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Strengthening Disaster Mitigation through Risk Communication in the Palm Oil Industry Occupational Safety and Health System: A Narrative Literature Review

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ABSTRACT

The palm oil industry is a high-risk sector that faces various potential hazards and therefore requires a disaster mitigation strategy that is not only oriented to technical aspects, but also to risk communication. This study aims to analyze the role of risk communication in strengthening disaster mitigation through the Occupational Safety and Health system in the palm oil industry. The research uses a qualitative approach with a narrative literature review method. Data were obtained through literature searches on ScienceDirect, Google Scholar, SpringerLink, and DOAJ, then analyzed thematically through synthesis and interpretation processes. The results of the study show that risk communication plays a role in shaping risk perceptions, strengthening safety cultures, improving organizational preparedness, and supporting coordination in disaster mitigation. Risk communication also connects the technical aspects of the K3 system with the behavioral and governance aspects of the organization.

Keywords: *Risk Communication, Disaster Mitigation, Occupational Safety And Health, Safety Culture, Palm Oil Industry.*

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INTRODUCTION

The complexity of the modern industrial environment puts companies at various risks that can threaten the safety of workers while disrupting the continuity of operational activities. Disaster mitigation efforts have been more supported by technical approaches, such as the installation of safety systems, the provision of personal protective equipment, or the preparation of emergency response procedures (Day & Fearnley, 2015; Disasters, 1999; Jerolleman, 2020; Tiefenbacher, 2012; Tong & Zhang, 2019). However, the power of disaster mitigation does not only depend on these technical aspects, but also on how information about hazards and preventive measures can be understood and implemented by all parties involved. This is where risk communication plays a strategic role, namely as a bridge that connects technical information with the right understanding, perception, and response from workers and management. (Covello & Sandman, 2001) define risk

communication as the process of exchanging information and opinions about risks between individuals, groups, and institutions, which aims to help make appropriate decisions in dealing with threats.

This strengthens disaster mitigation through risk communication that is increasingly felt in high-risk work environments, where the potential for industrial accidents and disasters is relatively large. A systematic study conducted by (Zara et al., 2023) shows that safety *communication*, communication climate, and communication satisfaction have a significant effect on worker safety commitments in high-risk industries. The findings confirm that the success of safety systems is not solely determined by the availability of procedures and technology, but also by the effectiveness of communication that runs within the organization. Conversely, communication failures can trigger misinterpretations of hazards, decrease adherence to safety procedures, and increase the likelihood of work incidents.

In line with these findings, risk communication has also been shown to strengthen organizational capacity in preventing risks from developing into incidents or disasters. Research by (Nordin et al., 2021) on high-risk work environments shows that communication management and the company's communication climate have a significant effect on the company's ability to avoid incidents and disasters. Furthermore, (Nuraliah, D et al., 2022) emphasized that interpersonal communication is a key mechanism for fostering a safety culture by enhancing workers' awareness and promoting safe work behaviors. In the context of disaster mitigation, (Rahmawati et al., 2026) demonstrated that mitigation communication integrating local wisdom with modern disaster information significantly improved community preparedness for earthquake hazards in Majene Regency. These findings indicate that the effectiveness of communication depends not only on the accuracy of the information conveyed but also on the ability to tailor messages to the characteristics of the target audience. This principle is highly relevant to risk communication within Occupational Safety and Health (OSH) systems in the palm oil industry, where hazard-related information should be communicated in ways that are easily understood, accepted, and translated into appropriate preventive actions by workers.

Strengthening disaster mitigation through risk communication is also in line with the goals of the Occupational Safety and Health system, which is to create a safe, healthy, and productive work environment. An effective K3 system not only emphasizes technical hazard control, but also requires the active involvement of all workers through a continuous communication process. Various studies show that the implementation of safety communication through training, safety briefings, safety talks, and internal communication media is able to increase awareness and safe work behavior. Studies on the palm oil processing industry, for example, found that the implementation of safety talks regularly contributes to strengthening safety culture and increasing workers' compliance with occupational safety procedures (Salsabila & Nurhayati, 2026; Tabibzadeh & Meshkati, 2015; Waldan & Ruci, 2025). With effective communication, safety information can be conveyed clearly so that work mistakes that have the potential to trigger accidents or emergencies can be minimized.

