

**PROCEEDINGS OF THE INTERNATIONAL WORKSHOP ON ADVANCES IN
SURFACE MINING FOR ENVIRONMENTAL PROTECTION AND SUSTAINABLE
DEVELOPMENT 17 OCTOBER 2025, HA NOI, VIET NAM**



**THE 60th ANNIVERSARY
OF SURFACE MINING EDUCATION**

ADVANCES IN SURFACE MINING FOR ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT-2025 (ASMES - 2025)



TRANSPORT PUBLISHING HOUSE, HA NOI, VIET NAM

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ASMES - 2025

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Occupational safety and health in Vietnam: Situation, Challenges, and Solutions in the new context

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ABSTRACT

For both Vietnam and the international community at large, Occupational Safety and Health (OSH) serves as a cornerstone of socio-economic development. Its significance lies in its dual role: safeguarding the health and lives of workers while simultaneously acting as a driver of sustainable development at both the corporate and national levels. Acknowledging the persistent challenges confronting OSH management and practices in Vietnam, this paper analyzes existing shortcomings and limitations to elucidate their root causes. Employing a methodology of qualitative and quantitative analysis of reliable secondary data sources—including the National Profile on OSH, official reports from the Ministry of Labour, Invalids and Social Affairs (MOLISA), and relevant legal documents—the study proposes a set of strategic solutions to enhance the efficacy of OSH practices in the coming period. The research indicates that fundamental factors, such as a weak safety culture, ineffective risk management systems, a lack of genuine commitment from employers, and prevailing profit pressures, have created inherent barriers to OSH advancement in Vietnam. Consequently, despite improvements in the policy framework, the incidence of occupational accidents and diseases has not seen sustainable improvement, particularly in high-risk sectors. This situation is further exacerbated by the limited awareness and compliance among relevant stakeholders. Based on these findings, the authors recommend a suite of strategic measures, ranging from strengthening the institutional framework and fostering a culture of prevention to enhancing risk governance and leveraging science and technology. These recommendations are collectively oriented towards the ultimate goal of ensuring a safe and sustainable working environment for the workforce.

Keywords:

Occupational safety and health, Vietnam, Solutions, Occupational accidents

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1. Introduction

In the course of industrialization, modernization, and deep international integration, occupational safety and health (OSH) in Vietnam has emerged as an indispensable component of sustainable development. In practice, establishing a safe working environment is not only a humanitarian imperative to safeguard workers' health and lives, but also a prerequisite for optimizing productivity and quality, thereby strengthening the competitiveness of both enterprises and the nation as a whole. Recognizing this strategic significance, the Party and the State have proactively developed and refined a comprehensive legal framework on OSH aligned with international standards.

Despite these achievements, Vietnam continues to face a complex landscape of OSH challenges. Traditional risks persist in high-risk sectors such as construction and mining, in labor-intensive industries, and among small and medium-sized enterprises. At the same time, the Fourth Industrial Revolution is reshaping the entire risk environment. Emerging issues—including mental health in digital workplaces, safety in human-robot interactions, and the protection of personal data—are becoming urgent priorities that demand rapid adaptation of both legal systems and corporate governance. This reality compels us to view OSH through a broader lens: not merely as a responsibility to protect workers, but as a pivotal factor in enhancing productivity, demonstrating social commitment, and ensuring the sustainable and harmonious development of the nation in the digital era.

The current situation reveals a profound contradiction between policy objectives and actual outcomes in occupational safety and health (OSH) implementation. This gap can be interpreted through a multidimensional lens, ranging from subjective factors—such as the limited awareness of both employers and employees, as well as weaknesses in safety culture—to objective constraints, including insufficient financial and technical resources and inadequate regulatory oversight.

The deficiencies in implementation stem from a systemic interplay of factors: insufficient awareness among both employers and workers, limited investment and specialized human resources, weak enforcement and monitoring mechanisms, and entrenched cultural barriers to safety. Particularly, the widespread perception of OSH as a financial burden rather than a strategic investment in sustainability remains prevalent within the business community.

Building on this diagnosis, the present study sets out two primary objectives. First, it seeks to provide a comprehensive analysis of shortcomings in OSH practices in Vietnam, addressing policy design, institutional enforcement, and stakeholder perceptions, while identifying root causes. Second, based on this analysis, the study proposes a coherent and feasible set of solutions aimed at systemic improvement—from institutional refinement and enhanced governance capacity to the promotion of a safety culture and the integration of technological innovations. These solutions are ultimately directed toward protecting workers' health and fostering a safe working environment that aligns with the developmental needs of the country in the new era.

This research adopts both qualitative and quantitative approaches, drawing on authoritative secondary sources such as Vietnam's National OSH Profile, sectoral reports, legal documents, and scholarly publications. The findings highlight a paradox: despite an increasingly consolidated legal framework, occupational accidents and work-related illnesses remain a persistent challenge. This paradox can be attributed to enduring weaknesses in compliance awareness, resource limitations, and, most critically, inadequacies in safety culture, risk

management, and leadership commitment within enterprises. Accordingly, the study advances a set of integrated recommendations focused on strengthening institutions, cultivating a safety culture, enhancing risk governance, and promoting technological adoption, with the overarching goal of building a safe and sustainable working environment.

2. Research Methodology

To ensure comprehensiveness and scientific rigor, this study employs secondary data analysis in combination with a review of academic literature. The research database was constructed on a multidimensional foundation, encompassing: (1) the legal and policy framework institutionalized in Party documents and state regulations; (2) empirical data from authoritative sources such as the National OSH Profile and summary reports of regulatory bodies, including the annual reports of the Ministry of Labour, Invalids and Social Affairs (MOLISA); and (3) published scientific studies from both domestic and international sources. The integration of these materials enables the study to provide objective assessments and in-depth explanations of the current state of OSH in Vietnam.

The study adopts a mixed-methods analytical approach to process the data. Quantitative techniques (descriptive statistics and trend analysis) were employed to systematize the data, while qualitative tools (fishbone diagrams and problem trees) were applied to identify causal relationships and root causes. This integrated approach enables the study not only to provide an objective depiction of the current situation but also to offer a nuanced explanation of underlying factors, thereby ensuring that the proposed recommendations are both scientifically grounded and of high practical relevance.

3. Research Content and Findings

3.1. The Current State of Occupational Safety and Health (OSH) in Vietnam

The context of the Fourth Industrial Revolution and the process of international integration are generating urgent transformations in occupational safety and health (OSH) in Vietnam, thereby reshaping both the challenges and opportunities for the nation's sustainable development.

