

Developing a Crisis Communication Model for the Mining Industry

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Abstract

The mining industry is highly crisis-prone due to its reliance on high-risk technologies, environmentally sensitive locations, and complex stakeholder relationships. While prior studies have examined crisis management and safety regulations, limited research has developed sector-specific crisis communication models that integrate preparedness, stakeholder engagement, and technological adaptation. This study addresses this gap by proposing a comprehensive crisis communication model for the mining sector, utilizing a case study of a mining company in Indonesia. The research aims to explore the roles and effectiveness of existing crisis communication strategies and to formulate an industry-specific model that enhances organizational preparedness and responsiveness. A qualitative descriptive design was employed, incorporating observations, semi-structured interviews with corporate, governmental, community, and academic stakeholders, as well as document analysis of regulatory, media, and corporate sources. Findings reveal that transparency, proactive disclosure, stakeholder dialogue, preparedness training, and integration of digital monitoring systems consistently improved outcomes by reducing conflict escalation and restoring trust. Conversely, delayed, defensive, and one-way communication strategies tended to exacerbate distrust and prolong crises. Building on these insights, the study proposes a hybrid communication model structured around four cyclical stages: anticipation (monitoring and simulations), engagement (multi-stakeholder dialogue), communication (transparent and empathetic narratives supported by credible data), and adaptation (post-crisis learning). The study contributes theoretically by integrating Situational Crisis Communication Theory with Stakeholder Theory, and practically by offering a contextually relevant framework for mining companies to institutionalize preparedness, inclusivity, and responsibility in crisis communication.

Keywords: crisis communication, mining industry, SCCT theory, Stakeholder theory

INTRODUCTION

Over the past five years, there has been a significant increase in academic focus on crisis communication. Most of the issues relate to the incorporation of Situational Crisis Communication and Stakeholder Theories into organizational practices. For instance, [Savoia et al. \(2023\)](#) and [Bernard et al. \(2023\)](#) emphasize the importance of timeliness, transparency, and empathy in effective risk communication. Meanwhile, [Shi \(2022\)](#) highlights the crucial role of stakeholder perceptions in shaping corporate responses. Specific to Indonesia, research has drawn attention to the complex interplay between evolving mining regulations, social conflicts, and environmental risks ([Harun et al., 2023](#); [Setiawan, 2024](#); [Suhartini et al., 2024](#)). [Meutia et al. \(2022\)](#) further demonstrate how artisanal and small-scale mining, which employs millions yet often operates illegally, exacerbates regulatory and environmental challenges. More recent contributions underline the role of digital platforms and social media monitoring in shaping crisis awareness and stakeholder engagement ([Molavi & Zhang, 2024](#); [Xiao & Yu, 2024](#)). However, despite these advances, empirical studies remain disproportionately focused on general crisis management or sector-specific issues such as safety and environmental regulation, with less emphasis on systematically developing communication models tailored to high-risk extractive industries.

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This gap signifies the lack of a holistic crisis communication paradigm that incorporates regulatory, technical, and stakeholder viewpoints within the mining industry. Prior studies have predominantly focused on macro-level policy alterations, exemplified by Indonesia's mining law amendments in 2009 and 2020 (Natsir et al., 2024; Prasetyawan, 2017), or on discrete events, such as the Hazelwood coal mine conflagration in Australia and the Mosaic-Esterhazy occurrence in Canada, which highlighted the significant implications of communication failures and successes, respectively (Macnamara, 2015). However, limited research offers a comprehensive framework that encompasses the readiness, reaction, and recovery phases while considering the social, technological, and environmental intricacies of mining activities.

This study aims to fill the gap by proposing a model for crisis communication in the Mining Industry, using the case of a mining company in Indonesia as an empirical basis. The novelty of this study lies in the integration of Situational Crisis Communication Theory and Stakeholder Theory to develop a model that is both theoretically robust and practically applicable to the unique challenges of the mining industry. This study enhances both academic discourse and industry practice by emphasizing preparedness, responsiveness, and recovery.

Five distinct sections make up the structure of the paper. Following this introduction, the literature review section presents the theoretical and empirical literature related to crisis communication and the mining industries. In the research method section, we will discuss the research approach employed in this study. In the findings and discussion section, the findings are presented, along with a discussion of the proposed communication paradigm. A conclusion is drawn which outlines theoretical implications, provides recommendations for practical application, and suggests directions for future research.

