

# Barriers to Implementing Occupational Safety and Health in the Industrial Sector: A Scoping Review

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Abstract- Background: The implementation of OSH in the industrial sector is very important in preventing work accidents and occupational health, but in reality there are still various obstacles in its implementation. The aim of this research is to determine the barriers to implementing Occupational Safety and Health in the Industrial Sector. Method: This scoping review collected several studies based on the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines, starting from the identification, screening, eligibility, and retrieval of studies included in this scoping review. The search strategy for sample articles uses several keywords by inserting the words "and" and "or" to guarantee that all related research can be retrieved. The keywords used in this database are "barriers", "work safety", "work health", and "industrial sector". Researchers used four database search sources: Science Direct, PubMed, Scopus, and Wiley. Results: There are still various obstacles and constraints in the process of implementing occupational safety and health (OSH) in the industrial sector, caused by a lack of worker awareness of occupational safety and health, a shortage of expert resources, insufficient management leadership in implementing OSH policies, and weak regulations in implementing OSH. Conclusion: Barriers to implementing OSH need to be minimized by strengthening the commitment of companies and workers. Companies must be consistent in implementing OSH regulations, supported by management and company leaders who are able to provide examples to workers regarding the implementation of OSH. Apart from that, there is a need to increase worker awareness regarding occupational safety and health.

Keywords— Barriers, work safety, work health, industrial sector.

# I. INTRODUCTION

Resource development power is very important for increasing the economy of a country. Because with advances in the development of science and technology, high-tech industries have been created that require high-quality personnel. Human resources play a very important role in the production process[1]. Of all production factors such as human power, raw materials, auxiliary materials, money, machines, methods and so on, humans are the most important factor, not only because humans can influence the quantity of products produced, but because humans also determine the quality of the product.

Reducing the source of the development of labor problems is one of the steps to minimize the number of work accidents. It should be noted that the more complex the production technology, the higher the possibility of accidents occurring and the greater the possibility of loss of quality human resources [2]. According to the International Labor Organization (ILO), 153 people are injured at work every 15 seconds and one person dies as a result of a workplace accident or occupational disease. ILO data shows that every year around 380,000 workers or 13.7% of 2.78 million workers die due to work accidents or occupational diseases. And more than 374 million people are injured, injured or fall ill every year due to accidents involving workers.

In Russia, 20.5 thousand people were injured at work in 2020. More than 27 million people were employed in hazardous working conditions. If a work accident occurs, employees' working hours will be disrupted, which can reduce company productivity. Potential dangers in the work environment cause losses for companies and workers [3]. Based on BPJS Employment data, in 2020 the total number of work accidents was 221.740 cases. In 2021, the total work accidents increased to 234.370 cases. Meanwhile, in 2022, the total number of work accidents will increase significantly, namely 298.137 cases.

There are two general reasons for accidents, namely unsafe actions (human factors) and unsafe conditions (environmental factors) [4]. Unsafe actions are dangerous actions carried out by humans, or can be interpreted as any action that humans can take that creates the possibility of danger or accident to themselves or others. Meanwhile, unsafe conditions are working environmental conditions that are dangerous and may cause accidents among workers [5]. According to research that has been conducted, it was found that 80% -85% of accidents are caused by unsafe actions [6].

Preventing work accidents and occupational diseases is a contemporary goal that is an important part of the world economy. Prevention of work-related accidents and diseases can be done by improving working conditions and improving occupational safety and health [7].

The Occupational Safety and Health (OSH) program may have been implemented by the company, but not within the framework of a good system, it is not organized and seems haphazard, so that the results achieved are less effective, causing a high number of work accidents due to accidents and illnesses throughout the company [8]. This is caused by various barriers arising from multiple factors. This study aims to address the limitations of previous research, which only examined the barriers to OSH implementation within a narrow scope and focused on a single factor. By using a multifaceted approach, this research delves deeper into all the factors that hinder OSH implementation in the industrial sector.



Effective action towards occupational safety and health requires a joint commitment between workers and employers. Workers and managers must be prepared to uphold widely recognized occupational safety and health principles. They must also maintain, follow, and continuously evaluate the policies and practices established by the company [9]. This literature was prepared with the aim of finding out the obstacles in implementing occupational safety and health in the industrial sector.

#### II. METHODS

## A. Design:

This scoping review collects several studies based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines, starting from identification, screening, eligibility, and obtaining studies included in this scoping review.

#### B. Search strategy

The search strategy for sample articles is to use several keywords related to the researcher's questions in the database. Because the terms used are different, researchers use different keywords by inserting the words "and" and "or" to ensure that all related research can be retrieved. The keywords used in this database are barriers, occupational safety, occupational health, and industrial sector. In this research, researchers used 4 database search sources, namely Science Direct, Pubmed, Scopus, and Wiley.