The palm oil industry is one of the sectors that urgently needs to strengthen disaster mitigation through risk communication. As a strategic sector that contributes greatly to the national economy and labor absorption, operational activities in oil palm plantations and mills contain various potential hazards, ranging from the use of heavy machinery, exposure to chemicals, extreme working environments, to high-temperature and high-pressure production processes. A systematic study by (Myzabella et al., 2019) found that palm oil industry workers face a variety of occupational health and safety risks, including work injuries, musculoskeletal disorders, pesticide exposure, and infectious diseases. If not managed through effective prevention and mitigation systems, these risks have the potential to develop into industrial disasters.

In addition to the risk of work accidents, the palm oil industry is also vulnerable to disaster threats originating from technical and environmental factors, such as production facility fires, equipment explosions, operational failures, and supply chain disruptions due to natural disasters. (Istisya et al., 2023; Tama et al., 2025) emphasized that the palm oil industry is a sector that is vulnerable to various disaster risks that can affect the company's operational sustainability as well as worker safety. This condition shows that disaster mitigation must be an integral part of the K3 system, and risk communication has a strategic role in strengthening these efforts through increased awareness, preparedness, and coordination between actors in the organization.

Although various studies have discussed occupational safety, risk management, and disaster mitigation in the palm oil industry, most studies still focus on technical aspects, such as hazard identification, risk assessment, and risk control through the HIRADC approach and other risk management methods. Research that specifically examines risk communication as a strategy to strengthen disaster mitigation in the palm oil industry's K3 system is still relatively limited and has not been comprehensively studied. In fact, risk communication has great potential to strengthen the effectiveness of disaster mitigation through increasing risk understanding, building a safety culture, and strengthening organizational preparedness (Arwan & Syam, 2025).

Based on these gaps, this study is here to examine specifically how risk communication can strengthen disaster mitigation in the Occupational Safety and Health system in the palm oil industry. Through a literature review approach, this study aims to identify the concepts, forms of implementation, benefits, and challenges of risk communication found in various previous studies. The results of the research are expected to make a theoretical contribution to the development of risk communication studies in the field of organizational communication and safety communication, as well as a conceptual reference for strengthening the safety and health system and disaster mitigation in the palm oil industry.

METHOD

This study uses a qualitative approach with the *narrative literature review method* to analyze the role of risk communication in strengthening disaster mitigation through the Occupational Safety and Health system in the palm oil industry. This method was chosen

because it allows researchers to review, integrate, and interpret various findings of previous research in order to gain a comprehensive understanding of a phenomenon (Baumeister & Leary, 1997; Snyder, 2019)

Research data was obtained through literature search on scientific databases, namely ScienceDirect, Google Scholar, SpringerLink and DOAJ. The search was conducted using the keywords *risk communication*, *disaster mitigation*, *occupational health and safety*, *palm oil industry*, and its equivalents in Indonesian with the help of Boolean operators (AND and OR) (Xiao & Watson, 2019). The literature was selected based on relevance to the research focus, the scientific quality of the sources, and the availability of a complete manuscript (*full text*). This study integrates conceptual, theoretical, and empirical literature to produce a comprehensive synthesis of the role of risk communication in strengthening disaster mitigation through Occupational Safety and Health systems in the palm oil industry.

Data were analyzed using thematic analysis by identifying, grouping, and synthesizing the main themes that emerged in the literature related to risk communication, disaster mitigation, and K3 systems in the palm oil industry. This analysis aims to generate a conceptual understanding of the contribution of risk communication in improving safety culture, organizational preparedness, and disaster mitigation effectiveness(Braun & Clarke, 2006).

FINDING AND DISCUSSION

RESEARCH RESULT

This study reviewed a variety of literature that discusses risk communication, occupational safety and health, and disaster mitigation in high-risk industries with a focus on the palm oil industry. The results of the study show that risk communication evolves from an information delivery approach to a participatory approach that emphasizes the formation of risk perceptions, safety culture, and organizational resilience. Based on the synthesis of the literature, six main themes were found, namely: (1) risk communication as a risk management mechanism, (2) the evolution of the Risk Communication Paradigm in the K3 System, (3) the formation of worker risk perception, (4) risk communication and safety culture, (5) risk communication in organizational preparedness, and (6) risk communication as a link between the K3 system and disaster mitigation.