LITERATURE REVIEW

Comprehending crisis communication in the mining sector is intricate. The concept of crisis preparedness has become significantly prominent in corporate and academic discourse, particularly as industries confront environmental, social, and reputational concerns in an interconnected global landscape. Researchers, including Coombs (2015), Frandsen and Johansen (2017), and Sng et al. (2021), have significantly contributed to the dialogue on crisis communication, asserting that crises are not merely interruptions but critical junctures that evaluate an organization's legitimacy, transparency, and capacity to uphold stakeholder trust. These studies emphasize that mining enterprises, in particular, operate in high-risk settings where accidents, environmental degradation, and community disputes can rapidly escalate into crises with far-reaching consequences. Crisis communication is crucial for both mitigating immediate reputational harm and fostering long-term resilience and sustainability (Marsen, 2020).

Situational Crisis Communication Theory (SCCT), as outlined by Coombs (2015), is the primary source of ideas behind crisis communication. This theory primarily explains how companies should tailor their actions according to the perceived level of accountability and the expectations of stakeholders. This paradigm has been adapted in the mining sector to respond to crises, including environmental catastrophes and social protests (Kim & Lim, 2020). Benoit's (1997) Image Restoration Theory emphasizes the importance of strategic communication, encompassing corrective actions, apologies, or reinforcement, in restoring public confidence. These techniques suggest that mining companies should adopt proactive measures and develop comprehensive communication strategies that encompass transparency, accountability, and engagement with affected communities (Schultz & Raupp, 2020). Critics, however, have pointed out that many existing techniques primarily focus on business reputation and sometimes overlook the broader community empowerment and societal issues (Siano et al., 2017).

Crisis communication theory offers important insights; however, studies on its implementation in the mining sector indicate both advantages and limitations. Effective communication strategies are associated with improved stakeholder relations and enhanced corporate legitimacy. Conversely, communication failures—characterized by delayed responses, insufficient empathy, or excessively technical language—have intensified tensions with local communities and resulted in prolonged conflicts (Haupt, 2021). Case studies from Latin America, Africa, and Asia illustrate that mining-related crises frequently intersect with structural issues, including environmental justice, Indigenous rights, and political accountability (Hilson, 2019). The findings suggest potential inadequacies in the industry's crisis communication strategies, particularly in their ability to address the fundamental power imbalances and socio-environmental inequalities that contribute to the emergence of crises.

The literature on crisis communication in relation to mining appears to provide an understanding of the opportunities and challenges faced by the industry. While the SCCT and Image Restoration Theory focus on responses to a crisis, the trust, inclusion, and sustainability challenges continue to plague the industry. The current approach to dealing with these issues continues to prioritise organisational survival over the community, revealing a serious gap in the social response framework. In this light, this research aims to accomplish two objectives. First, what strategies and how effective are crisis communications employed in the mining industry? Second, what is the description of an industry-specific, comprehensive, and operational model intended to improve anticipation, response, and recovery from a crisis?

RESEARCH METHOD

This study employs a qualitative descriptive design to answer two central research questions: (1) *What are the roles and effectiveness of crisis communication strategies applied in the mining industry in addressing these challenges?* and (2) *What kind of crisis communication model can be developed to enhance preparedness and responsiveness in facing future crises?* A qualitative descriptive approach is particularly suited to this inquiry, as it emphasizes understanding social phenomena in their natural context, allowing researchers to construct holistic descriptions of complex realities (Creswell, 1998). By focusing on processes, perceptions, and interactions, the approach facilitates the exploration of how crises are experienced, how communication strategies function in practice, and how new models can be proposed based on empirical insights.

The research was conducted at one of Indonesia's mining companies, serving as a focal case, while also incorporating broader perspectives from regulators, communities, and academics. This site and actor selection reflect the multidimensional nature of mining crises, ensuring that diverse voices are captured. Data were collected from both primary and secondary sources. Primary data were gathered directly from informants representing different stakeholder groups, including corporate management responsible for public relations and crisis response, community leaders, and academics or crisis communication experts. These informants provided firsthand accounts relevant to both research questions, particularly regarding crisis dynamics, communication strategies, and expectations for model development. Secondary data included policy documents, sustainability reports, academic studies, press releases, and media coverage. These documents provided essential context for situating the empirical findings within broader regulatory and discursive environments.