# C. Study criteria

Inclusion criteria: In review scoping this, researcher set a number of criteria inclusion for limit room scope research, including: (1) workers in the sector industry, (2) research using primary data, (3) explains obstacle implementation of K3, and (4) research conducted in 10 years last (2013-2023).

Exclusion criteria: The exclusion criteria set by researchers in this scoping review were (1) not an original article, (2) only an abstract, (3) not accessible, and (4) the content of the article does not match the scope. from this research.

#### D. Study selection

The preparation of the article complies with PRISMA guidelines, selecting studies using the Mendeley application through a duplication screening stage. Then, studies are selected whose titles and abstracts match the scope to be researched. The articles obtained are full text articles and are relevant to the scope of discussion.

# E. Data extraction

The steps for data extraction carried out in this study are as follows: (1) Identify Relevant Studies: Find and select studies that meet the inclusion and exclusion criteria. (2) Create Extraction Table: Prepare a data extraction table with relevant columns. (3) Extract Information: Extract information from each relevant study and fill in the data extraction table. (4) Analyze Data: Analyze the extracted data to identify patterns, themes, and key findings. (5) Summarize Findings: Draw conclusions based on the analysis of the extracted data.

#### III. RESULT

The article selection process consists of four steps (Figure 1). The first step was to identify articles from 4 databases (Science Direct, Pubmed, Scopus, and Wiley) using the keywords prevention, occupational diseases, work accidents, and industrial sector. The search results obtained 16,580 articles related to keywords (Science Direct= 6,851, Pubmed= 832, Scopus= 184, and Wiley= 8,713). To avoid duplication, double-screened articles were removed resulting in 7,804 articles.

The second step to obtain 64 articles, researchers filtered articles that were not published in the last 10 years (2013-2023) (n= 3,786) and whose titles and abstracts did not match the scope of the research (n= 3,954). The third step, researchers filtered articles based on original articles (n= 31), suitability of the content of the articles with the scope of the research, namely barriers to implementing occupational safety and health in the industrial sector and completeness of the articles (n= 16). The final step was to carry out a feasibility test against the inclusion criteria and the final result was 11 articles that were assessed as appropriate to the scope of the research.



Fig. 1. PRISMA flow chart

After completing the article selection, the researcher summarizes relevant and detailed information according to the characteristics of the literature study, distribution of articles according to study design, according to study location, and other study characteristics. Researchers created a table that corresponds to the characteristics of a scoping review study regarding obstacles or challenges in implementing occupational safety and health.

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No.	Author/	Objectif	Methods	Participants/ Sample Size	Result
1	Country Chetty et al, 2023 Afrika	This research discusses the lack of implementation of K3 in small and medium companies in the construction sector.	Cross-sectional study	399 companies out of 500 small and medium companies were contacted via email	K3 training for workers is insufficient, which can result in low levels of safety and worker awareness in the construction sector. Apart from that, workers also experience ergonomic problems and work stress, this is inversely proportional to the company's goal of zero accidents, so it is necessary for companies to carry out K3 training in order to fulfill the company's goal of creating a good K3 culture.
2	Vitrano et al, 2023 Italy	The aim of this research is to determine the effectiveness of interventions given to companies that are experiencing difficulties managing OSH in the workplace.	Experimental study	3 INAIL specialists, 5 researchers from two Italian universities, and 2-5 representatives from three local health units (ASL)	Occupational Safety and Health (K3) faces various challenges such as limited human resources, economics, technology that creates new types of risks, and the OSH culture is not yet widespread.
3	Hauke et al, 2022 Germany	This research aims to identify future challenges and opportunities in the field of occupational safety and health.	Cohort study	865 prevention experts of the GSAII and the DGUV	The results obtained in certain sectors and as a whole show that K3 risks do not arise from the work itself, but are strongly influenced by political, social, economic, environmental or technical factors which can only be influenced by accident insurance. A lack of skilled staff is identified as a threat to OSH in almost all sectors. Therefore, employee and leadership awareness is needed regarding the implementation of OSH and strengthening the OSH culture in the workplace.
4	E. Siabi et al, 2021 Ghana	This study assesses occupational safety and health knowledge and practices in the small- scale gold mining sector	Cross-sectional study	Involving six companies with a total population of 2,758 workers and 252 workers were taken as research samples	The majority of respondents did not use PPE and did not report work accidents that occurred. Additionally, working conditions generally do not meet OSH standards. Therefore, it is necessary to have a written policy regarding the implementation of employee occupational safety and health. A mining company's safety policy document should outline the structures, procedures, and processes that create a safe work environment. The policy document should also explain employee responsibilities and include training courses, briefing meetings, thorough introductions of methods for new employees, as well as a commitment from stakeholders to strive for an OSH culture in the work environment.
5	Rodrigues et al, 2020 Portugal	This research aims to analyze OSH management practices in the field of micro and small businesses in the industrial sector in Portugal.	Cross-sectional study	66 companies in Portugal	The results showed that micro and small-sized waste management firms display several constraints with regard to OHS management. Several enterprises still don't have organized preventive services. Additionally, OSH policies or objectives, risk assessment, training and accidents recording mechanisms were found to be non-existent in several cases.
6	Kajiki et al, 2019 Japang	This research aims to determine the conditions for implementing OSH and develop and validate a global occupational health and safety management system (OHSMS) model for Japanese companies.	Experimental Study	12 production sites in Japan and 31 overseas sites	Common weaknesses in the implementation of health programs in several Japanese companies occur due to a lack of assessment of hazardous factors in the workplace and a lack of fitness for work before implementation. In addition, the implementation of risk assessment and risk reduction is not sufficiently implemented in the workplace.
7	Nuñez and Prieto, 2018 Spain	This paper analyzes how firms' human capital influences their investments in occupational health and safety (OHS).	Cross sectional study	1.472 companies from the manufacturing and construction industry	Some failures in K3 investments are caused by a lack of adequate and skilled human resources in carrying out their duties. Apart from that, the government is also less involved in ensuring the safety and health of workers
8	Micheli et al, 2018 Italy	The aim of this research is to understand what mechanisms make K3 interventions successful or not work as expected, along with the barriers and drivers, as well as related contextual factors.	Case study research	43 SMEs in the industrial sector in Lombardy, Italy	Barriers to implementing OSH include lack of worker awareness of the importance of OSH, lack of communication and management involvement in implementing OSH, and limited economic and expert resources.