Risk Communication as the Foundation of the K3 System in the Palm Oil Industry

The results of the literature review show that risk communication is a fundamental component in risk management in high-risk work environments. Various studies have consistently placed risk communication as a factor that affects the ability of individuals and organizations to understand, anticipate and respond to emerging threats. However, the literature shows a paradigm shift in interpreting the function of risk communication. If risk communication was initially understood as a means of conveying information about hazards and safety procedures, the development of studies places it as a mechanism that shapes risk perception, builds trust, and influences safety (Balog-Way & McComas, 2020; Covello & Sandman, 2001).

Various literature shows that the effectiveness of risk management is not solely determined by the availability of information, but by the ability of the organization to convert that information into *a shared understanding* among workers. In this perspective, risk is not seen as an objective fact that is automatically understood by each individual, but rather as a social construct that is interpreted based on each individual's experience, values, and work context (Slovic, 2000). Therefore, risks that have been technically identified do not necessarily result in preventive measures if workers do not understand the consequences and relevance of these risks to their work activities.

This view is strengthened by the findings of (Zara et al., 2023) who show that safety communication, communication climate, and communication satisfaction have a significant relationship with worker safety commitment. These findings indicate that the success of risk management depends not only on the quality of the safety systems that the organization has, but also on the quality of the communication interactions that take place within them. In other words, organizations that have a good safety system are not necessarily able to manage risks effectively if the communication built is not able to create understanding and employee engagement on safety issues.

The findings of (Nordin et al., 2021) further strengthen this argument. The research shows that communication management and communication climate contribute to an organization's ability to prevent incidents and deal with emergency situations. If interpreted through the *risk governance* perspective put forward by (Renn, 2008), the findings show that risk communication functions not only at the individual level through increased understanding of potential hazards, but also at the organizational level through strengthening coordination, collaboration, and information-based decision-making. In the palm oil industry, risk communication is a mechanism that harmonizes management and worker actions in identifying threats, developing mitigation strategies, and improving preparedness for emergencies. Based on this description, the effectiveness of disaster mitigation depends not only on technical procedures, but also on the quality of communication that supports integrated risk management.

The strategic function of risk communication is becoming increasingly important due to its industry characteristics that face multidimensional risks. The risks faced are not only in the form of work accidents, but also the threat of fire, explosions of production facilities, operational failures, and disruptions due to natural disasters (Tama et al., 2025). This complexity suggests that risk management approaches that focus only on technical controls have limitations because they do not directly affect the way workers understand and respond to threats. Therefore, risk communication acts as a mechanism that translates the results of risk identification and assessment into information that can be understood, accepted, and implemented by workers in their daily activities.

Based on a synthesis of various literature, it can be understood that risk communication is not just a tool for delivering safety information, but a strategic mechanism that connects risk knowledge, worker perceptions, and organizational actions. The more effective the risk communication process that the company builds, the greater the opportunity for the organization to develop a safety culture, improve preparedness, and

prevent risks from developing into incidents or disasters. Thus, risk communication can be positioned as the main foundation in sustainable risk management in the palm oil industry.

The Evolution of the Risk Communication Paradigm in the K3 System

The results of the study show that the concept of risk communication has undergone significant development in recent decades. At the beginning of its development, risk communication was seen as the process of delivering information in one direction from those who have authority to the community or groups that are considered at risk. This paradigm departs from the assumption that risk occurs due to a lack of information so the necessary solution is to increase the amount of information provided to the audience. In the context of occupational safety, this approach is realized through the delivery of safety procedures, work instructions, and hazard warnings aimed at increasing workers' compliance with organizational rules.