3.1.1. The Legal and Policy Framework for OSH in Vietnam

Occupational safety and health (OSH) constitutes an essential component of Vietnam's legal system, serving to protect workers' health and lives while ensuring safe working conditions. Acknowledging its critical importance, Vietnam has established a relatively comprehensive legal framework, with the OSH Law (2015) and the Labor Code as its cornerstones. This framework has been continuously refined to align with international standards, particularly the Conventions of the International Labour Organization (ILO) to which Vietnam is a signatory, such as Conventions No. 155 and No. 187 (Dang & Nguyen, 2025). In parallel, a series of National OSH Programs have been implemented, reflecting the consistent commitment of the Party and the State to preventing occupational accidents and diseases, and recognizing OSH as a pivotal factor for sustainable development (Nguyen & Le, 2025). Overall, the current legal framework encompasses the fundamental dimensions of the field, ranging from the rights and obligations of stakeholders to preventive mechanisms and accountability regimes.

However, the enforcement of OSH legislation in practice continues to face significant shortcomings and obstacles. Despite increasing attention to legal dissemination and education, compliance awareness among a considerable proportion of both employers and employees remains limited. From a managerial perspective, resources allocated to inspection and supervision are inadequate and fall short of practical demands, while the effectiveness of sanctioning measures is at times insufficient to serve as a deterrent. Particularly, the implementation of legal provisions in small and medium-sized enterprises, traditional craft villages, and the informal economy encounters substantial difficulties due to financial, technological, and cognitive constraints. Moreover, coordination among relevant authorities during enforcement processes is occasionally fragmented and inconsistent, thereby undermining overall effectiveness.

In summary, two major limitations can be identified within the current body of OSH legislation. First, the system lacks coherence and consistency. The dispersion of provisions across multiple legal documents has created obstacles for systematic consolidation, legal reference, and uniform enforcement. Second, the feasibility of certain regulations remains a significant challenge, particularly for entities with limited resources such as micro-enterprises and the informal economy. This situation calls for the development of more tailored guidance mechanisms and supportive policies that are better aligned with practical realities.

3.1.2. Enterprise-Level Implementation of OSH Practices

Acknowledging recent positive developments, awareness of occupational safety and health (OSH) among both employers and employees has improved considerably. On the employers' side, there has been a notable shift in perception, with OSH increasingly regarded as an investment in sustainable development rather than merely a compliance cost (Duong, 2025). This change is reflected in the proactive adoption of international management standards such as ISO 45001 and the integration of OSH into corporate production strategies (Nguyen et al., 2025). Significantly, the application of Industry 4.0 technologies—such as IoT, AI, and VR/AR—for environmental monitoring and safety training has begun to take shape, particularly in high-risk sectors (Ha & Vo, 2025; Nguyen, 2025; Vo, 2025; Nguyen & Nguyen, 2025; Nguyen, 2025).

In terms of training, methods have been diversified through innovative approaches such as scenario-based simulations, group discussions, and storytelling (Vu, 2025). The scale of training has also expanded; for instance, reports from the OSH Department indicated that nearly 600,000 workers received training in the second quarter of 2022 alone, underscoring the broad implementation of such initiatives (Nguyen, 2025).

Nevertheless, it should be recognized that the quality and effectiveness of OSH training remain uneven across enterprises and industries. In many organizations—particularly small-scale businesses or those that do not prioritize OSH—training activities are still largely perfunctory. In these cases, training is often conducted merely to comply with legal requirements, while the content and methodology fail to adequately reflect actual risks and workplace conditions, thereby limiting its practical relevance and preventive impact.

3.1.3. The Situation of Occupational Accidents and Diseases

Despite ongoing efforts, the situation of occupational accidents (OAs) and occupational diseases (ODs) in Vietnam remains complex, with a worrying trend of increasing severe cases in certain high-risk sectors (Truong & Vu, 2025). The issue is particularly alarming in the informal economy, which is widely regarded as the “weak spot” of OSH. This sector, consisting primarily

of household-based business establishments, reflects a dangerous vicious cycle: employers often pay little attention to safety measures, while workers lack adequate knowledge of risks and preventive practices. As a result, workers operate in substandard conditions with low safety standards, are frequently exposed to hazardous factors, and receive minimal preventive protection, rendering them especially vulnerable (Truong & Vu, 2025).

Based on an analysis of occupational accident (OA) data for the period 2020–2024 published by the Ministry of Labour, Invalids and Social Affairs (MOLISA), the study identifies divergent trends between two labor sectors. Specifically, the sector with formal labor relations exhibits a complex situation. The number of OA cases fluctuated over the years, peaking in 2024 with 7,902 incidents. Similarly, the number of fatalities, after a slight decline between 2020 and 2023, rebounded in 2024, while the number of serious injuries remained alarmingly high at approximately 1,500 cases annually.

In contrast, the sector without formal labor relations recorded a clear improvement, with both the number of cases and victims declining steadily throughout the study period (Figures 1 and 2). These findings, on the one hand, reflect the initial effectiveness of intervention measures in the informal sector, while on the other hand highlight the urgent need to strengthen management and supervision in enterprises with formal labor relations to curb the rising trend of OAs.

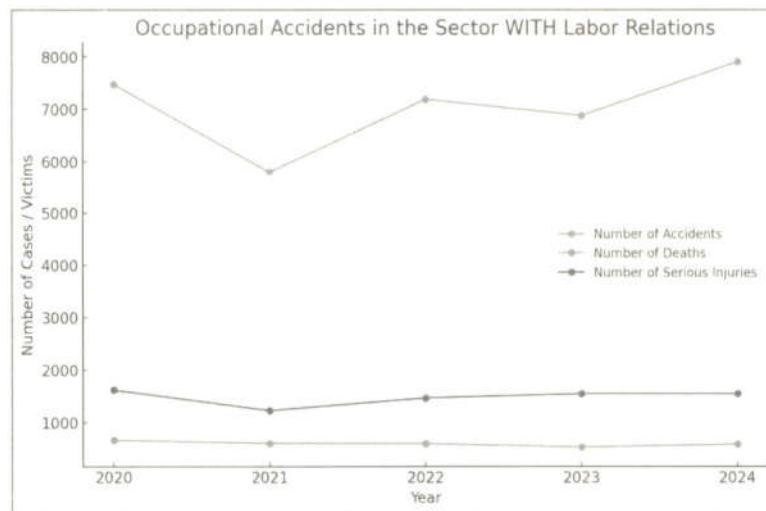


Figure 1. Occupational Accident Trends in the Formal Sector (2020–2024)