Data collection involved observation, interviews, and document analysis. The study examines communication practices within the mining industry, analyzing the emergence and management of crises in the context of regulatory frameworks, social conflicts, environmental impacts, and economic volatility. This addressed the initial research question regarding crisis dynamics. Semi-structured interviews were conducted with stakeholders to investigate the second research

question, focusing on the roles and effectiveness of communication strategies. The inquiries examined the nature of strategies as either proactive or reactive, as well as stakeholders' perceptions of their credibility in crisis management practices. The analysis of documents supplemented these methods by reviewing official reports, regulations, and news coverage, facilitating data triangulation and providing a historical perspective on the communication and management of crises.

To ensure the trustworthiness of findings, the study employed triangulation by cross-verifying data from multiple sources and stakeholders (Moleong, 2006; Sutopo, 2002). Data obtained from company officials were checked against media reports, community narratives, and NGO documentation to minimize bias and enhance credibility. This approach ensured that the conclusions drawn were robust and reflected a balanced understanding of stakeholder perspectives.

FINDINGS AND DISCUSSION

Roles and Effectiveness of Crisis Communication Strategies in the Mining Industry

The authors' study indicates that crisis communication strategies within the Indonesian mining sector are becoming crucial in influencing organizational resilience and stakeholder trust. Corporate transparency has become a crucial factor in mitigating reputational risks and reducing uncertainty during times of crisis. Mining companies have implemented press briefings, explanatory statements, and family-assistance programs to mitigate community concerns in the aftermath of fatal accidents. These strategies align with the assertion by Coombs and Holladay (2022), who emphasize the importance of transparency for effective crisis recovery and maintaining stakeholder confidence. However, effectiveness has varied. Proactive disclosures and acknowledgments of responsibility generally alleviated tensions; however, delays or excessively technical communication occasionally fostered perceptions of defensiveness. This disparity aligns with the findings of Fitrianti et al. (2023), who observe that while stakeholder dialogues enhanced friction mitigation in the PT Vale case, deficiencies in empathetic framing obstructed broader trust-building efforts.

Stakeholder engagement has assumed a central role in crisis communication within the sector. Mining firms have facilitated dialogues, hearings, and liaison programs that served both informational and relational purposes. Such initiatives enabled communities and NGOs to articulate grievances and allowed companies to refine their messaging accordingly. This aligns with the view of Rudolph-Cleff et al. (2022), who argue that dialogic approaches in high-risk industries foster legitimacy and social acceptance. However, effectiveness varied with perceived inclusivity: when meetings were one-way or lacked meaningful follow-up, credibility was undermined. As demonstrated in the cases of East Luwu and Kaltim Prima Coal, the presence of adat leaders and local mediators proved crucial in shifting communication from formalistic to dialogic, thereby enhancing trust (Fitrianti et al., 2023).

Preparedness and training play indispensable roles in shaping the coherence and speed of crisis responses. Companies with established crisis teams engaged in simulation exercises, spokesperson training, and internal communication rehearsals reported greater confidence in managing crises. Indonesia mining companies' use of quarterly simulations after the Big Gossan collapse exemplifies how preparedness improves coordination and reduces panic among crisis managers. This finding resonates with Jin et al. (2021), who argue that crisis-prepared organizations tend to achieve more consistent stakeholder evaluations. Nevertheless, interviews revealed that some drills lacked updated scenarios, particularly those related to social media or digital communication channels, thereby limiting their practical effectiveness.

The integration of technology and monitoring systems has become a crucial component of effective crisis communication strategies. Companies that deploy social media monitoring, big data analytics, and environmental sensors demonstrate stronger capacities to detect emerging crises early and provide credible evidence in their messaging. These tools enabled proactive responses and enhanced the legitimacy of corporate statements, particularly in environmental incidents, where real-time sensor data added credibility to their claims. As [Voronkova and Nikitenko \(2022\)](#) suggest, digital communication tools not only accelerate crisis detection but also strengthen the narrative credibility of corporate actors. However, smaller firms often lacked resources to adopt such systems comprehensively, and stakeholders criticized overly technical data presentations that excluded lay audiences.

Further, reputation management and media engagement remain at the forefront of corporate communication strategies. Trained spokespersons, timely press releases, and partnerships with external PR agencies were designed to manage narratives and limit reputational fallout. While these measures reduced sensationalist coverage in several cases, NGO and community respondents highlighted that media messaging often remained defensive, emphasizing corporate interests rather than shared concerns. This defensive stance aligns with global findings, which indicate that communication framed primarily as damage control rather than stakeholder engagement tends to underperform in rebuilding trust ([Coombs, 2021](#); [Lee & Jahng, 2022](#)).

