


ANALYSIS OF THE EFFECTIVENESS OF THE IMPLEMENTATION OF THE OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM IN MEDIUM-SIZED MANUFACTURING INDUSTRIES

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Abstrak	
<p>Keywords:</p> <p><i>Occupational Safety and Health, Management System, Manufacturing Industry</i></p>	<p><i>Occupational Safety and Health (OSH) is an important aspect in supporting the productivity and welfare of labor, especially in the medium-scale manufacturing sector, which has a relatively high risk of workplace accidents. This study aims to analyze the effectiveness of implementing an OSH management system in medium-scale manufacturing industries using a literature review approach. The study results show that the effectiveness of OSH system implementation heavily depends on management commitment, labor awareness, and the availability of adequate resources. Factors such as training, provision of personal protective equipment (PPE), and internal and external supervision are critical to the success of OSH system implementation. However, medium-scale companies still face many challenges, particularly related to budget constraints, lack of training, and weak regulatory enforcement. Therefore, strategies for improving the OSH system must be implemented comprehensively. Therefore, the strategy for improving the K3 system must be carried out comprehensively and sustainably to create a safe, efficient, and productive work environment.</i></p> <p><i>This is an open access article under the CC BY-NC-SA 4.0 license</i></p> <div style="text-align: center;">  </div>

INTRODUCTION

Occupational Safety and Health (OSH) is a fundamental aspect in the industrial world, especially in efforts to create a safe, efficient, and productive work environment (Arafat et al., 2018). In the manufacturing sector, which has a high risk of work

accidents, the implementation of OSH management systems becomes a strategic necessity that cannot be overlooked. This system is designed to identify potential hazards, prevent accidents, and ensure the health of workers is maintained during the production process (Korneilis & Gunawan, 2018).

The optimal implementation of the Occupational Safety and Health (OSH) management system contributes to reducing the potential for accidents in the workplace, improving labor efficiency and productivity, and ensuring compliance with government regulations.. Nevertheless, the implementation of the occupational health and safety management system in Small and Medium Enterprises (SMEs) often faces various obstacles that are characteristic and different compared to large-scale companies (Alditia AlfaReza & Susilawati Susilawati, 2024).

Competition in the industrial world, which is currently intense, requires every company to optimize the use of all available resources to produce high-quality products (Dariansa, 2024). The quality of the produced products highly depends on the contribution of human resources (HR) within the company (Armadani & Ali, 2025). Various production factors such as capital, equipment, and raw materials will only yield value if managed effectively by HR. In performing their roles, workers are not free from potential risks related to safety and health aspects while in the work environment (Asmini et al., 2022).

The medium-scale manufacturing industry plays an important role in supporting national economic growth. However, many in this sector face challenges in implementing a comprehensive occupational health and safety management system (K3) (Marlina & Rizal, 2017). Factors such as limited human resources, lack of training, and minimal awareness of the importance of K3 still pose major obstacles in its implementation (Dona Silviani et al., 2022). Therefore, it is important to evaluate the extent to which the K3 management system has been effectively implemented and how it impacts the improvement of workplace safety and employee productivity in that work environment (Nawawi et al., 2022).

This research aims to analyze the effectiveness of the implementation of the occupational health and safety management system in medium-scale manufacturing industries. The results of this research are expected to serve as a reference for industry players and relevant parties in formulating policies and strategies for improving the occupational health and safety system in a more optimal and sustainable manner.

LITERATURE REVIEW

The Occupational Health and Safety Management System (SMK3) is an integral part of maintaining the safety of the workforce and ensuring the continuity of the production process in the industrial sector, including in medium-scale manufacturing industries. According to Ginting (2021), SMK3 is designed as a systematic approach that involves policies, procedures, and practices aimed at identifying and controlling work risks to create a safe and healthy working environment. In practice, the implementation of SMK3 highly depends on the commitment of top management and active participation from all workers.

The effectiveness of the implementation of SMK3 is influenced by various factors such as compliance with regulations, safety training, risk assessment, and work culture. As explained by Sutrisno and Wahyuni (2020), effective OSH implementation can reduce workplace accident rates and increase company productivity. In the medium-

scale manufacturing sector, regular supervision and adjustments to technological developments become crucial in ensuring that the OSH system remains relevant and can be optimally implemented.

However, the main challenge in the implementation of SMK3 in medium-scale industries is the limitation of human and financial resources. According to research by Putra and Lestari (2022), many medium companies only implement SMK3 as an administrative formality without accompanied understanding and thorough implementation. Therefore, continuous effectiveness evaluation is needed to ensure that the implementation of SMK3 is not only symbolic but also has a real impact on improving safety and health at the workplace in the manufacturing industry.