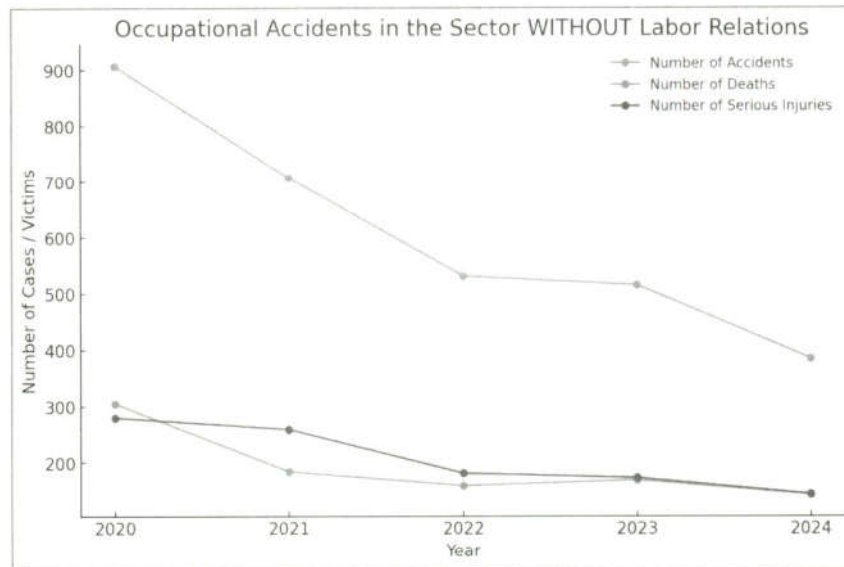


Figure 2. Occupational Accident Trends in the Informal Sector (2020–2024)

When analyzing the data by enterprise type, a marked disparity can be observed in the share of fatal occupational accidents (OAs) across different sectors. Joint-stock companies and limited liability companies consistently accounted for the dominant proportion—always exceeding 25%—although a slight decline was recorded in 2024. In contrast, state-owned enterprises and public administrative units exhibited considerable volatility: the fatality rate peaked at 27.75% in 2023 but then dropped sharply to only 5.75% in 2024. Meanwhile, private enterprises and household businesses maintained a relatively low and stable proportion, fluctuating between 5% and 7% throughout the study period (Figure 3).

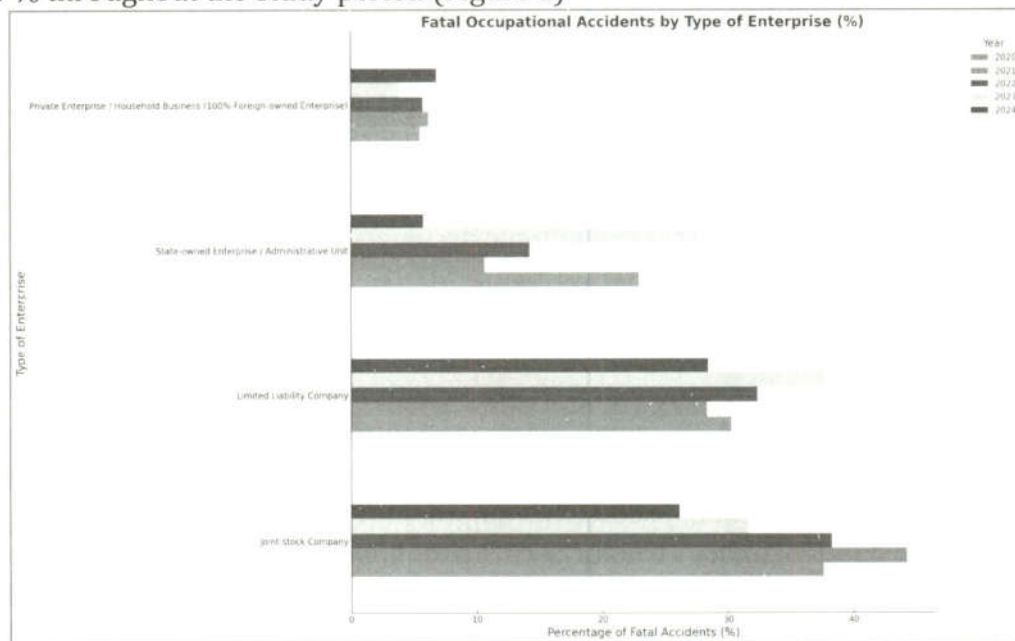


Figure 3. Fatal Occupational Accidents by Type of Enterprise, 2020–2024

By industry structure, the data analysis identified several sectors as “hotspots” for fatal occupational accidents (OAs):

Mining: This sector consistently maintains a high and stable share of fatalities (approximately 12–17%), reflecting the inherent risks of its working environment.

Construction: This field continues to pose the highest risk, although the fatality rate has declined from its peak of 18.27% in 2023 to 13.25% in 2024.

Building Materials Manufacturing: Notably, this sector has emerged as an area of growing concern, with the fatality rate remaining stable at around 10%, indicating its potential to become a new “hotspot” (Figure 4).

This situation underscores the urgent need to prioritize enhanced risk control and monitoring measures in these three key sectors in order to reduce fatal occupational accidents in the coming period

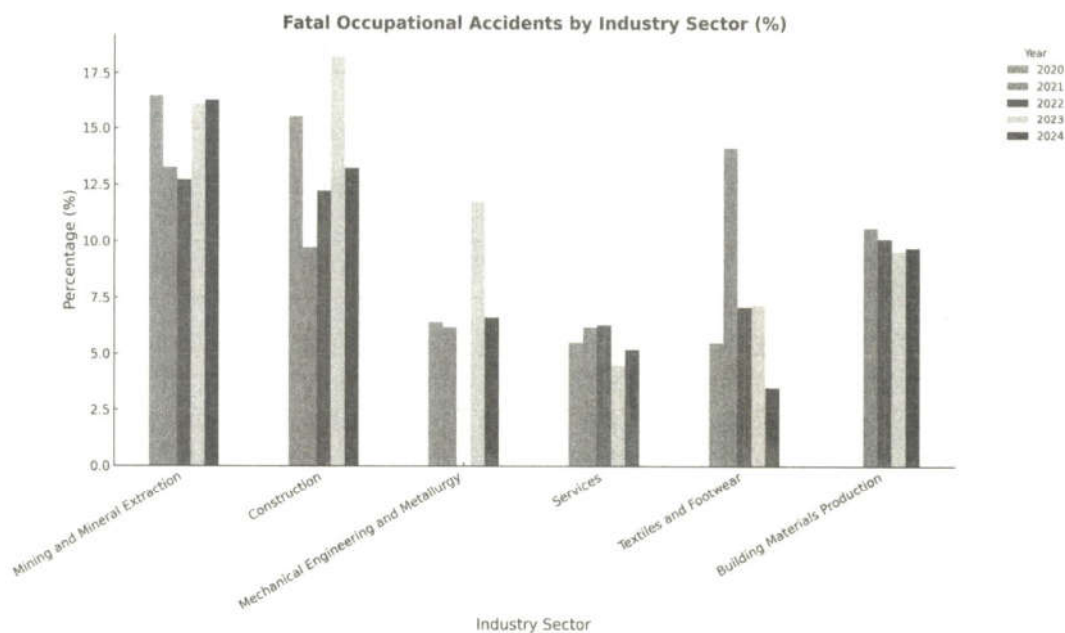


Figure 4. Fatal Occupational Accidents by Industry, 2020–2024

An analysis of the causes of fatal occupational accidents (OAs) identified several major risk categories accounting for the largest shares (Figure 5):

Traffic-related accidents: This category is the most prominent, with a share ranging from 22% to 36%. The upward trend highlights the urgent need for targeted control measures, including driver behavior management and stricter monitoring of transportation schedules.