No.	Author/ Country	Objectif	Methods	Participants/ Sample Size	Result
9	Sorensen et al, 2017 India	The aim of this research is to describe the process of adapting an intervention that integrates work safety and health (OHS) and health promotion for manufacturing workplaces in India and its challenges faced in implementing it.	Case-Control Study	22 manufacturing worksites in the Greater Mumbai region	Challenges in implementing K3 occur due to the low level of leadership support and commitment to K3, which is evidenced by the lack of management participation in K3 interventions, reluctance to discuss K3 issues and little acceptance of recommendations resulting from industrial health expert reports.
10	Hayash et al, 2016 Jepang	This research explains the causes of the high number of work accidents in Japan.	Cross sectional study	In total 34.580 reports of occupational same-level falls between 2012 and 2016 were used	Although the number of work accidents in Japan has decreased since the Occupational Safety and Health Law was implemented in 1972, the number has increased since 2010, partly due to the growth of tertiary industry (including trade, catering, health and hygiene). The cause of the increase in work accidents due to falls in the workplace is because elderly workers do not follow public health efforts and fall injury prevention training.
11	Chan et al, 2014 China	This article focuses on the serious occupational health and safety (OHS) injuries affecting the workers of one of China's most important industries automotive assembly	Cross sectional study	The sizes of the sampled assembly plants range from a workforce of 3.000 to 6.000	OSH problems in the workplace include the absence of advocacy voices demanding K3 as a worker's right. In the international trade union movement, K3 ranks low after wages, job security and working hours. Apart from that, there is a lack of government and management awareness regarding the implementation of K3 in the workplace as well as a lack of worker participation in voicing their rights to protect employee safety and health.

# A. Occupational Safety and Health (K3)

Occupational safety is the protection of employees from injuries caused by work-related accidents. Safety risks are aspects of the work environment that can cause fire, fear of electric currents, cuts, bruises, sprains, broken bones, loss of bodily equipment, vision and hearing [10]. Occupational safety refers to the protection of a person's physical well-being against work-related injuries [11].

Occupational health is a condition that is free from physical, mental, emotional or pain disorders caused by the work environment. Health risks are a fact in the work environment of working beyond the specified time period, an environment that can cause emotional stress or physical disorders [12]. Occupational health is an effort to implement rules to protect the condition of workers from events or conditions that can harm workers' health, whether healthy, physical or social, so that they are able to work more optimally and productively.

Occupational Safety and Health (OSH) is the science and application of it in efforts to prevent work accidents and occupational diseases. Occupational safety and health are efforts made to create protection and security from the risk of accidents and physical, mental and emotional dangers to work, companies, communities and the environment. Occupational Safety and Health is a program system created for workers and employers as an effort to prevent work accidents and illnesses resulting from work relations in the work environment by identifying things that have the potential to cause work accidents and illnesses resulting from work relations as well as anticipatory steps if this occurs it happened at work [13].

There are at least 5 indicators that can have an impact on OSH, such as working environmental conditions, air management, lighting management, use of work equipment, and the physical and mental condition of employees. In general, the aim of companies implementing OSH is to increase company productivity and profits which can then be enjoyed by workers in the form of increased salaries, welfare and benefits [14].

