

CHAPTER 1 - INTRODUCTION

1.1 Background

Safety at work is essential, is a fundamental right of employees and therefore requires strict measures against any impairment. The consequences of workplace accidents extend beyond individual well-being to impact productivity and company reputation. Compliance with regulatory standards is essential and reflects the commitment to protecting individuals in society. Consequently, promoting a safety culture requires a concerted effort that includes training, vigilance, incident reporting, and continuous improvement initiatives (Saleh & Wahyu, 2019). In the mining industry, which is characterized by inherent complexity and increased risks, prioritizing workplace safety and health is paramount. Cultivating a robust and enduring OHS culture in mining companies requires the dissemination of values, norms and behaviors that promote increased safety awareness (Saleh & Wahyu, 2019). Effective internal communication strategies are crucial in shaping employees' perceptions and ensuring their behavior adheres to safety protocols (Yovita, 2009). Furthermore, recognizing the influence of psychological and behavioral factors highlights the complexity of occupational health and safety in the mining sector (Coulson, 2018).

Organizational policies and procedures serve as a linchpin in strengthening occupational health and safety in mining operations and provide a structured framework for risk mitigation and incident management. Participation and empowerment of the workforce is an essential part of promoting a safety-focused ethos and fostering collective ownership and accountability towards OHS initiatives (Saleh & Wahyu, 2019). However, despite concerted efforts, the occurrence of accidents highlights the complex challenges associated with maintaining occupational health and safety in the mining sector. Mitigating risk requires continuous vigilance, procedural adherence, and organizational adaptability (Coulson, 2018).

Psychological and behavioral aspects are one of the key influencing factors on occupational safety and health in the mining sector (Coulson, 2018). It refers to the cognitive and behavioral aspects of employees and how these factors can influence safety and health in the workplace. Psychological aspects include a person's awareness of the risks and dangers in their work environment (Guerin & Sleet, 2021). This awareness can motivate employees to follow safety procedures and comply with health and safety policies.

Organizational policies and procedures are important factors affecting occupational health and safety in the mining sector (Micheli et al., 2018). These policies and procedures provide the framework that governs how workplace safety and health is managed in mining companies. Safety policies and work procedures are policies that govern employees' actions to ensure their own safety and that of their colleagues. They establish the steps to follow in situations of potential risk or danger. This policy covers the use of personal protective equipment (PPE), evacuation procedures, risk identification and preventive measures (Lu et al., 2020a). Organizational policies and procedures form the basis for promoting occupational safety and health in the mining sector. It provides clear instructions, standards to follow and a framework for identifying, reporting and managing potential risks. If consistently implemented and strictly enforced, organizational policies and procedures can significantly contribute to improving occupational safety and health in the mining sector (Rudakov et al., 2021a).

Participation and empowerment of the workforce are key factors influencing occupational health and safety (OSH) in the mining sector (Rudakov et al., 2021a). Actively involving employees in occupational safety and health efforts and giving them the authority to contribute to occupational health improvements is an important element in creating a safe and healthy working environment in the mining sector (Yu et al., 2019). Workforce empowerment promotes a team-based safety culture in which employees feel they have a shared responsibility for workplace safety and health (Lu et al., 2020b). This leads to intensive collaboration in identifying and solving occupational health and safety issues.

While previous studies have recognized the importance of effective communication in advocating safety measures, there is a significant lack of understanding of the precise communication methods that promote a forward-looking safety culture in the ever-changing and precarious environment of the mining sector.

The phenomenon that accidents still occur in companies with a high safety culture can be caused by several complex, interrelated factors. Although a strong safety culture can reduce the risk of accidents, it does not always guarantee total accident avoidance. Even though a culture of safety exists, human error can still occur. Individuals may violate safety measures because they feel rushed, underestimate the risk, or are unaware of the danger. Some work environments can be very complex and potentially dangerous, even when strict safety regulations are followed. Time pressure, multitasking, or the need to adapt to rapidly changing situations can lead to mistakes. Sometimes there may be obstacles or failures in the security system. This could be problematic equipment, unclear procedures or deficiencies in training. Although companies claim to have a high safety culture, practices and norms may vary within specific groups. It is possible that some groups do not adhere to the safety culture due to stricter group norms. Changes in the operating environment, such as changes in technology, business growth, or changing customer needs, can impact the focus on security.