Falls from height: Although showing a downward trend, falls from height remain a leading cause of fatalities (8–26%), underscoring the critical importance of strict compliance with safety procedures and the use of personal protective equipment (PPE).

Other causes: Electrocution, structural collapse, falling objects, and machinery-related accidents fluctuate annually but together account for a considerable share. This finding emphasizes the necessity of regularly implementing safety programs on electrical hazards, structural safety, and machine guarding, as well as lockout-tagout (LOTO) procedures for equipment.

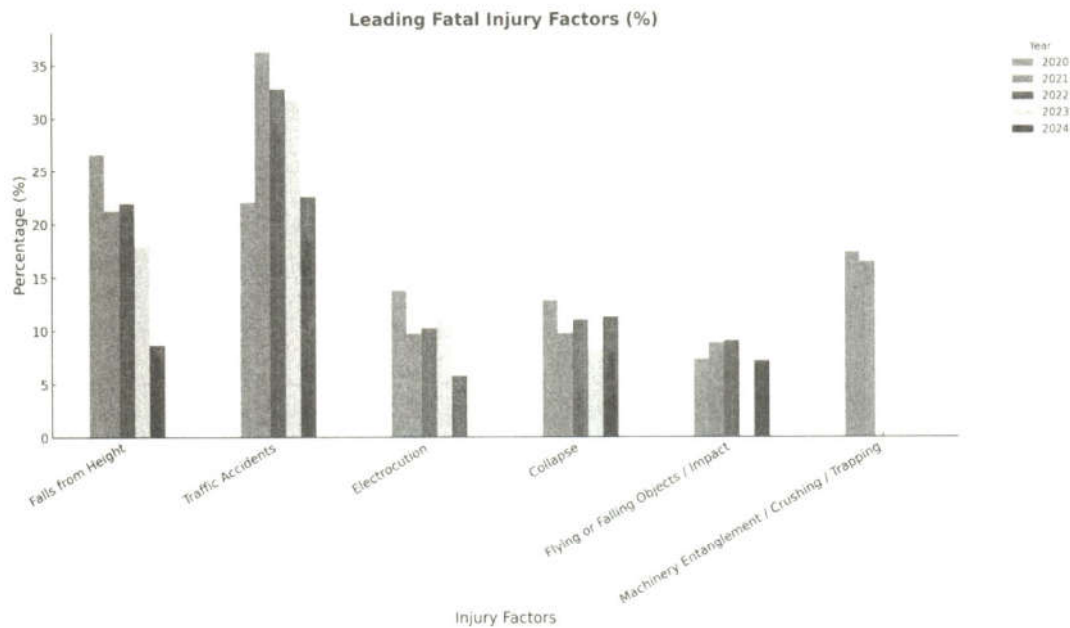


Figure 5. Major Injury Factors Leading to Fatal Occupational Accidents, 2020–2024

The above findings underscore the necessity of developing prevention strategies with a focused and prioritized approach. Specifically, measures should be directed primarily toward reducing traffic-related accidents and falls from height, while simultaneously maintaining and strengthening technical and managerial controls for the remaining risk categories.

A deeper analysis of causal structures indicates that responsibilities can be broadly attributed to three main groups (Figure 6):

Employers: Key shortcomings include inadequate organization of safety training (3.9–26.6%), unsafe working conditions (13–25%), and insufficient provision of personal protective equipment (PPE) (7–12%).

Employees: Unsafe behaviors remain prevalent, particularly violations of safety procedures (9.7–23.8%) and failure to use PPE (2.65–10.98%).

Other causes: Notably, this group—which encompasses objective factors or causes not clearly identified—consistently accounts for a very high share (30–49%).

These figures reveal weaknesses in fulfilling safety responsibilities on both sides, while also exposing a substantial gap in accident investigation practices. Consequently, there is an urgent need to strengthen training, improve working conditions, and enforce safety discipline, alongside enhancing accident investigation capacity to clarify and effectively address the “other causes” category.