Implementing good OSH management in a company will be able to reduce and eliminate work accidents and increase performance effectiveness [15]. Apart from that, the existence of OSH has a significant effect on increasing employee productivity and performance [16]. OSH is a very important element in the running of a company [17]. Constitution number 13 of 2003, concerning manpower, regulates OSH to protect workers. In this case, it is applied to achieve physical endurance, work power, and occupational health, so that OSH doesn't only focus on physical factors but also includes psychological factors for workers [18]. Therefore, companies are obliged to guarantee the welfare of workers by providing decent work and the right to receive protection for occupational safety and health so that in carrying out work, working conditions are created that are conducive, comfortable, healthy and safe and can develop skills and abilities so that they are able to live a decent life. in accordance with human dignity [19].

#### B. Implementation of K3 in the Industrial Sector

The high use of technology in the industrial sector will increase the risk of danger to workers due to work accidents and work-related diseases [20]. The occupational safety and health program is an official government program to protect the interests of workers, companies and the surrounding community from dangers and negative access due to accidents and work processes. Occupational safety and health programs are closely related to work performance, because by implementing occupational safety and health programs, workers will feel safe and comfortable at work so that they can



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improve their performance. OSH standards must be realized by using work equipment that can be adapted to work needs. This is based on SOPs or standard operating procedures that apply generally as regulated in statutory regulations, one of which is Law No. 1 of 1970 concerning Work Safety.

Companies in various countries have implemented OSH according to the needs of each worker. As in China, they have fairly good labor laws and OSH laws, and have established fairly high safety standards and organizational structures for OSH monitoring [21]. Indonesia and Thailand, especially companies from Japan, are examples of developing countries that have implemented the OSH system well in accordance with statutory regulations [22].

In Indonesia, the implementation of OSH is usually called the Occupational Safety and Health Management System (SMK3). SMK3 must be implemented by companies that employ more than 100 workers. In accordance with Government Regulation Number 50 of 2012. The implementation of OSH is very important for companies, especially in the industrial or factory sectors which have a high risk of accidents.

Implementing OSH requires commitment from the company. This commitment must be realized through concrete actions so that it can be known, studied, internalized and implemented by all employees. All company employees must know that the responsibility for implementing the OSH Management System is not only the responsibility of the OSH department, but is the responsibility of all personnel in the company from top management to the lowest employees.

Apart from that, other countries such as Spain, Germany, India, Pakistan and Japan have also implemented OSH as a preventive measure to protect their workers from work accidents and occupational diseases. Some examples of OSH that have been implemented are laws related to OSH, providing training, monitoring worker health, using Personal Protective Equipment (PPE), safety talks, and etc [23].

# C. Barriers to K3 Implementation

Even though the provisions regarding occupational safety and health have been regulated in such a way, in practice they have not met expectations and obstacles are still encountered [24]. Many field factors influence occupational safety and health, such as human, environmental and psychological factors [25].

# Low leadership support and commitment to OSH

Barriers to implementing OSH in several industries from various countries are caused by a lack of leadership support [26] and commitment to OSH [21]. Thailand and Indonesia are examples of developing countries that still experience OSH problems in the form of a lack of management leadership in implementing OSH policies [22]. Similar things are also experienced by several industries in Ukraine and India, especially small and medium industries [26]. Where the high number of work accidents and work-related diseases occurs due to a lack of management responsibility in creating a safe and comfortable work environment [27]. This can be seen from the lack of management participation in OSH interventions, reluctance to discuss OSH problems with study teams or workers, and the low acceptance of recommendations resulting from industrial health expert reports [26]. Work culture in many industries still often prioritizes production results compared to work safety. The pressure to meet production targets and deadlines often means that OSH aspects are neglected. Management may feel that taking safety measures will only hinder the production process and reduce efficiency.

# Working conditions do not meet OSH standards

Implementation of regulations that are not accompanied by strict and continuous supervision and sanctions for the implementation of the OSH program will not be able to run as expected. In fact, there are still many companies that have not provided good and correct OSH services to their employees, in other words, companies have not created working conditions that meet OSHA standards [28]. Even though OSH is very important for the future of the company [29].

Research conducted in the textile industry in Turkey explains that workers experience musculoskeletal disorders and often feel pain in the back area which makes them uncomfortable while working. This occurs due to the incompatibility of work tools with workers and the absence of regulations regarding ergonomics in the company [30].

Companies often take adjustments to work and work tools as trivial. For example, research conducted on several industrial companies in Indonesia and Thailand found that companies did not fully evaluate the health of workers who were exposed to dangerous factors. Apart from that, the company also does not carry out initial assessments for workers to adjust jobs that are suitable for employees (fit for work) before work placement [22]. This can then increase the risk of accidents and work-related illnesses.

In addition, previous research states that work accidents in Ukraine often occur in newly established small businesses. The accident was caused by a lack of labor protection implemented by the company and the absence of permits for workers in certain sections that require a permit certificate[27].