The phenomenon of industrial accidents in mining areas has occurred recently, namely an explosion on December 9, 2022 at PT Nusa Alam Lestari (NAL). There were 14 victims in the mine accident, 10 of whom died. The number of mining accidents in Indonesia is relatively high, which is said to be due to inadequate monitoring and assessment of mines. The standards applied include the selection of work equipment that is safe and meets safety standards, the rapid and accurate reporting and processing of occupational safety incidents to ensure that every worker understands the importance of occupational health and safety in their work and is prepared to implement it in every operational activity to apply. Regularly update health and safety procedures. and monitor and evaluate the effectiveness of the occupational health and safety program and establish occupational safety, occupational health, work environment and occupational safety and health management systems.

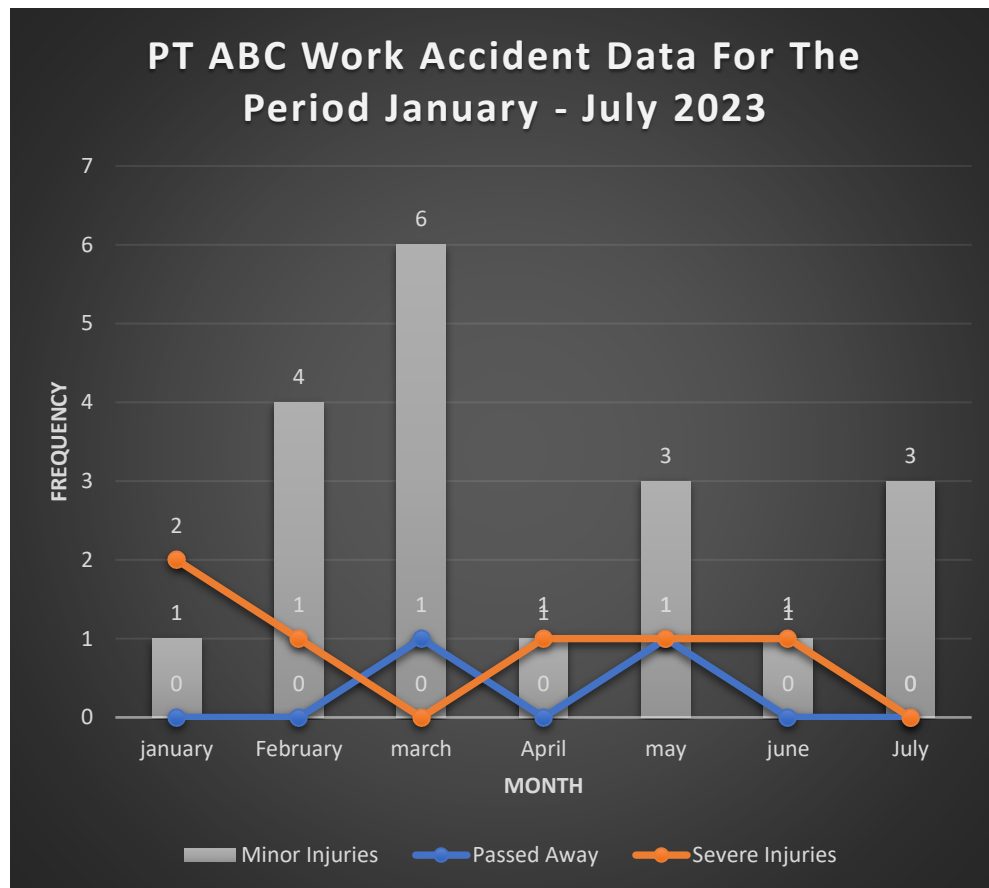


Figure 1. Work Accident Period January - July 2023
Source: Internal Data PT ABC, 2023

Due to the lack of attention to safety culture, minor accidents have become more and more common. As described in Table 1.1. Although these accidents are described as “normal occurrences” by management, employees begin to feel worried and unsafe. As background, accident data shows that the age range of accident victims varies and employees are between 25 and 45 years old. In addition, the length of service of employees who have had an accident is between 2 and 10 years.

However, this situation reached its climax when an incident occurred that shook the entire coal industry. One of the flimsy minelayers suddenly collapsed, harboring a group of workers inside. Rescue teams were immediately dispatched to rescue them, but when they finally reached the site, several workers were seriously injured and several others were declared dead. This incident not only shocked the local community but also caught the attention of the mining regulator.