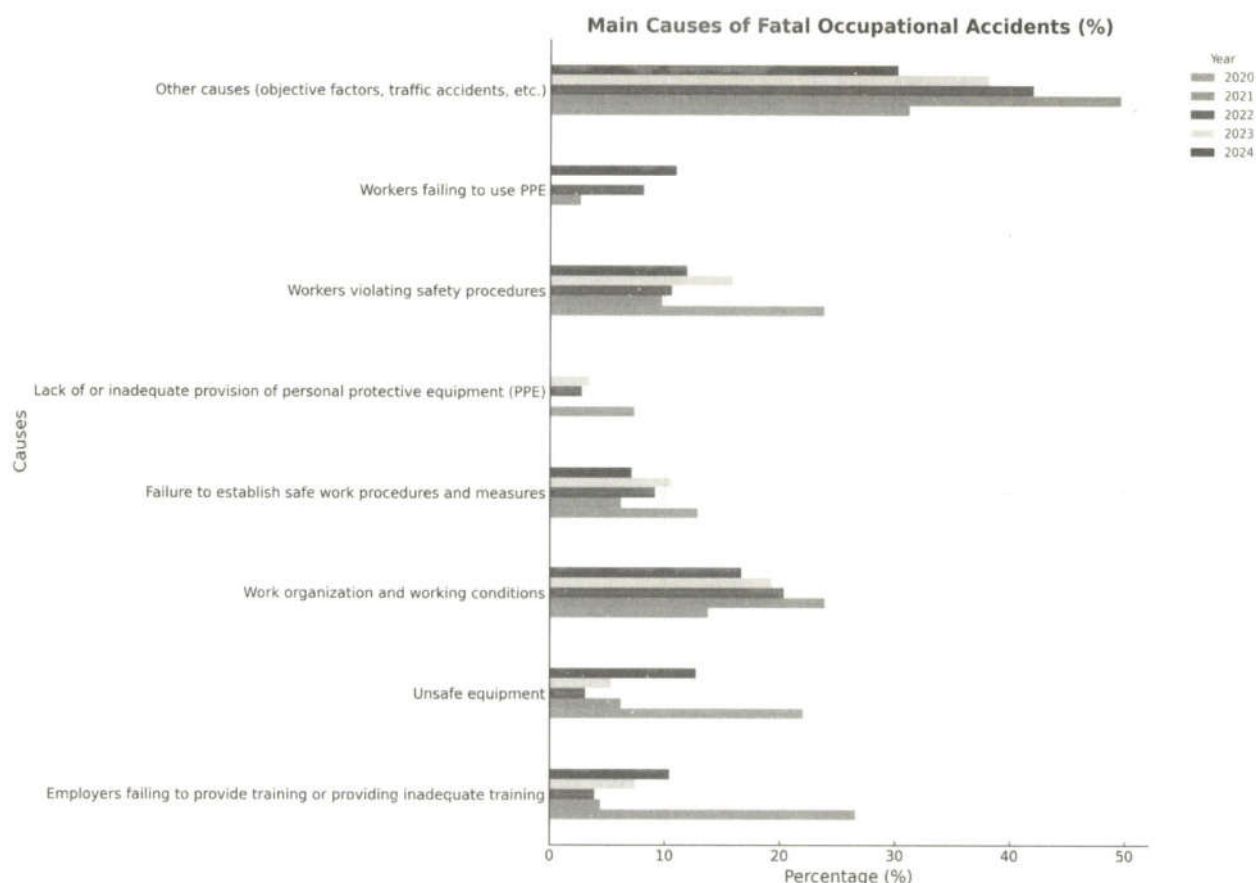


Figure 6. Primary Causes of Fatal Occupational Accidents in Vietnam, 2020–2024

In summary, the situation of occupational accidents (OAs) in Vietnam presents a multidimensional picture: on the one hand, initial progress has been recorded in prevention efforts; on the other hand, the overall landscape remains highly complex. High-risk sectors with inherent hazards—such as construction, mining, and electrical work—continue to be focal points of severe accidents. Causal analysis indicates that the core issues revolve around two principal factors: deficiencies in employers’ fulfillment of safety responsibilities and the insufficient compliance of a segment of workers with established safety procedures.

To achieve substantive progress, a comprehensive approach with the active engagement of all stakeholders is required. This entails strengthening the legal framework, enhancing enforcement effectiveness, intensifying awareness-raising and communication campaigns, and fostering a sustainable workplace safety culture.

3.1.4. Emerging Issues in Occupational Safety and Health (OSH) in Vietnam

The rapid advancement of digital technologies, automation, and artificial intelligence—the cornerstones of the Fourth Industrial Revolution (Industry 4.0)—is profoundly reshaping labor structures and employment patterns, while simultaneously generating new challenges for occupational safety and health (OSH). Emerging forms of work in the Industry 4.0 context have introduced non-traditional risks. These include mental health issues (such as stress and tension associated with remote work), safety concerns in digital environments (cybersecurity and data protection), and risks related to human–machine interactions. This situation necessitates timely

adjustments and updates in OSH policies and legislation to effectively respond to the evolving context (Le & Truong, 2025; Vo, 2025; Pham, 2025).

In the context of the Fourth Industrial Revolution, Vietnam's labor market is undergoing three major structural shifts:

First, the restructuring of production models and work organization. The advancement of automation, robotics, and new work arrangements (such as remote work and the platform economy) is driving a breakthrough in productivity. However, this simultaneously creates an urgent demand for the workforce to rapidly adapt and acquire new digital skills.

Second, the flexibilization of labor relations. The growing prevalence of non-traditional employment forms—including freelance work, short-term contracts, and flexible schedules—poses significant challenges to ensuring fundamental rights related to social protection and occupational safety and health (OSH) for workers.

Third, the intensification of digital connectivity. While offering new opportunities for employment and collaboration, this trend also entails the risk of disrupting the balance between work and personal life. This underscores the necessity of supportive policies aimed at safeguarding mental health and improving the overall quality of life for workers (Le & Truong, 2025).

In the digital economy, workers are increasingly exposed to new, non-traditional occupational health and safety risks. These risks include:

First, remote work and platform-based employment blur the boundaries between work and personal life, leading to social isolation, prolonged stress, and heightened risks of mental exhaustion such as stress and burnout.

Second, the sedentary nature of screen-based work over extended periods contributes to emerging occupational health issues, particularly musculoskeletal disorders and metabolic syndromes.

Third, excessive digital surveillance and insufficient protection of personal data exert a dual impact—both infringing on privacy rights and generating constant psychological pressure.

Finally, the “always-on” work model, which requires employees to be available and responsive around the clock, exacerbates conditions such as insomnia, burnout, and depression.

To address these challenges, comprehensive intervention strategies are essential. These should include setting clear work-life boundaries, improving workplace design through ergonomic principles, strengthening data protection regulations, and implementing mental health support programs (Le & Truong, 2025).

The Fourth Industrial Revolution (Industry 4.0) is profoundly and comprehensively restructuring the labor market. This transformation not only creates breakthrough opportunities for productivity but also generates new and non-traditional occupational safety and health (OSH) risks, including mental health issues (stress and burnout), disorders associated with sedentary work, data security threats, and human-machine interaction risks. Together with the rise of flexible employment models and the platform economy, this context underscores the urgent need to transform the OSH policy framework.

A paradigm shift is required—from traditional management approaches focused primarily on physical hazards to a more proactive, multidimensional, and adaptive framework. Such an approach calls for the integration of technology into monitoring systems, stronger protection of data privacy, prioritization of mental health, and enhanced capacity to anticipate and address emerging risks.

3.2. Limitations of Occupational Safety and Health (OSH) in Vietnam

3.2.1. Limitations in the Legal and Policy Framework

Although a legal framework on occupational safety and health (OSH) has been established, inconsistencies, overlaps, and gaps remain, particularly with respect to regulations governing new forms of work in the Industry 4.0 era. While the OSH Law provides a fundamental legal foundation, the existing regulatory standards have not kept pace with digital and flexible labor arrangements. Moreover, sector-specific provisions—such as permissible limits for noise and dust exposure or the list of hazardous occupations—require systematic review, greater transparency, and regular updates on an accessible database to facilitate compliance and enable enterprises to effectively implement OSH measures (Le & Truong, 2025).

In addition, the domestication and implementation of international conventions face considerable challenges. For instance, although the 2024 Trade Union Law has incorporated several key requirements of ILO Convention No. 155, enforcement remains constrained by gaps in monitoring mechanisms and limited inspection capacity. The misalignment between regulations and actual practice, coupled with resource shortages for enforcement, has rendered many international standards more symbolic than effective in reality (Dang & Nguyen, 2025).

Furthermore, the absence of specific technical regulations and standards for certain high-risk or emerging fields—such as road transport, remote work, the digital economy, and robotic/automated systems—creates substantial difficulties for enterprises in compliance and weakens the effectiveness of state management over newly emerging risks.

3.2.2. Limitations in Enterprise-Level OSH Implementation

Recent statistics indicate that only 35–36.7% of small and medium-sized enterprises (SMEs) fully comply with OSH regulations (An, 2025), while the adoption of technology-based safety management solutions remains very limited—below 5% among SMEs and around 20% in large enterprises (Truong & Vu, 2025). The root cause lies primarily in the prevailing perception that OSH expenditures represent a “sunk cost,” leading to practices that are largely superficial or merely for compliance purposes. In addition, constrained financial capacity, outdated production technologies, and unsafe working conditions further hinder investments in occupational protection. Profit-driven mindsets among some employers, coupled with insufficient attention to risk management, exacerbate the incidence of workplace accidents and negatively affect workers’ health.