Working conditions that do not meet OSH standards are still found in developed countries such as Portugal. Some companies still do not have an organized work accident prevention service. In addition, there is an absence of an OSH policy or objective, and mechanisms for risk assessment, training, and accident recording were observed to be lacking in multiple instances [31]

# Limited resources

One of the biggest obstacles to effective OSH implementation is a lack of resources. The First is a lack of financial resources. Many industrial companies, especially small and medium sized ones, often face significant financial constraints. Available funds are usually allocated more for the company's core operations, such as production, marketing and distribution, while allocations for OSH are considered non-urgent additional expenditure. This obstacle is experienced by several industrial companies in Italy, Africa and Germany [24], [32], [33].

As a result, there has been a reduction in OSH training programs for workers. This training is important to increase



awareness and knowledge of good safety practices. Companies may not be able to purchase or maintain necessary safety equipment, such as personal protective equipment (PPE), alarm systems, and fire extinguishers if there are limited funds.

The second is a lack of technological resources. Without adequate technology, the risk of work accidents increases. For example, the use of dangerous manual equipment and less efficient work processes can cause accidents. Older or less effective safety technology can slow down work processes and reduce productivity, ultimately impacting a company's bottom line. Italy is one of the countries with several industrial sector companies that experience a lack of technological resources [34].

The third is the lack of human resources. The shortage of experts in the field of OSH, such as OSH managers or safety inspectors, is a significant challenge in all sectors. In addition, many workers may not have sufficient knowledge or skills regarding OSH. The lack of OSH experts makes supervision and enforcement of K3 regulations weak. This means many safety procedures may be ignored or not implemented properly. Without competent human resources, OSH training and education programs cannot be implemented effectively. This reduces workers' awareness and readiness to face risks in the workplace. Several companies in developed countries such as Japan, Germany, Italy and Spain still experience obstacles to implementing OSH in the form of a lack of experts in the OSH field [23], [24], [32], [34], [35].

# Low awareness of the importance of OSH

Occupational Safety and Health (OSH) is an important aspect in industrial sector operations, which aims to protect workers from the risk of accidents and occupational diseases. However, awareness of the importance of OSH is often still low in various industrial companies.

One of the main factors causing low OSH awareness is the lack of adequate education and training for workers and company management [33]. Many workers do not receive sufficient OSH training from the moment they join the company. This often happens because the company does not have a structured training program or because there is a lack of funds to provide regular training [28].

In certain industries, there exists a belief that workplace accidents are unavoidable and a component of work-related risks. This culture reinforces an indifferent attitude towards the importance of OSH and makes implementation of safety measures difficult. In addition, existing regulations related to OSH are often not strictly enforced [31]. In many countries such as Japan, although there are laws governing OSH, implementation in practice is often weak [35]. The lack of regular inspections and strict sanctions for violators means that many companies do not feel the need to comply with existing OSH standards.

### Insufficient PPE

Personal Protective Equipment (PPE) is an important component in Occupational Safety and Health (OSH) in the industrial sector. PPE functions as the last line of defense for workers against various work risks such as physical injury, exposure to chemicals, noise, and other risks. However, the implementation of OSH is often hampered by inadequate PPE, both in terms of availability, quality and appropriate use [36].

One of the main problems is the limited availability of PPE. In many industries, especially in developing countries or small and medium-sized companies, the supply of PPE is often not sufficient to meet needs [27]. This can be caused by a limited budget or a lack of priority on work safety. Without sufficient PPE, workers are forced to work without adequate protection, increasing the risk of work-related injuries and illnesses.

Apart from availability, the quality of PPE is also often a problem. Low-quality PPE may not provide enough protection or fail quickly. Providing cheap, low-quality PPE is often done to reduce costs. Inappropriate PPE can cause discomfort, discourage workers from using it, or even increase the risk of accidents because it does not provide proper protection. On the other hand, using uncomfortable PPE will reduce worker productivity.

Lack of training and awareness regarding the correct use of PPE is also a significant barrier [37]. Workers may not know how to use PPE correctly or are unaware of the importance of using PPE in every work situation.

Research conducted in industrial sector companies in Ghana, Ukraine and Spain found that the majority of workers did not use PPE for various reasons, such as inadequate PPE for workers and feeling uncomfortable wearing PPE [27], [28], [31].

# IV. DISCUSSION

The implementation of occupational safety and health in the industrial sector has a significant social impact. In actual working conditions, there are still many workers and managers in the industrial sector who do not understand the importance of OSH. Lack of training and education related to OSH is one of the main factors. This lack of awareness can cause a high number of work accidents resulting in injury and even death. This has a direct impact on the welfare of the families of affected workers and reduces overall work productivity.