RESEARCH METHOD

The research method used in this study is descriptive qualitative with a literature study approach by reviewing and examining data obtained from literature sources (Nawawi et al., 2022). This research encompasses a series of systematic steps in collecting, evaluating, and synthesizing various relevant academic sources related to occupational safety and health (OSH) in Small and Medium Enterprises (SMEs). Data is obtained from various secondary sources, particularly scientific journal articles available in academic databases such as Google Scholar, ScienceDirect, and Sinta. The search process is conducted using keywords related to OSH management systems and their application in the context of SMEs. The selected articles are then filtered based on topic relevance, recency, and the quality of their scientific publication.

RESULTS AND DISCUSSION

Occupational Safety and Health (OSH) is a preventive and systematic approach to protect workers from potential hazards in the workplace. This concept emphasizes the importance of creating a safe and healthy work environment to prevent workplace accidents and occupational diseases. In the context of the manufacturing industry, the implementation of OSH becomes an integral part of company operations because this sector has characteristics of technology-intensive and labor-intensive production activities, which have a high potential for accident risks.

a. Basic Concepts of Occupational Safety and Health (OSH)

According to the Government Regulation of the Republic of Indonesia Number 50 of 2012 concerning the Implementation of Occupational Health and Safety Management Systems, OHS is not only the responsibility of workers but also the obligation of employers to ensure the safety of every individual involved in work activities (Widyawati, 2021). Therefore, the OHS management system is designed to be integrated into all production processes, from planning, implementation, to supervision. The application of the OHS concept also includes the identification of hazards, risk assessment, and risk control that can affect the health and safety of workers (Aulia Nabila et al., 2024).

This approach not only impacts worker protection but also improves efficiency, productivity, and the company's reputation. Therefore, companies that effectively implement OHS principles will be better able to compete in a competitive and sustainable industrial environment (Robi Rojaya Simbolon et al., 2024). The concept of occupational safety and health (OHS) plays a central role in the implementation of

every work procedure in industrial environments as well as other institutions. OHS is an approach that includes systematic thinking and efforts to maintain the integrity and physical and mental balance of the workforce.

The main objective of implementing this concept is to create safe and comfortable working conditions, thereby maintaining physical resilience, improving work capacity, and maintaining optimal health levels (Hasibuan, A., 2020). If the principles of Occupational Health and Safety (OHS) are applied consistently, this will have a positive impact on improving the productivity and performance of workers. The risk of workplace accidents that could harm both individuals and institutions can be minimized as much as possible through the implementation of an effective OHS system (Fitri, 2016).

The urgency of implementing occupational health and safety (K3) in the workplace has also been a focus in various studies and previous research. The results of these studies indicate that the implementation of K3 is one of the important indicators in creating a sustainable work environment (Nawawi et al., 2022). Therefore, vocational education as an institution that prepares prospective professional workers needs to integrate K3 values and practices into the learning curriculum according to each field of expertise. This aims to ensure that the graduates produced are not only technically competent but also have an awareness of the importance of workplace safety, thus being more prepared to face the demands of the real world of work.

Supporting and Inhibiting Factors in the Implementation of SMK3

The implementation of the Occupational Health and Safety Management System (SMK3) is a systematic effort to ensure the safety of the workforce and create a safe, efficient, and productive work environment. However, in practice, the implementation of SMK3 does not always run optimally due to various supporting and inhibiting factors present in the organizational environment. The main supporting factors for the implementation of SMK3 are:

1. Commitment from company management. When leaders show concern and support for occupational safety and health policies, all elements of the organization will be encouraged to implement the system consistently.
2. Awareness and active participation from workers also become an important strength in forming a positive safety culture.
3. Adequate training, provision of personal protective equipment (PPE), and effective communication between workers and management further strengthen the implementation of SMK3.
3. The availability of resources, both human, financial, and infrastructure, is also a significant factor that supports the sustainable implementation of this system (Awuy et al., 2017).

Barriers that often hinder the implementation of OSH management systems, especially in small and medium-sized enterprises.

1. Low awareness of the importance of occupational safety and health (OSH), both from management and workers. This may be due to minimal training, lack of education, or the perception that OSH is just an administrative burden.
2. Limited budgets and resources often serve as reasons for suboptimal implementation of OSH programs, such as the unavailability of adequate personal protective equipment (PPE) or limited internal supervisory teams.

3. Lack of oversight from external parties, such as government agencies, as well as weak enforcement of regulations and sanctions against OSH violations (Awuy et al., 2017).

b. Effectiveness of the Implementation of Occupational Health and Safety Management Systems in Medium-Sized Manufacturing Industries

The implementation of the Occupational Health and Safety (OHS) management system in medium-sized manufacturing industries is crucial in efforts to create a safe, healthy, and productive working environment. Medium-sized manufacturing industries generally face various challenges, such as limited human resources, restricted budgets, and a lack of awareness among workers and management regarding the importance of applying safety standards. Therefore, the effectiveness of the OHS management system must be comprehensively analyzed, from the aspects of planning, implementation, to evaluation.