Moreover, the development and maintenance of effective OSH management systems remain weak in many enterprises. Risk assessment and hazard control are often conducted in a fragmented or perfunctory manner. A genuine safety culture has yet to be established and sustained, as both employers and employees lack proactivity in preventing occupational accidents and diseases (Tran et al., 2025). The application of Industry 4.0 technologies in OSH is also progressing slowly, characterized by fragmentation, inconsistency, and the absence of a clear strategic orientation (Vo, 2025; Nguyen & Nguyen, 2025).

3.2.3. Limitations on the Workers’ Side

A segment of workers still lack adequate knowledge and skills regarding OSH, often displaying complacency and violating safety procedures. In the informal sector, OSH is largely neglected due to limited awareness and resources on the part of both employers and workers. Most production and business establishments in this sector are small in scale, employ workers without formal contracts, and operate beyond the reach of regulatory oversight, resulting in

minimal application of OSH requirements. Statistics indicate that 16.67% of workers fail to use personal protective equipment (PPE) correctly (Nguyen et al., 2023). Many workers wear masks, gloves, or earplugs only during inspections, often due to discomfort or lack of understanding (Truong & Vu, 2025).

The current state of occupational safety training in many enterprises remains largely formalistic and has yet to meet the practical requirements of accident prevention. According to Nguyen Minh Tuan and Pham Thi Bich Lien (2021), training content often lacks practical applicability, with limited integration of real-life scenarios and insufficient emphasis on hands-on skill development. As a result, workers struggle to apply acquired knowledge to specific tasks, leading to confusion and delayed responses when confronted with hazardous situations, thereby significantly increasing the risk of occupational accidents.

In addition, workers have not fully exercised a proactive role in proposing or participating in initiatives to improve working conditions.

3.2.4. Limitations in the Support and Monitoring System for OSH

The OSH inspection workforce remains limited in size, with inspection activities failing to cover all relevant entities, while sanctions for violations lack sufficient deterrent effect. The practice of “integrating” OSH inspections into broader labor inspections has constrained the effectiveness of specialized oversight, particularly at the local level where resources are especially scarce. As a result, inspection frequency is low and the deterrent impact limited, while reward–penalty mechanisms and evaluation criteria have been slow to adapt. In addition, accident and safety violation reporting and statistical practices remain inadequate, thereby undermining data consolidation and weakening the capacity of regulatory authorities to direct and manage effectively.

At present, although the Department of Work Safety (under MOLISA) operates an OSH statistics portal, the national database system still exhibits significant limitations. The proportion of enterprises submitting reports on occupational accidents and diseases remains very low, at only around 5–7%, concentrated mainly among large-scale industrial enterprises. Most small- and medium-sized enterprises (SMEs) and those in the informal sector virtually fail to comply with this reporting obligation. Data collection does not adequately cover non-contract workers—a highly mobile group facing elevated risks—while the information technology infrastructure of many local authorities and enterprises remains underdeveloped. Consequently, reporting, aggregation, and data-sharing processes are fragmented and lack interoperability (Nguyen & Le, 2025).

The current reporting system records only accidents that have already occurred, without mechanisms for tracking near-miss incidents or analyzing systemic causes, thereby limiting the capacity for risk forecasting and preventive decision-making (Duong & Nguyen, 2019). Furthermore, enterprises often deploy health, safety, and environment (HSE) solutions in an isolated manner, leading to data fragmentation across incompatible platforms, which further hampers integration, analysis, and OSH policymaking at the national level (Vo, 2025).

3.3. Causes of Limitations in Occupational Safety and Health (OSH) in Vietnam

3.3.1. Causes Related to Awareness

Cognitive and attitudinal barriers remain major obstacles to OSH implementation in Vietnam, manifesting across multiple levels.

On the employers' side, the perception of OSH as a financial burden rather than a strategic investment in sustainable development remains widespread, particularly among small and micro-enterprises. As a result, OSH activities in these establishments are often carried out in a superficial, compliance-oriented manner, aimed merely at satisfying minimum legal requirements (An, 2025). This short-sighted mindset, focused on immediate costs, obscures the long-term economic benefits of OSH, leading to the reduction or postponement of investments in safety systems.

On the workers' side, in many high-risk sectors such as mechanical engineering, construction, and mining, awareness levels and compliance with OSH regulations remain limited. A lack of knowledge about rights and responsibilities, combined with complacency, has led to unsafe working practices. This situation is particularly alarming among unskilled workers, who often lack the ability to recognize hazards and respond to incidents, thereby increasing the frequency of accidents (Vu, 2025; Dang & Nguyen, 2025).

At a broader level, societal awareness of the role and importance of OSH has yet to be profoundly enhanced, failing to generate sufficient social pressure to drive change.

Altogether, this set of cognitive barriers—across enterprises, workers, and society—has created a significant obstacle, constraining the effectiveness of efforts to improve working conditions in Vietnam.

3.3.2. Causes Related to Resources

Small and medium-sized enterprises (SMEs) in Vietnam face inherent barriers to investing in occupational safety and health (OSH). Limited financial resources are a direct cause of outdated infrastructure and technology, resulting in working conditions in many establishments that fail to meet safety standards. This situation is reflected in a substantial gap in technology adoption: fewer than 5% of SMEs apply technological solutions in OSH management, compared to about 20% among large enterprises (Dang & Ly, 2025). The high initial investment and ongoing operation and maintenance costs of advanced technologies—such as IoT, AI, HSE software, and modern training methods (VR/AR, e-learning)—pose an excessive financial burden for most SMEs. Consequently, training activities in these enterprises remain largely confined to traditional, low-interaction formats (Nguyen, 2025; Vo, 2025).

Another critical barrier lies in the shortage of high-quality human resources with sufficient digital competence. The digital transformation of OSH management imposes a dual requirement on OSH personnel: in addition to professional expertise, they must also be proficient in information technology, data analysis, and the operation of specialized software.

However, in practice, only about 12% of OSH officers have received formal training in digital tools, while the majority continue to rely primarily on traditional management methods (Institute of Occupational Safety and Health, 2023). This situation has resulted in very limited capacity to utilize and operate digital tools such as IoT sensors or data analytics platforms. The shortage of technological skills is not confined to management levels but is also prevalent among frontline workers, significantly reducing the effectiveness of digital solutions in workplace implementation.

3.3.3. Causes Related to Mechanisms, Policies, and Enforcement

Although the 2015 OSH Law marked an important milestone, the broader legal and policy framework still reveals inconsistencies and fragmentation across three structural levels:

- **Transparency and feasibility:** Many technical provisions lack clear interpretation, creating obstacles for legal reference and practical implementation.
- **Institutionalization process:** The promulgation of sub-law regulations has been slow and inconsistent, leaving legal gaps in sanctioning violations, as illustrated by the case of Decree No. 88/2015/ND-CP.
- **Inter-agency coordination:** Collaboration in developing sectoral standards remains weak, resulting in guidance documents that are outdated or insufficiently updated, thereby creating difficulties for both enterprises and supervisory bodies (Nguyen & Le, 2025).
- **Legal dissemination:** Awareness-raising activities have not been widely implemented, limiting access to information for enterprises, particularly SMEs and those in the informal sector.