Small and medium-sized companies tend not to have sufficient financial, technological and PPE provision to implement high OSH standards. Minimalist or inadequate implementation of OSH can increase the risk of work accidents and occupational diseases. This will cause a huge social and economic burden, both for affected individuals and for the country's health and social security systems [38].

On the other hand, inconsistent or poorly enforced OSH regulations and an unsupportive OSH culture often become real obstacles to implementing OSH in the workplace. Non-compliance with OSH regulations and a work culture that does not support OSH can create an unsafe work environment, causing prolonged stress and fatigue at work. If this continues to happen, it will have impacts such as losing a sense of security in the workplace, reducing employee morale, the mental and physical health of workers, and having a negative impact on the stability and sustainability of the company.

The company's unpreparedness in implementing good OSH standards has an impact on the welfare of workers, workers' families and the company. The lower the quality of OSH implementation, the higher the number of work-related



accidents and illnesses that occur. This of course will result in losses for workers, workers' families, and the sustainability of the company. Therefore, it is important to ensure the implementation of OSH according to standards. Some steps that can be taken are providing OSH training to all company members, increasing awareness and commitment of workers and company management through OSH programs, allocating sufficient funds for the implementation of OSH programs, and providing personal protective equipment (PPE) and equipment. adequate safety and health support for workers.

#### V. CONCLUSION

Occupational Safety and Health (OSH) has been implemented by countries in the world, both developing and developed countries. Implementing OSH requires commitment from the company. This commitment must be implemented with concrete actions so that it can be known, studied, internalized and implemented by all employees. However, there are still various obstacles and constraints in the implementation process. The low level of worker safety and health is caused by a lack of worker awareness of occupational safety and health, lack of expert resources, lack of management leadership in implementing OSH policies, and weak regulations in implementing OSH. This of course needs to be minimized by strengthening the commitment of companies and workers. Companies must be consistent in implementing OSH regulations, supported by management and company leaders who are able to provide examples to workers regarding the implementation of OSH. Apart from that, there is a need to increase worker awareness regarding occupational safety and health.

#### REFERENCES

- L. D. M. Duc, N. H. Tien, and N. Minh Ngoc, "Solutions for Development of High Quality Human Resource in Binh Duong Industrial Province of Vietnam," *Int. J. Bus. Glob.*, vol. 1, no. 1, p. 1, 2022, doi: 10.1504/ijbg.2025.10056380.
- [2] M. R. Lazuardi, T. Sukwika, and K. Kholil, "Analisis Manajemen Risiko Keselamatan dan Kesehatan Kerja Menggunakan Metode HIRADC pada Departemen Assembly Listrik," *J. Appl. Manag. Res.*, vol. 2, no. 1, pp. 11–20, 2022, doi: 10.36441/jamr.v2i1.811.
- [3] M. Kovtun and E. Galkina, "Reduction of occupational accidents at industrial enterprises," *E3S Web Conf.*, vol. 389, p. 09019, 2023, doi: 10.1051/e3sconf/202338909019.
- [4] L. Botti, R. Melloni, and M. Oliva, "Learn from the past and act for the future: A holistic and participative approach for improving occupational health and safety in industry," *Saf. Sci.*, vol. 145, p. 105475, 2022, doi: https://doi.org/10.1016/j.ssci.2021.105475.
- [5] D. L. Putri, S. Sumihardi, A. Irfan, and I. M. Djaja, "Relationship between Unsafe Action and Condition with Work Accident among Production Unit Workers at the Jaya Sentrikon Indonesia Commpany, Padang, West Sumatra," *Int. Conf. Public Heal. Proceeding*, no. 2016, pp. 49–49, 2019, doi: 10.26911/the6thicph.01.26.
- [6] G. Hurtado, R. Rojas, D. Mauricio, and J. Santisteban, "Expert System for the Prevention of Occupational Risks in Construction - Residential Buildings," *TEM J.*, vol. 11, no. 4, pp. 1748–1757, 2022, doi: 10.18421/TEM114-41.
- [7] P. Markova, M. Homokyova, F. Praj, and M. Cambal, "Prevention of Accidents At Work and Occupational Diseases By Implementation of Ergonomics," *MM Sci. J.*, vol. 2022-March, pp. 5526–5532, 2022, doi: 10.17973/MMSJ.2022\_03\_2022002.
- [8] S. Liu, E. N. K. Nkrumah, L. S. Akoto, E. Gyabeng, and E. Nkrumah, "The State of Occupational Health and Safety Management Frameworks (OHSMF) and Occupational Injuries and Accidents in the Ghanaian Oil and Gas Industry: Assessing the Mediating Role of Safety Knowledge,"

Biomed Res. Int., vol. 2020, 2020, doi: 10.1155/2020/6354895.