Based on the results of research and literature studies conducted, the implementation of OHS management systems in medium-sized industries shows significant variation between companies. Companies with strong commitment from top management tend to be able to develop systematic and sustainable OHS policies and procedures. This commitment is reflected in the preparation of OHS documentation, regular training for workers, and the provision of personal protective equipment (PPE) that meets standards. In addition, active involvement of workers in hazard identification and risk control activities also contributes to the creation of a work culture that is more concerned about safety, according to the research by Marlina & Rizal, (2017).

There are still companies that only implement the occupational health and safety (K3) system as a formality, without truly integrating K3 values into daily production activities. This is reflected in the low level of work accident reporting, minimal internal inspections on a regular basis, and the absence of a comprehensive evaluation of the effectiveness of preventive measures that have been taken. The lack of worker involvement in the decision-making process related to K3 is also one of the obstacles that hinder the success of this system. In fact, active worker involvement is one of the main principles in the K3 management system as regulated in Government Regulation Number 50 of 2012.

The effectiveness of the implementation of occupational health and safety (OHS) is also influenced by aspects of training and the development of worker competencies. Companies that regularly conduct training on safe work procedures, the use of personal protective equipment (PPE), and emergency handling have been proven to reduce the rate of workplace accidents and improve worker compliance with operational standards. Conversely, companies that do not provide adequate training tend to face higher accident rates and work errors that negatively impact productivity. In addition to training, the effectiveness of the OHS system implementation is also influenced by the monitoring and evaluation system carried out by management.

The existence of periodic internal audits, transparent incident reporting, and a well-functioning feedback system can encourage improvements in the quality of the occupational health and safety (OHS) system. This evaluation also serves as a basis for companies to make continuous improvements to established policies and procedures. In general, the effectiveness of the OHS management system implementation in medium-sized manufacturing industries largely depends on three main factors: management

commitment, worker involvement, and a consistently operating evaluation system. When these three aspects can be synergistically implemented, the OHS system not only becomes a tool for regulatory compliance but also an integral part of a work culture that supports safety, efficiency, and work productivity.

Table 1. Strategic Steps to Improve the Effectiveness of Occupational Health and Safety Implementation

Strategic Step	Explanation	Objective
1. Increasing OHS Literacy	Conduct regular training and awareness campaigns on the importance of OHS for both management and employees.	To enhance awareness and understanding of work-related risks among all company elements.
2. Integrating OHS into Organizational Culture	Make OHS a core value of the company, not just an administrative obligation.	To foster collective concern for workplace safety.
3. Utilizing OHS Monitoring Technology	Use CCTV, temperature sensors, gas detectors, digital reporting systems, and wearable devices to monitor working conditions in real-time.	To facilitate monitoring and accelerate responses to potential hazards.
4. Involvement of Educational Institutions	Establish partnerships with vocational schools or universities for training and supplying skilled workers in the OHS field.	To prepare competent and OHS-aware human resources before they enter the workforce.
5. Synergy with Government and Related Bodies	Collaborate with the Ministry of Manpower, BPJS Ketenagakerjaan, and certification bodies to strengthen policies and competency certification.	To support sustainability and compliance with national OHS regulations.
6. Periodic Monitoring and Evaluation	Conduct internal and external audits and follow up on the results with concrete improvement programs.	To ensure consistent and effective OHS implementation.
7. Incentives for Compliant Workers	Provide rewards or bonuses to workers who actively and consistently follow OHS procedures.	To boost motivation and employee engagement in maintaining workplace safety.

Therefore, strategic steps are needed to encourage the improvement of the effectiveness of OSH implementation, such as enhancing OSH literacy among management and workers, utilizing technology in the monitoring system, and fostering synergy between companies, the government, and educational institutions to create a knowledgeable and skilled workforce in the field of occupational safety and health.

CONCLUSION

The implementation of the Occupational Health and Safety (OHS) management system in medium-scale manufacturing industries has proven to play an important role

in creating a safe working environment and improving labor productivity. The success of OHS system implementation is highly determined by the commitment of company leadership, employee awareness, and adequate resource support. Nevertheless, there are still various obstacles such as budget limitations, lack of training, and weak supervision that hinder the effectiveness of the OHS system. Therefore, a comprehensive and sustainable strategy is needed, including the involvement of all parties, capacity building of human resources, and strengthening regulations, to ensure the sustainability of OHS implementation in medium-scale manufacturing industries.

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