In sum, the effectiveness of crisis communication strategies in the mining sector is mixed and conditional. Proactive disclosure, dialogic engagement, preparedness training, and technological integration are consistently linked to improved outcomes, including reduced conflict escalation, quicker restoration of trust, and mitigation of reputational damage. Conversely, delayed responses, one-way communication, and overreliance on defensive media tactics tend to perpetuate distrust and prolong crises. These findings align with international scholarship that emphasizes preparedness, transparency, and stakeholder involvement as pillars of effective crisis management ([Coombs & Holladay, 2022](#); [Jin et al., 2021](#)), while also highlighting sector-specific gaps in inclusivity and technological adoption. Thus, crisis communication strategies in Indonesia's mining industry not only serve immediate reputational protection but also shape long-term stakeholder relationships and institutional legitimacy.

Toward a Crisis Communication Model for the Mining Industry

The authors' investigation indicates that developing a crisis communication model for Indonesia's mining sector requires integrating lessons learned from past crises with theoretical insights on preparedness, stakeholder engagement, and adaptive capacity. First, the findings underscore the need to embed proactive preparedness into the model. Regular simulations, risk mapping, and digital monitoring systems are not merely technical add-ons; they are foundational practices that enhance responsiveness and overall effectiveness. The mining company under study structured drills and real-time monitoring tools to illustrate how organizations with preparedness protocols respond more swiftly and coherently during crises. This resonates with [Jin et al. \(2021\)](#), who argue that organizational readiness—comprising both material resources and cognitive rehearsal—forms the backbone of effective crisis management. Embedding preparedness into a model ensures that communication is not improvised but follows an adaptive, scenario-tested pathway.

Second, stakeholder inclusivity emerges as an indispensable pillar of the model. Interviews reveal that one-way communication or token consultation often undermines legitimacy, while dialogic engagement with communities, NGOs, regulators, and the media fosters trust and mutual understanding. As [Fitrianti et al. \(2023\)](#) demonstrate in the PT Vale–East Luwu case, formal and informal dialogues can reduce escalation even when structural grievances remain unresolved.

Thus, a future model must operationalize multi-stakeholder platforms that institutionalize dialogue, mediate competing interests, and translate technical information into accessible narratives. This aligns with the dialogic theory of public relations, which emphasizes reciprocal communication as the basis of sustainable legitimacy (Kent & Taylor, 2016).

Third, the integration of digital technology constitutes a transformative element in advancing crisis responsiveness. The study finds that companies employing real-time environmental sensors, social media monitoring, and sentiment analysis were able to anticipate crises earlier and substantiate their communication with credible data. However, the challenge lies in ensuring that such data are communicated in accessible and culturally resonant formats. As Voronkova and Nikitenko (2022) highlight, digital tools amplify an organization's narrative power only when combined with transparent storytelling. Consequently, the proposed model must couple technological monitoring with communication strategies that translate complex data into meaningful narratives for diverse publics.

Fourth, the model must explicitly balance reputational management with social responsibility. While current practices reveal a strong emphasis on controlling media narratives, stakeholders frequently critique this orientation as defensive and self-serving. A more sustainable model should prioritize empathetic acknowledgment, restitution, and co-created solutions alongside reputation protection. This perspective aligns with Coombs and Holladay's (2022) situational crisis communication theory, which posits that accommodative strategies—such as apology, corrective action, and stakeholder support—are more effective in high-responsibility crises than defensive strategies. Embedding such normative principles in the model ensures that communication not only manages perceptions but also addresses the substantive concerns of affected stakeholders.

Finally, the authors propose a hybrid crisis communication model that integrates preparedness, inclusivity, technology, and responsibility into a coherent framework. The model adopts a cyclical structure: (1) anticipation through monitoring and simulations; (2) engagement through dialogic stakeholder platforms; (3) communication through transparent, empathetic, and data-supported narratives; and (4) adaptation through post-crisis evaluation and institutional learning. This cyclical approach aligns with best practices in resilience studies, where continuous learning is a central component of adaptive governance (Lee & Jahng, 2022). By combining these elements, the model enhances both organizational responsiveness and stakeholder trust, providing a more comprehensive framework for crisis management in high-risk industries.