- [9] P. Hasle, C. Uhrenholdt Madsen, and D. Hansen, "Integrating operations management and occupational health and safety: A necessary part of safety science!," *Saf. Sci.*, vol. 139, 2021, doi: 10.1016/j.ssci.2021.105247.
- [10] R. D. Parashakti and Putriawati, "Pengaruh Keselamatan Dan Kesehatan Kerja (K3), Lingkungan Kerja Dan Beban Kerja Terhadap Kinerja Karyawan," J. Ilmu Manaj. Terap., vol. 1, no. 3, pp. 290–304, 2020, doi: 10.31933/jimt.v1i3.113.
- [11] R. I. Putera and S. Harini, "Pengaruh Keselamatan Dan Kesehatan Kerja (K3) Terhadap Jumlah Penyakit Kerja Dan Jumlah Kecelakaan Kerja Karyawan Pada Pt. Hanei Indonesia," J. Visionida, vol. 3, no. 1, p. 42, 2017, doi: 10.30997/jvs.v3i1.951.
- [12] N. Juniarti, H. Halin, and R. Roswaty, "Pengaruh Keselamatan Dan Kesehatan Kerja Terhadap Kinerja Karyawan Pt Putera Sriwijaya Mandiri Palembang," *J. Ilm. Ekon. Glob. Masa Kini*, vol. 8, no. 2, pp. 111–116, 2018, doi: 10.36982/jiegmk.v8i2.310.
- [13] B. I. Siswanto, "Pengaruh Pelaksanaan Keselamatan Dan Kesehatan Kerja Terhadap Produktivitas Kerja Karyawan Pada Pt. Pembangunan Perumahan Tbk Cabang Kalimantan Di Balikpapan," J. Adm. Bisnis Fisipol Unmul, vol. 8, no. 3, p. 250, 2020, doi: 10.54144/jadbis.v8i3.3760.
- [14] F. P. Wibowo and G. Widiyanto, "Pengaruh Keselamatan Dan Kesehatan Kerja Dan Lingkungan Kerja Terhadap Kinerja Karyawan Bagian Produksi Pada Perusahaan Tom's Silver Yogyakarta," *Primanomics J. Ekon. Bisnis*, vol. 17, no. 2, p. 23, 2019, doi: 10.31253/pe.v17i2.170.
- [15] N. C. Fertilia, "Pengaruh Penerapan Keselamatan dan Kesehatan Kerja (K3) Terhadap Efektivitas Pencegahan Kecelakan Kerja," *Rekayasa Sipil*, vol. 9, no. 1, p. 25, 2020, doi: 10.22441/jrs.2020.v09.i1.05.
- [16] N. Wahyuni, B. Suyadi, and W. Hartanto, "Pengaruh Keselamatan Dan Kesehatan Kerja (K3) Terhadap Produktivitas Kerja Karyawan Pada Pt. Kutai Timber Indonesia," J. Pendidik. Ekon. J. Ilm. Ilmu Pendidikan, Ilmu Ekon. dan Ilmu Sos., vol. 12, no. 1, p. 99, 2018, doi: 10.19184/jpe.v12i1.7593.
- [17] M. YILMAZ and S. YILDIZ, "The Importance of Occupational Health and Safety (OHS) and OHS Budgeting in terms of Social Sustainability in Construction Sector," *J. Build. Mater. Sci.*, vol. 2, no. 1, 2021, doi: 10.30564/jbms.v2i1.2591.
- [18] S. Yunus and D. V. D. Doda, "Safety climate and work stress in university administration staff," *BKM Public Heal. Community Med.*, vol. 39, no. 2, pp. 1–7, 2023, doi: 10.22146/bkm.v39i02.6361.
- [19] R. D. Djatmiko, Keselamatan dan Kesehatan Kerja, 1st ed. Yogyakarta: Deepublish, 2016.
- [20] L. A. Derdowski and G. E. Mathisen, "Psychosocial factors and safety in high-risk industries: A systematic literature review," *Saf. Sci.*, vol. 157, no. August 2022, p. 105948, 2023, doi: 10.1016/j.ssci.2022.105948.
- [21] A. Chan, Y. P. Chen, Y. Xie, Z. Wei, and C. Walker, "Disposable Bodies and Labor Rights: Workers in China's Automotive Industry," *WorkingUSA*, vol. 17, no. 4, pp. 509–529, Dec. 2014, doi: https://doi.org/10.1111/wusa.12136.
- [22] S. Kajiki *et al.*, "Developing a global occupational health and safety management system model for Japanese companies," *J. Occup. Health*, vol. 62, no. 1, p. e12081, Jan. 2020, doi: https://doi.org/10.1002/1348-9585.12081.
- [23] I. Nuñez and M. Prieto, "The effect of human capital on occupational health and safety investment: An empirical analysis of Spanish firms," *Hum. Resour. Manag. J.*, vol. 29, no. 2, pp. 131–146, Apr. 2019, doi: https://doi.org/10.1111/1748-8583.12208.
- [24] A. Hauke, E. Flaspöler, R. Klüser, I. Neitzner, and D. Reinert, "Trend Analysis by Risk Observation: How the German Statutory Accident Insurance Prepares for the Future in Occupational Safety and Health," *Saf. Health Work*, vol. 13, no. 4, pp. 429–439, 2022, doi: https://doi.org/10.1016/j.shaw.2022.09.003.
- [25] S. Samanta and J. Gochhayat, "Critique on occupational safety and health in construction sector: An Indian perspective," *Mater. Today Proc.*, vol. 80, pp. 3016–3021, 2023, doi: https://doi.org/10.1016/j.matpr.2021.05.707.
- [26] G. Sorensen, E. M. Nagler, P. Pawar, P. C. Gupta, M. S. Pednekar, and G. R. Wagner, "Lost in translation: The challenge of adapting integrated approaches for worker health and safety for low-and middle-income countries," *PLoS One*, vol. 12, no. 8, pp. 1–25, 2017, doi: 10.1371/journal.pone.0182607.

