, H. K. (2023). Algorithmic governmentality and the space of ethics: Examples from "People Analytics." *Human Relations*, 76(3), 483-506.
- Wright, L. (2022). Automated platform governance through visibility and scale: On the transformational power of AutoModerator. *Social Media + Society*, 8(1).
- Yudarwati, G. A., Putranto, I. A., & Delmo, K. M. (2022). Examining the Indonesian government's social media use for disaster risk communication. *Asian Journal of Communication*, 32(1), 1-20.
- Zeng, J., & Kaye, D. B. V. (2022). From content moderation to visibility moderation: A case study of platform governance on TikTok. *Policy & Internet*, 14(1), 79-95