Table 0. Currently Accidents

Accident	%	Frequency (incidents/month)	Severity Type
hazardous chemical spills that are not immediately addressed properly	43%	5	Moderate
machinery that is not properly maintained	47%	5	Moderate
workers who are injured because they do not use appropriate personal protective equipment	78%	16	Moderate to heavy
Fall Accidents	56%	7	Heavy
Accidents Due to Heavy Equipment	37%	2	Moderate to heavy
Poison gas	19%	1	Moderate to heavy
Explosion	27%	3	Moderate to heavy

Source: Internal Data, 2023

Based on Table 1 Mining Operations is that department responsible for the exploitation and extraction of mineral resources or mining materials. They manage day-to-day operations such as drilling, blasting, earthmoving and material handling, a department that contributes to high rates of workplace accidents. The most common workplace accidents in mining are “fall accidents” and “accidents caused by heavy equipment”. Falling accidents are common because the mining work environment is often at high altitudes, for example on building roofs or on steep field edges. Workers who do not follow safety regulations and use personal protective equipment properly may be at risk of these accidents. On the other hand, heavy equipment accidents can occur when equipment such as excavators, dump trucks, or other heavy machinery are not used or managed properly. Improper operation of heavy equipment can result in serious incidents. Therefore, worker safety and training, as well as good maintenance of heavy equipment, are crucial to reduce the risk of these mining accidents (Ismail et al., 2021).

Even though OSH has been implemented in the work environment, there are still several work accidents as described in Figure 1.2. Work accidents with minor injuries category are still the dominating accident rate in PT ABC's work environment. In the initial survey of 20 workers, information was obtained that the high number of minor injuries and even deaths was influenced by a safety culture that had not been implemented properly as much as 32% and a lack of awareness from coal mining workers. so that it requires measuring the level of safety culture at PT ABC and safety culture that is easily adapted and implemented properly by workers. One of the initial observations in a company engaged in coal mining was found in one case of a supervisor giving blasting instructions through a walkie-talkie before routine duties at the mine.

Although PT ABC has implemented various security measures, security standards in this company are still relatively low. Signs of a low level of safety include the high number of minor and serious accidents at work that often occur at mining sites. This shows that employees' safety awareness still needs to be improved. In addition, although there is a safety training program in place, its effectiveness is still not optimal, as evidenced by the failure of some employees to understand and implement safety procedures. Safety leadership is also not optimal, with some managers and supervisors not consistently enforcing safety rules, meaning a safety culture has not yet fully developed at all levels of the organization. The existing reward and punishment system also does not appear to be effective as employees continue to perform unsafe actions without clear consequences. Additionally, reports of near misses and potential risks are often not responded to quickly, indicating a lack of proactive response to safety issues.

At PT. ABC Mining, a large mining company, has weaknesses in the safety culture it implements. These weaknesses negatively impact employee safety and impact overall company performance. A poor picture of the safety culture at PT. ABC Mining includes several causal factors that can be identified through certain indicators and standards. First, there is an indifferent attitude towards personal protective equipment (PPE), which is reflected in the number of employees who do not use PPE correctly or at all. PT ABC responded by implementing an intensive training program on the use of PPE, which was closely monitored to ensure correct use. Sanctions will be imposed for

repeated PPE-related violations. Second, the lack of adequate safety training, particularly for new employees, is addressed by introducing basic and advanced safety training. Third, the lack of safety communication was addressed by establishing a safety team and holding regular meetings between management and employees to discuss safety issues. Fourth, low responsiveness to security incidents is addressed by conducting a thorough investigation each time an incident occurs and taking corrective action without delay.

The in-depth interview process conducted was an in-depth and contextual research method to gain comprehensive insights into the safety culture at PT ABC. The researchers conducted interviews with various stakeholders, including senior executives, field managers, and operational staff. Interviews were conducted using structured question guides to explore their understanding and perceptions of safety culture, inhibiting factors, and socialization efforts undertaken. To build a strong safety culture, the company prioritizes clear policies and procedures related to K3, including guidelines for the use of personal protective equipment, evacuation procedures and preventative measures. Additionally, active workforce participation and effective internal communication strategies are key factors in creating a safe and productive work environment.