- [27] R. Pahomov, O. Zyma, and E. Dyachenko, "Analysis and prevention of industrial injury in the construction sector," *Int. J. Eng. Technol.*, vol. 7, no. 3, pp. 285–290, 2018, doi: 10.14419/ijet.v7i3.2.14421.
- [28] E. K. Siabi *et al.*, "Assessing the knowledge and practices of occupational safety and health in the artisanal and small-scale gold mining sector of Ghana: A case of obuasi," *Heliyon*, vol. 8, no. 11, p. e11464, 2022, doi: https://doi.org/10.1016/j.heliyon.2022.e11464.
- [29] A. D. Putra, E. Syamsuir, and F. I. Wahyuni, "Analisis Penerapan Kesehatan Dan Keselamatan Kerja (K3) Di Perusahaan Jasa Konstruksi Kota Payakumbuh," *Rang Tek. J.*, vol. 4, no. 1, pp. 76–82, 2021, doi: 10.31869/rtj.v4i1.2034.
- [30] G. Aksüt, H. M. Alakaş, T. Eren, and H. Karaçam, "Model proposal for physically ergonomic risky personnel scheduling problem: An application in textile industry for female employees," *J. Fac. Eng. Archit. Gazi Univ.*, vol. 38, no. 1, pp. 245–256, 2023, doi: 10.17341/gazimmfd.882419.
- [31] M. A. Rodrigues *et al.*, "Occupational Health & Safety (OHS) management practices in micro- and small-sized enterprises: The case of the Portuguese waste management sector," *Saf. Sci.*, vol. 129, p. 104794, 2020, doi: https://doi.org/10.1016/j.ssci.2020.104794.
- [32] G. J. L. Micheli, E. Cagno, and A. Calabrese, "The transition from occupational safety and health (OSH) interventions to OSH outcomes: An empirical analysis of mechanisms and contextual factors within small and medium-sized enterprises," *Int. J. Environ. Res. Public Health*, vol. 15, no. 8, pp. 1–22, 2018, doi: 10.3390/ijerph15081621.

- [33] D. Ramkalawon Veerapen Chetty, R. Boojhawon, S. Bhagwant, and L. Levy, "Factors affecting the occupational safety and health of small and medium enterprises in the Construction Sector of Mauritius," *Soc. Sci. Humanit. Open*, vol. 10, no. August 2023, 2024, doi: 10.1016/j.ssaho.2024.100964.
- [34] G. Vitrano and G. J. L. Micheli, "Effectiveness of Occupational Safety and Health interventions: a long way to go," *Front. Public Heal.*, vol. 12, no. 3, 2024, doi: 10.3389/fpubh.2024.1292692.
- [35] C. Hayashi *et al.*, "Risk factors for fracture by same-level falls among workers across sectors: a cross-sectional study of national open database of the occupational injuries in Japan," *Public Health*, vol. 217, pp. 196– 204, 2023, doi: 10.1016/j.puhe.2023.02.003.
- [36] B. Das, "Assessment of ergonomic exposure, work-related occupational injuries, and prevention: Child work in the brickfield industry in India.," *Toxicol. Ind. Health*, vol. 37, no. 8, pp. 481–495, Aug. 2021, doi: 10.1177/07482337211025366.
- [37] S. Shakoor *et al.*, "Barriers to implementation of optimal laboratory biosafety practices in Pakistan," *Heal. Secur.*, vol. 14, no. 4, pp. 214– 219, 2016, doi: 10.1089/hs.2016.0031.
- [38] G. Vitrano *et al.*, "Sustainable occupational safety and health interventions: A study on the factors for an effective design," *Saf. Sci.*, vol. 166, p. 106249, 2023, doi: https://doi.org/10.1016/j.ssci.2023.106249.