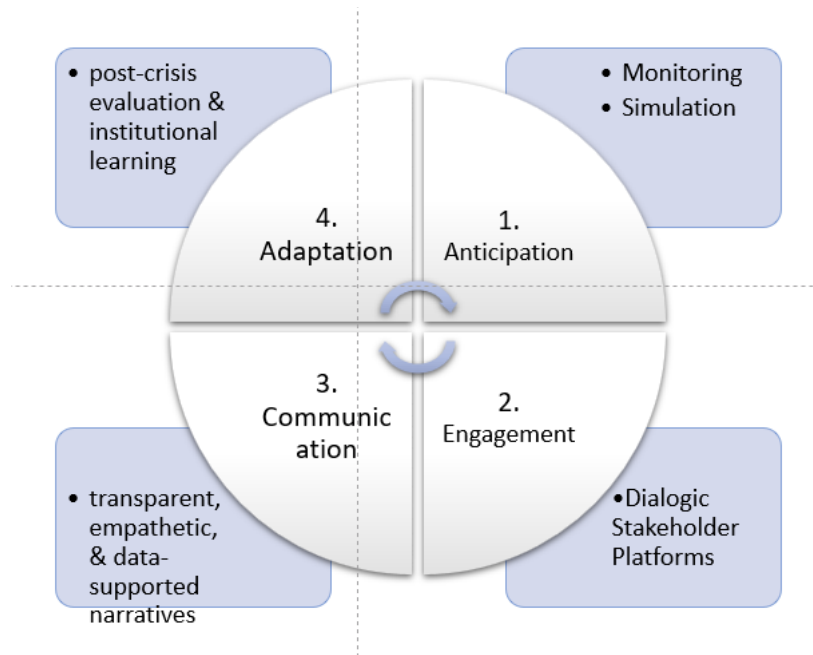


Figure 1. A Hybrid Crisis Communication Model

In sum, the proposed model reflects a shift from reactive, reputation-focused communication to a proactive, dialogic, and technologically enhanced framework. It integrates global insights on preparedness and inclusivity with local contextual lessons from Indonesia's mining sector, thereby addressing the persistent gaps identified in current practices. If implemented, such a model could enhance not only the immediate responsiveness of mining companies but also their long-term legitimacy in the eyes of diverse stakeholders.

CONCLUSIONS

Overall, this paper addresses two research questions that guided the investigation: the roles and effectiveness of crisis communication strategies employed in the mining industry, and the development of a communication model to enhance preparedness and responsiveness in the face of future crises. The initial findings reveal that crisis communication in the mining sector plays a crucial role in fostering transparency, sustaining stakeholder trust, and mitigating reputational risks. Communication strategies such as press briefings, stakeholder dialogues, preparedness training, and technological monitoring demonstrated varying degrees of effectiveness. Proactive disclosure, empathetic engagement, and the integration of digital tools consistently improved crisis outcomes, whereas reactive, one-way, and defensive messaging often exacerbated distrust. These insights underscore that communication in high-risk sectors, such as mining, is not merely an exercise in corporate image management but an essential component of sustaining a company's social license to operate.

The second findings of the study focus on the proposed crisis communication model, which integrates preparedness, inclusivity, technology, and responsibility into a cyclical framework. The model emphasizes anticipation through simulations and monitoring, engagement via dialogic platforms, transparent and empathetic communication supported by credible data, and adaptation through post-crisis learning. By combining these components, the model provides a more comprehensive and contextually relevant approach for Indonesia's mining sector. It reflects a transition from reactive and reputation-driven practices to proactive, dialogic, and technologically enhanced communication, which both improves immediate crisis response and reinforces long-term legitimacy.

This research contributes to the theoretical advancement of crisis communication by adapting frameworks such as Crisis and Emergency Risk Communication (CERC) and Stakeholder Theory to the mining sector. It also provides practical recommendations for mining companies to institutionalize simulations, adopt inclusive dialogue mechanisms, integrate real-time monitoring, and adopt accommodative strategies that prioritize stakeholder well-being.

In conclusion, the findings underscore the need for effective crisis communication in the mining sector to extend beyond reputational management, encompassing preparedness, inclusivity, technological integration, and social responsibility. Such an approach not only strengthens responsiveness during crises but also cultivates trust, legitimacy, and sustainability in one of the most crisis-prone industries.

LIMITATIONS & FURTHER RESEARCH

The study's limitations include its focus on a single case study of an Indonesian mining company and a select group of stakeholders, which may not capture the full diversity of mining contexts across Indonesia or globally. Future research should therefore explore comparative studies across different mining companies and regions, including artisanal and small-scale mining contexts, to examine how crisis communication models can be tailored to diverse institutional and socio-cultural environments.

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