In mining companies, operating costs are an important aspect that affects financial balance and smooth operations. Daily costs include expenses for equipment maintenance, fuel, labor wages and utilities, with estimates ranging from Rp. 50 million to Rp. 100 million. Monthly costs include equipment rental, insurance premiums and management fees, with estimates ranging from Rp. 500 million to Rp. 1 billion. Meanwhile, annual costs include purchasing critical equipment, infrastructure improvements, regulatory compliance and exploration, with estimates suggesting it could run into billions of rupiah. With effective management, mining companies can maintain the sustainability of their operations and optimize their financial performance.

In the mining industry, companies take various preventive measures to prevent accidents and incidents. This includes providing a comprehensive safety training program for all employees to ensure understanding and compliance with safety

protocols. In addition, the company conducts routine inspections of equipment and facilities to identify and address potential hazards before they result in incidents. In addition, investments are being made in advanced technology such as sensors, monitoring systems and automation to improve safety and efficiency in mining operations. The importance of a safety culture is embedded throughout the organization, with safety a priority at all levels and employees feeling encouraged to report hazards and near misses. Compliance with relevant safety regulations is also strictly adhered to, both by government authorities and industry associations. Each incident is thoroughly investigated to determine the root cause and implement corrective actions to prevent similar incidents from occurring in the future. By implementing these measures, mining companies can ensure a safe working environment and reduce the risk of incidents that could adversely affect mining operations.

The phenomenon of building a strong safety culture at PT ABC in the Indonesian mining industry can be supported by several underlying theories. Safety culture theory posits that a robust safety culture is characterized by shared beliefs, practices, and attitudes that prioritize safety at all organizational levels. Critical components include employee safety awareness, safety leadership, and reward and punishment programs. The Health Belief Model and Theory of Planned Behavior emphasize that increased safety awareness leads employees to adopt safer practices. Transformational Leadership Theory suggests that leaders who inspire, motivate, and demonstrate a commitment to safety can significantly influence the behavior of their employees. In addition, behavioral theory, particularly operant conditioning, explains how reinforcement strategies can influence behavior. Studies have shown that awareness campaigns and training programs significantly improve safety behavior (Clarke, 2019). Transformational leadership positively impacts safety outcomes because leaders who actively promote safety and interact with employees create a deeply embedded safety culture (Conchie & Burns, 2019). A strengthened strategy to explore security in the context of PT ABC in the Indonesian mining industry is critical for several reasons. First, the mining industry is inherently dangerous and poses a high risk of accidents, injuries and deaths due to the nature of the work, including the use of heavy machinery, exposure to hazardous materials and demanding working conditions. Improving safety

practices can significantly reduce these risks and preserve the lives and health of the workers. Second, a strong safety culture can increase overall productivity and efficiency by minimizing disruption caused by accidents and ensuring a stable and healthy workforce. Third, regulatory compliance is critical in the mining industry, and research into safety practices helps ensure companies adhere to legal and ethical standards, thereby avoiding potential fines and reputational damage. Additionally, fostering a robust safety culture can improve employee morale and job satisfaction, leading to higher retention rates and better overall organizational performance. Finally, findings from safety research can be transferred to other industries and thus contribute to broader improvements in workplace safety measures.

The main health and safety law in Indonesia is the Occupational Safety Law (Law No. 1 of 1970), which covers all workplaces and focuses on prevention. In addition, Article 87 of the Manpower Act 2003 requires every workplace to implement an occupational safety and health management system. ISO 45001, an international standard for occupational health and safety (OH&S), derived from OHSAS 18001, provides a framework for managing the prevention of work-related injuries, illnesses and/or deaths, thereby ensuring a safe and healthy workplace.

The researcher examined the correlation between these parameters and their relationship with the safety culture of PT ABC in the Indonesian mining company. Workers must constantly enhance their strong safety culture due to the dynamic and competitive nature of the mining industry. This is consistent with safety culture theory, which states that a robust safety culture is characterized by shared beliefs, practices and attitudes that prioritize safety at all organizational levels. Critical components include people's safety awareness, safety leadership, and reward and punishment programs, as well as providing relevant evidence and interventions to the mining industry. Therefore, the title of this study is to analyze the safety culture of PT ABC in the Indonesian mining company through public safety awareness, safety leadership, and reward and punishment programs.