However, the approach was later deemed inadequate because it ignored the psychological, social, and cultural factors that influence the way individuals perceive risk. (Slovic, 2000) explains that risk perception is not always shaped by objective data, but is influenced by individual experiences, emotions, values, beliefs, and knowledge levels. Therefore, risk is not only a technical issue that can be explained through numbers and probabilities, but also a social construct that is interpreted differently by each individual. This perspective shifts the focus of risk communication from just transferring information to an effort to build an understanding of how risk is perceived by the message recipient.

The next development was marked by the emergence of the dialogical approach put forward by (Covello & Sandman, 2001). According to them, risk communication is the process of exchanging information and opinions between individuals, groups, and organizations that aims to help make decisions related to risk. In this paradigm, communication is no longer seen as the activity of delivering messages from sender to receiver, but rather as an interaction process that allows for feedback, negotiation of meaning, and the formation of trust. Trust is a very important aspect because the effectiveness of risk messages is greatly influenced by the extent to which the source of information is considered credible by the audience.

A more comprehensive approach was then developed by (Renn, 2008) through the concept of risk governance. Renn places risk communication as an integral part of risk governance involving various stakeholders in the process of identifying, assessing, managing, and evaluating risks. In this perspective, risk communication not only serves to convey information about hazards, but also serves as a means of building participation, collaboration, and joint decision-making. This approach is particularly relevant for high-risk industries because it allows workers, management, and other related parties to be actively involved in risk management.

Recent developments show that risk communication is increasingly understood as a strategic instrument in building organizational resilience. (Balog-Way & McComas, 2020) explain that modern risk communication emphasizes the importance of stakeholder engagement, information transparency, and strengthening relationships of trust as

foundations in the face of complex uncertainties and threats. In the palm oil industry, this approach indicates that risk communication not only serves to reduce work accidents, but also strengthens the organization's ability to anticipate, respond, and adapt to various threats that have the potential to develop into disasters.

Based on the synthesis of these various perspectives, this study argues that risk communication in the K3 system needs to be understood as a strategic process that goes beyond the function of delivering safety information. Risk communication is a mechanism that shapes risk perception, builds safety culture, improves organizational preparedness, and strengthens disaster mitigation capacity. It can be understood that the effectiveness of the K3 system in the palm oil industry is not only determined by the quality of the technical controls applied by the company, but also by the organization's ability to manage risk communication in a participatory, dialogical, and sustainable manner.

Risk Communication and Employee Risk Perception Formation

The results of the literature review show that risk perception is one of the factors that determine the success of risk communication in a high-risk work environment. Various studies confirm that individuals do not always respond to risks based on objective levels of danger, but based on how they understand, interpret, and perceive the threat. This study shows that risk communication plays an important role because it is a means that shapes the way workers interpret the risks they face on a daily basis (Slovic, 2000).

According to (Slovic, 2000), risk perception is influenced by various psychological and social factors, such as personal experience, level of knowledge, trust in information sources, and perception of the consequences of a hazard. This perspective suggests that the existence of information about risks does not automatically result in safe behavior. Workers may be aware of potential hazards, but still ignore them if they consider the risk to be minor or irrelevant to the conditions at hand. It can be concluded that the main challenge of risk communication is not only to convey information, but to ensure that the information is able to form a perception of risk that is appropriate to the actual level of threat.

Other literature suggests that risk perception serves as a link between risk communication and safety behavior. (Covello & Sandman, 2001) emphasized that effective risk communication must be able to help individuals understand the consequences of a threat while encouraging appropriate decision-making. These findings indicate that the success of risk communication cannot be measured only by the amount of information conveyed, but also by the extent to which it changes the way workers perceive and respond to risk. In other words, changes in safety behavior do not occur directly through the delivery of information, but through changes in perception formed after the communication process takes place.

This relationship is increasingly seen in a study by (Zara et al., 2023) which found that safety communication and communication climate contribute to worker safety commitments in high-risk work environments. If interpreted further, the findings suggest that open and participatory communication not only improves workers' access to safety information, but also helps them develop a higher awareness of potential hazards in the

workplace. This awareness ultimately forms the perception that safety is an important need that must be realized through adherence to safe work procedures.