Enforcement mechanisms for OSH also face three systemic challenges: (1) organizational instability in the inspection model; (2) shortages in the number of inspectors and limitations in their technical capacity; and (3) weak deterrence of sanctioning measures, which has led to many violations going undetected or unaddressed in a timely manner, especially among SMEs (Vu, 2025; Dam & Doan, 2025).

The absence of an effective inter-agency coordination mechanism continues to hinder the development and enforcement of OSH legislation. At the central level, responsibilities are dispersed across multiple ministries without a unified coordinating authority, resulting in overlapping functions and delays in regulatory promulgation. At the local level, weak linkages between regulatory agencies, enterprises, and trade unions have reduced the effectiveness of support measures and information dissemination.

As a consequence, enterprises—particularly SMEs—are left to navigate a complex and fragmented system on their own, which increases compliance costs and undermines the overall effectiveness of OSH policies (Dam & Doan, 2025; Dang & Nguyen, 2025).

3.3.4. Causes Related to Culture and Practices

Unsafe working behaviors—rooted in complacency, reliance on experience, and the neglect of technical procedures—remain one of the fundamental causes of occupational accidents. Statistics indicate that subjective factors related to human behavior account for up to 73% of accidents, while objective causes represent only about 3% (Thu, 2024). In particular, violations of safety procedures and failure to use personal protective equipment (PPE) are among the behaviors associated with the highest fatality rates.

However, attributing responsibility cannot rest solely with workers. This situation also reflects shortcomings in employer management practices, including negligence in training, supervision, and equipment maintenance. Therefore, alongside standardizing worker training programs, it is essential to reinforce and strictly enforce employer responsibility in fostering a safety culture, ensuring the proper use of PPE, and maintaining preventive risk management systems.

Another systemic barrier is the persistence of a “culture of silence” or “underreporting culture” regarding unsafe incidents and working conditions. In many enterprises, where production deadlines and output targets are often prioritized over safety, workers tend to avoid reporting risks due to fear of being blamed or subject to retaliation.

The direct consequence is that near-miss incidents go unrecorded, eliminating opportunities for organizational learning from errors and weakening overall risk-prevention capacity. In addition, the current statutory reporting system does not adequately cover non-contract workers, thereby creating a “data gray zone” that leaves the national risk profile of occupational accidents seriously incomplete (Nguyen & Le, 2025; Duong & Nguyen, 2025; Truong & Vu, 2025).

3.4. Proposed Solutions to Enhance the Effectiveness of Occupational Safety and Health (OSH) in Vietnam in the Current Period

3.4.1. Improving the Legal and Policy Framework

To strengthen the legal and policy framework for enhancing the effectiveness of OSH, a comprehensive and coherent approach is required, focusing on the following key solutions:

First, regularly review and update the legal system to ensure consistency with socio-economic development, the requirements of the Fourth Industrial Revolution, and international standards. Priority should be given to developing specific regulations for the informal economy and emerging forms of employment.

Second, establish and institutionalize sector-specific national technical regulations and standards, particularly for high-risk industries.

Third, strengthen the effectiveness of sanctioning mechanisms to enhance deterrence and prevent violations.

Fourth, design incentive-based policies and supportive mechanisms to encourage enterprises—especially SMEs—to invest in improving working conditions and adopting advanced safety management systems.

Effective implementation of these measures will provide the cornerstone for a robust legal framework, which not only safeguards human capital but also contributes directly to the broader goal of sustainable national development.

3.4.2. Solutions to Strengthen Management and Implementation Capacity at the Enterprise Level

To enhance OSH management and enforcement capacity at the enterprise level, strategic efforts should focus on the following measures:

Fostering a safety culture: Safety culture must be integrated as an organic component of corporate culture, grounded in genuine leadership commitment and the proactive engagement of all employees.

Promoting modern management systems: Enterprises should be encouraged and supported to establish and effectively operate OSH management systems in line with international standards (e.g., ISO 45001), embedding OSH considerations into all production and business processes.

Proactive risk identification and assessment: Enterprises should systematically and regularly conduct risk identification and assessment to design preventive and control measures, particularly in response to emerging risks in the context of digital transformation.

Viewing OSH investment as strategic investment: Enterprises need to shift their perception of OSH from a compliance cost to a strategic investment in sustainable development. This requires greater resource allocation for improving working conditions, providing standardized personal protective equipment (PPE), and adopting safety technologies.

This capacity-building process is continuous, demanding sustained leadership commitment and active worker participation. The coordinated implementation of these measures is a key factor in shaping a safe, efficient, and sustainable working environment.

3.4.3. Enhancing Training, Education, and Awareness-Raising

To strengthen the effectiveness of training, education, and community awareness on occupational safety and health (OSH), strategic efforts should focus on the following measures:

Innovating training methodologies and content: Training programs should be redesigned with a strong emphasis on practical applicability, prioritizing hands-on skills and incident response capacity rather than relying solely on theoretical delivery.

Leveraging technology in training: The integration of modern technologies such as virtual/augmented reality (VR/AR), e-learning systems, and scenario-based simulations can enhance visualization, improve learning efficiency, and strengthen practical competence.

Diversifying communication and education channels: Beyond traditional mass media, OSH awareness should be disseminated through creative use of social media platforms, including short videos and infographics, to maximize outreach. Partnerships with influencers should also be considered to amplify communication impact.

Standardizing and enhancing the quality of trainers: A professional cadre of trainers and instructors should be developed through specialized training programs, continuous professional development, and periodic knowledge updates.

The coordinated implementation of these measures—combining substantive content, innovative approaches, and modern technologies—will be critical to achieving a fundamental shift in OSH awareness and behavior, thereby contributing to the broader goal of sustainable national development.

3.4.4. Applying Technology and Promoting Digital Transformation in OSH

To harness scientific and technological advances for improving occupational safety and health (OSH), strategic efforts should concentrate on two levels of intervention:

At the enterprise level: Research, adoption, and transfer of Industry 4.0 technologies—such as IoT, AI, Big Data, robotics, and smart wearables—should be actively promoted. These technologies should be prioritized to optimize workplace monitoring, strengthen early risk-warning capacities, and automate high-risk processes.

At the national level: A digitalized national OSH database should be established to systematize the collection, analysis, and management of information. Such a system would provide reliable inputs for policymaking and the development of preventive strategies.

The synergy between enterprise-level technological applications and an effective national OSH database will create a strategic lever for Vietnam. This integration will enable a transition from a reactive posture to a proactive prevention approach, thereby ensuring stronger protection of workers' health in the digital era.