1.2 Research Problem

Given the research context, PT. ABC Mining Company faces significant occupational safety and health (K3) challenges due to the inherently risky nature of its mining operations. Ensuring the well-being and safety of employees is of the utmost importance. This requires an understanding of the key factors that contribute to building a strong safety culture. In this context, it is suggested that three variables - people's safety awareness, safety leadership and the reward and punishment system - are crucial factors in establishing an effective safety culture. The aim of this research is to determine the degree to which these variables influence safety culture.. ABC Mining Company and how they can be applied to enhance overall performance in terms of safety.

1.3 Research Question

The study presents the following problem:

- 1) How does people's security awareness affect security culture?
- 2) How does safety leadership impact safety culture?
- 3) How do rewards and punishments affect safety culture?

1.4 Research Objectives

The following are the anticipated research objectives for this study:

- 1) To analysis of the effects of people's security awareness on security culture
- 2) To analysis of the effects of safety leadership on safety culture
- 3) To Analysis of the effects of reward and punishment on safety culture

1.5 Research Context

This research examines people's safety awareness, safety leadership, reward and punishment, and safety culture in PT. ABC mining company. The study will involve individual employees of mining companies in Indonesia.

1.6 Scope and Limitation

This research will focus on analyzing the factors that influence the development of safety culture in PT. ABC Mining Company, with particular emphasis on health and safety policies and procedures, employee involvement and internal communications

strategies. Research includes surveys, interviews and analysis of related documentation to gain a holistic understanding of the problem.

Even so, this study will make an effort to present a thorough picture of the variables influencing safety culture. There are a number of restrictions with ABC Mining Company to take into account. First, there is limited access to internal company data, which can limit in-depth analysis. Second, respondent participation in surveys and interviews may vary, which may impact the overall representation of employee perspectives. Otherwise, the research focus is limited to PT. ABC Mining Company may not be directly transferable to other mining companies and combines methods for gathering data that are both quantitative and qualitative. A causal relationship between the different factors cannot be established in this study because cross-sectional data were used. As a matter of fact, the data merely capture the state of affairs during the period of investigation. The online questionnaire is completed by respondents who work for the respective company, and this provides primary data. Descriptive and statistical equation modeling techniques are applied to the data analysis process.

1.7 Significant of Study

1) Theoretical

This research is significant because it adds to the corpus of knowledge already available in the area of occupational safety and health (OSH), especially as it relates to the mining sector. By addressing the factors that influence the development of a strong safety culture at PT. ABC Mining Company, the study illuminates the complex dynamics of safety culture formation and provides valuable insights for scholars, researchers and practitioners in the field. The results of this study can potentially influence theoretical frameworks, methods, and future research directions in occupational safety and health management.

2) Practical

This study is significant for PT. ABC Mining Company and similar organizations operating in high-risk environments. By identifying key factors that influence safety culture development, the research provides companies with actionable insights to improve their safety management systems. Implementing

effective policies, encouraging employee participation and optimizing internal communications strategies based on the results of this study can lead to noticeable improvements in workplace safety and reduce the risk of accidents, injuries and associated costs. Ultimately, the practical implications of the study extend beyond PT. ABC Mining Company, which could potentially benefit a wider range of companies that want to maintain a strong safety culture and ensure the well-being of their workforce.

1.8 Structure of the thesis

This is the basic structure of this thesis.

- 1) Chapter 1 provides background information about the study and acts as an introduction. It explains the research's challenges, issues, goals, background, extent, constraints, and significance.
- 2) Chapter 2 serves as a review of the literature that develops a hypothesis by looking at the variables, constructs, and their relationships. This is achieved by examining earlier studies on the constructs, as well as the elements and results connected to each construct. In order to carry out a more thorough examination of the connections among every component in the suggested study model, a hypothesis was subsequently developed in this investigation.
- 3) Chapter 3 serves makes connections between various concepts by presenting the data that has been processed. This chapter also examines whether the theories are accepted or rejected. This chapter also offers fresh perspectives derived from the study's analysis and findings. Descriptive analyses are carried out using SPSS version 29.
- 4) Chapter 4 shows the data that has been processed to create connections between various concepts. This chapter also examines the acceptance or rejection of the hypotheses. Furthermore, this chapter offers fresh perspectives derived from the examination and findings of the research. The tool used for descriptive analysis is SPSS version 29.
- 5) Chapter 5 serves as the conclusion and proposal part of the study . An overview of the study's findings is given, along with recommendations for potential future research directions or ways to make the issue better.