In the palm oil industry, the formation of risk perception has a very strategic meaning because workers are dealing with various sources of hazards that are often considered a normal part of daily work activities. Exposure to heavy equipment, the use of chemicals, fire risk, and extreme work environment conditions can cause the phenomenon of risk normalization, which is the tendency of workers to consider risk as something ordinary so that the level of awareness decreases. The study of (Myzabella et al., 2019) shows that palm oil industry workers face a variety of complex health and safety risks, ranging from work injuries to pesticide exposure. These findings indicate that without effective risk communication, workers could potentially underestimate threats that actually have serious consequences for their safety and health.

Further analysis shows that risk communication plays a role in overcoming the phenomenon of risk normalization through increased understanding and awareness of workers. Activities such as safety talks, safety training, emergency simulations, and discussions about work incidents not only serve to convey information, but also help workers connect potential hazards with the real consequences they may experience. Through this process, risks that were previously considered abstract or far removed become more concrete and relevant for workers. These findings are consistent with those of (Nuraliah, D et al., 2022), who reported that interpersonal communication enhances employees' awareness of occupational safety and health (OSH) culture by fostering knowledge, understanding, and safe work behavior. From a risk communication perspective, this suggests that risk perception is shaped not only through the transmission of information but also through communication interactions that enable workers to internalize the meaning of risk as a foundation for preventive behavior. This shows that risk communication serves as a mechanism that transforms knowledge about hazards into awareness that drives preventive behavior.

Based on the synthesis of various literature, it can be understood that risk perception is a crucial point that bridges risk communication with the effectiveness of the K3 system and disaster mitigation. Effective risk communication will result in more accurate risk perception, while accurate risk perception will encourage the emergence of safety behaviors, adherence to work procedures, and preparedness in the face of emergencies. Therefore, the formation of risk perception cannot be seen as a by-product of risk communication, but rather as the main goal that determines the overall success of risk management. So in the context of the palm oil industry, the organization's ability to build the right risk perception in workers is an important foundation for the creation of a safety culture and the strengthening of sustainable disaster mitigation.

Risk Communication as a Driver of Safety Culture

The results of the literature review show that *safety culture* is one of the most important outcomes of effective risk communication implementation. Various studies indicate that risk management efforts will not run optimally if they rely only on technical

controls and formal regulations without the support of an organizational culture that places safety as the main value. Therefore, risk communication serves as a mechanism that transforms knowledge about hazards into collective values, beliefs, and behaviors that support occupational safety (Reason, n.d.).

According to (Reason, n.d.), safety culture is not only concerned with compliance with safety rules, but reflects the extent to which safety has become part of the way members of the organization thinks and acts. This perspective shows that safety culture is a social construct that is formed through continuous interaction and communication. Therefore, risk communication has a central position because it is the main means by which safety values can be disseminated, understood, and internalized by workers.

Other literature suggests that the relationship between risk communication and safety culture is dynamic and mutually reinforcing. On the one hand, effective risk communication is able to increase workers' understanding of the various threats they face. On the other hand, a strong safety culture will create a work environment that is more open to the exchange of information about risks. The findings of (Zara et al., 2023) show that safety communication, communication climate, and communication satisfaction have a significant effect on worker safety commitments. The findings indicate that workers in an open communication environment tend to have a higher level of concern for safety issues than workers who work in a closed or hierarchical communication environment.

Interpretation of these findings shows that risk communication not only serves to convey information about dangers, but also forms social norms that direct worker behavior. When safety is consistently communicated through briefings, training, risk discussions, and incident reporting, workers will view safety as an important part of their job. Conversely, when communication about risks is sporadic and only arises after an accident occurs, safety tends to be perceived as a purely administrative obligation. In other words, the intensity and quality of risk communication determines the extent to which safety values can be internalized in the organization's culture.

This perspective is in line with the risk governance approach put forward by (Renn, 2008), which places communication as the main instrument in building stakeholder involvement in risk management. When viewed from the perspective of safety culture, worker engagement is a very important factor because culture cannot be formed through instructions from management alone. A safety culture thrives when workers have the opportunity to participate in hazard identification, raise safety-related concerns, and be involved in decision-making processes related to risk management. Therefore, participatory risk communication has more potential to build a culture of safety than communication that is only oriented towards the delivery of instructions.

In the palm oil industry, strengthening a safety culture is very important because the work environment is full of various potential hazards. Harvesting activities, the use of heavy equipment, the operation of factory machinery, and the handling of chemicals require a high level of vigilance from workers. The study of (Myzabella et al., 2019) shows that palm oil industry workers face various health and safety risks that can have serious impacts if not managed properly. In these conditions, the safety culture serves as a layer of

protection that complements the technical control system. When workers have a collective awareness of the importance of safety, they tend to be more active in recognizing potential hazards, reporting unsafe conditions, and taking precautions before the risk develops into an incident.

The findings of (Salsabila & Nurhayati, 2026) regarding the effectiveness of safety talk in the palm oil processing industry further strengthen this argument. The implementation of safety talks regularly has been proven to increase workers' compliance with work safety procedures. However, if examined more deeply, the main benefit of these activities is not only increased compliance, but the formation of a communication space that allows workers and management to build a shared understanding of risks. Through the process of repeated communication, safety values slowly become part of the organization's culture and influence daily work behavior.

An analysis of the literature synthesis also shows that safety culture plays a role as a mechanism that links risk communication with disaster mitigation. Effective risk communication will increase workers' awareness and understanding of threats, while a safety culture ensures that that understanding translates into consistent behaviors in work activities. Thus, a safety culture can be understood as a long-term result of continuous risk communication. The stronger the safety culture formed in the organization, the higher the organization's capacity to prevent work accidents, anticipate emergencies, and reduce the impact of disasters that may occur.

Based on a synthesis of various literature, this study argues that risk communication is the main driver in the formation of a safety culture in the palm oil industry. Risk communication not only results in increased knowledge about hazards, but also shapes values, norms, and a collective commitment to safety. Therefore, the success of the K3 system and disaster mitigation depends not only on the quality of the technology and procedures that the company has, but also on the organization's ability to build a safety culture through a participatory, consistent, and sustainable risk communication process.

The Contribution of Risk Communication to Disaster Preparedness and Mitigation

The results of the literature review show that risk communication has a significant contribution to improving *preparedness* and the effectiveness of disaster mitigation in organizations. Various studies confirm that preparedness is not only determined by the availability of resources, technology, or emergency response procedures, but also by the ability of organizations to build a shared understanding of possible threats and actions to be taken to deal with them. In line with this view, risk communication serves as a mechanism that connects knowledge about risk with the capacity of individuals and organizations to respond to emergencies in an appropriate and coordinated manner (Covello & Sandman, 2001).

Various literature shows that risk communication plays a role in all stages of disaster management, from pre-disaster, during disaster, to post-disaster. In the pre-disaster stage, risk communication serves to increase awareness of potential threats, strengthen understanding of safety procedures, and build individual and organizational

preparedness. At the emergency response stage, risk communication plays a role in ensuring accurate information can be delivered quickly, supporting coordination and decision-making. Meanwhile, in the post-disaster stage, risk communication serves as a means of organizational learning to evaluate existing system weaknesses and strengthen future prevention strategies (Renn, 2008). These findings are further supported by (Rahmawati et al., 2026), who demonstrated that earthquake mitigation communication in Majene Regency became more effective when it integrated the local wisdom of the Mandar community with modern disaster information. This approach not only enhanced the community's understanding of earthquake hazards but also strengthened preparedness by delivering messages that were aligned with the social and cultural characteristics of the target audience. These findings show that risk communication is not just a supporting activity, but an integral part of the overall disaster mitigation process.

Furthermore, the literature shows that organizational preparedness is greatly influenced by the quality of internal communication built before an incident occurs. (Nordin et al., 2021) found that communication management and communication climate have an influence on an organization's ability to avoid incidents and deal with emergency situations. If interpreted more deeply, the findings indicate that organizations that have open communication systems tend to be better able to identify potential threats early, accelerate the dissemination of important information, and improve coordination between work units when facing crises. On the other hand, organizations with weak communication are more prone to response delays, misinterpretation of information, and coordination failures that can magnify the impact of an incident.

The findings are in line with the development of the risk communication paradigm that emphasizes the importance of *trust* in risk management. (Balog-Way & McComas, 2020) explain that the effectiveness of risk communication is highly dependent on the level of trust between the organization and stakeholders. In disaster preparedness, trust allows information about threats, evacuation procedures, and mitigation measures to be received and implemented more effectively. Without trust, risk messages have the potential to be ignored or misinterpreted, reducing the effectiveness of mitigation efforts that have been designed.

In the palm oil industry, the contribution of risk communication to preparedness is becoming increasingly important due to the complex and interrelated characteristics of risk. The threats faced are not only in the form of individual work accidents, but also risks that can develop into large-scale operational disruptions, such as production facility fires, storage tank explosions, operational system failures, and the impact of natural disasters on the company's supply chain. (Tama et al., 2025) emphasized that the palm oil industry is vulnerable to various forms of disasters that can affect worker safety as well as the sustainability of company operations. This condition shows that preparedness cannot be built only through the provision of emergency equipment or the preparation of emergency response procedures, but also requires a communication system that is able to ensure that all workers understand the risks and know the actions that must be taken when facing an emergency.

An analysis of the literature synthesis also shows that risk communication plays a role in reducing the gap between mitigation planning and implementation in the field. Many organizations already have adequate risk management documents, emergency response procedures, and safety operational standards. However, the effectiveness of such documents often depends on the extent to which the information contained in them can be understood and applied by workers. In this context, risk communication acts as a translational process that transforms technical information into practical knowledge that can be used in everyday work activities. Therefore, mitigation failures are often not caused by the absence of procedures, but by communication failures that cause the procedures to be misunderstood or not executed consistently.

Another important finding is that risk communication contributes to the development of organizational resilience. The literature shows that organizations that are able to build open, adaptive, and participatory communication tend to be better prepared for uncertainty than organizations that rely solely on a command and control approach. Preparedness built through risk communication allows organizations to detect threats early, respond to changing conditions more quickly, and recover operations more effectively after a disruption. Thus, risk communication not only serves to reduce the likelihood of disasters occurring, but also improves the organization's ability to survive and adapt when disasters are unavoidable.

Based on a synthesis of various literatures, it can be understood that the contribution of risk communication to disaster mitigation takes place through a gradual and interrelated process. Risk communication improves understanding of threats, forms more accurate risk perceptions, strengthens safety cultures, improves individual and organizational preparedness, and supports coordination when dealing with emergencies. Therefore, risk communication cannot be positioned only as an instrument of information delivery, but rather as an organization's strategic capacity that determines the effectiveness of disaster mitigation as a whole. In the palm oil industry, strengthening risk communication is an urgent need because the sector operates in a risk-rich environment and requires a high level of preparedness to maintain worker safety and the sustainability of company operations.

CONCLUSION

This narrative literature review shows that risk communication has a strategic role in strengthening disaster mitigation through the Occupational Safety and Health system in the palm oil industry. The results of a synthesis of various literature confirm that risk communication is no longer understood only as the process of conveying information about dangers, but has evolved into an organizational mechanism that shapes risk perception, builds trust, internalizes safety values, and encourages safe work behavior. Through this process, risk communication contributes to building a culture of safety, improving organizational preparedness, strengthening coordination between actors, and supporting decision-making in dealing with various potential threats. Thus, the effectiveness of disaster mitigation is not only determined by technical controls and safety procedures, but also by

the quality of risk communication that is able to connect the technical, behavioral, and governance aspects of the organization in the safety and health system.

Theoretically, this study enriches the study of risk communication by placing it as a mechanism that integrates risk perception, safety culture, organizational preparedness, and disaster mitigation in a single conceptual framework in the palm oil industry. Practically, the results indicate that companies need to strengthen their risk communication strategies through training, safety talk, two-way communication, hazard reporting, and active involvement of workers in risk management to improve the effectiveness of the K3 system and organizational resilience. Given that this research is based on a synthesis of the literature, it is recommended to conduct empirical testing of the resulting conceptual model to examine the relationship between risk communication, safety culture, organizational preparedness, and disaster mitigation in the palm oil industry and other high-risk industrial sectors.

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