3.4.5. Strengthening the Roles and Coordination of Stakeholders

To comprehensively improve occupational safety and health (OSH), it is essential to strengthen the roles and responsibilities of all stakeholders in a coordinated manner:

State regulatory agencies: The system of specialized inspection and supervision must be consolidated and its effectiveness enhanced.

Trade unions: Their pivotal role in representing and protecting workers' rights should be reinforced, including participation in policymaking, monitoring enforcement, and engaging in collective bargaining over safe working conditions.

Business associations: These organizations should expand their advisory and guidance functions, encouraging member enterprises to comply with and adopt advanced OSH standards.

Research institutes and training institutions: Scientific research should be promoted to develop preventive solutions, while also meeting the growing demand for highly qualified human resources in this field.

International cooperation: Proactive engagement in knowledge exchange and selective adoption of advanced global standards and management technologies is required.

In conclusion, OSH is a complex, cross-sectoral task that demands a holistic approach and close coordination among all stakeholders. The effective design and implementation of feasible solutions—grounded in a thorough analysis of current realities—will be decisive in building safe workplaces and contributing to Vietnam's sustainable socio-economic development.

4. Discussion

This study has sought to provide a comprehensive and multidimensional overview of the current state of occupational safety and health (OSH) in Vietnam. It has examined existing shortcomings, traced their root causes, and proposed a coherent system of solutions. In doing so, the research not only reaffirms the foundational role of OSH in sustainable development but, more importantly, systematically identifies the challenges and opportunities that Vietnam faces in the context of the Fourth Industrial Revolution and deep international integration.

4.1. Comparison with Previous Studies

The findings of this study both align with and add to previous research, specifically in the following aspects:

Regarding the legal framework, the study reaffirms the arguments of several authors (Dam & Doan, 2025; Dang & Nguyen, 2025) that Vietnam's OSH legislation continues to suffer from inconsistencies and lacks alignment with the practical context of the Fourth Industrial Revolution. In line with other studies (Le & Truong, 2025; Nguyen & Le, 2025), this research also underscores the importance of domesticating international standards.

At the enterprise level, the findings on the limitations of small and medium-sized enterprises (SMEs) in implementing OSH are fully consistent with earlier analyses of the resource and awareness constraints faced by this group (Vu, 2025; Dang & Ly, 2025). In particular, this study provides additional empirical evidence reinforcing Truong and Vu's (2025) argument on the urgent need to shift from a reactive, compliance-driven safety culture to a proactive, prevention-oriented one. Furthermore, the observed slow and fragmented adoption of Industry 4.0 technologies reflects broader national challenges in digital transformation.

At the state management level, systemic shortcomings—including understaffed inspection forces, weak sanctioning mechanisms (Dam & Doan, 2025; Dang & Nguyen, 2025), incomplete data systems (Nguyen & Le, 2025), and the neglect of the informal sector (Truong & Vu, 2025)—are further confirmed. These findings underscore the pressing need for more comprehensive and transformative reforms.

4.2. Novel Contributions of the Study

Through the systematic synthesis and analysis of secondary sources, this study makes several novel academic and practical contributions. It provides an updated and comprehensive picture of the current state of OSH in Vietnam within the context of digital transformation. Moving beyond the scope of traditional issues, the study offers an in-depth examination of the impacts of the Fourth Industrial Revolution, thereby identifying new forms of risks and proposing corresponding technological solutions. This constitutes a meaningful contribution that helps to fill a critical gap in previous research.

This study advances the discourse on OSH in Vietnam by offering several key contributions:

First, it elucidates the multidimensional and organic interconnections among factors influencing OSH. Rather than treating these elements in isolation, the study emphasizes the dialectical interactions between the legal framework, enterprise enforcement capacity, worker engagement, and monitoring systems. In particular, it highlights the close relationship between safety culture, leadership commitment, and worker participation.

Second, it proposes a coherent system of solutions with high feasibility and practical applicability. These solutions were developed through an in-depth analysis of current conditions and practical lessons (Nguyen & Nguyen, 2025), with clearly defined roles and responsibilities for each stakeholder, thereby forming a comprehensive intervention framework.

Third, it identifies critical “gaps” in both research and practice. By pinpointing hotspots such as the informal sector and high-risk industries, the study provides a solid scientific basis for future in-depth research and targeted policy interventions.

4.3. Limitations and Future Research Directions

Despite achieving its stated objectives, this study has several limitations that should be acknowledged:

Data sources: The analysis relies primarily on secondary data. Although these sources are generally reliable, their comprehensiveness and representativeness may be limited, and thus may not fully capture all dimensions of OSH realities nationwide.

Methodological approach: The study is largely qualitative in nature. The validation and quantification of the effectiveness of the proposed solutions will require complementary large-scale quantitative research.

Temporal scope: The research focuses mainly on contemporary issues. Long-term trends and potential risks associated with continuous technological change may not have been explored in sufficient depth.

To address these limitations and further contribute to the field, future research could focus on the following directions:

Conducting large-scale national and sectoral quantitative surveys to build primary datasets with high representativeness on the state of OSH and the effectiveness of policy interventions.

Future research should continue to explore several key directions:

In-depth analysis of Industry 4.0 impacts: Further investigation is needed on the multidimensional effects of the Fourth Industrial Revolution on OSH, particularly non-traditional risks such as mental health, data security, and human–machine interactions.

Cost-benefit analyses of OSH investment: Studies should assess the economic returns of OSH investments, providing persuasive evidence to shift employer perceptions from viewing safety as a cost to recognizing it as a strategic investment.

Targeted intervention models for vulnerable groups: Research should design and test OSH intervention models tailored to vulnerable groups such as informal workers, freelancers, and remote workers.

Socio-cultural determinants of safety culture: Further examination of economic, social, and cultural factors shaping safety culture in Vietnamese enterprises is required, in order to propose context-specific and effective intervention models.

Pursuing these research directions will not only help fill existing academic gaps but also generate robust scientific and practical evidence to inform policymaking and improve the effectiveness of OSH, thereby contributing to the broader goal of sustainable national development.

5. Results and Discussions

5.1. Results

Occupational safety and health (OSH) in Vietnam currently presents a multidimensional picture. On the one hand, certain achievements have been recorded in consolidating the legal framework and raising awareness. On the other hand, the field continues to face persistent shortcomings and challenges across multiple dimensions.

At the level of legal and policy frameworks: The system of regulatory documents remains fragmented and has yet to keep pace with the rapid transformations of socio-economic realities, particularly the rise of new forms of employment and the expansion of the informal economy. The domestication of international standards has been slow, accompanied by a lack of sector-specific technical regulations.

At the enterprise level: Resource constraints, compliance-oriented mindsets, and the absence of an internalized safety culture remain widespread, especially among small and medium-sized enterprises (SMEs). Risk assessment practices are not systematically implemented, and the adoption of technology remains slow and largely unstrategic.

On the workers' side: A segment of the workforce continues to demonstrate limited safety knowledge and skills, coupled with complacent attitudes. In many enterprises, the effectiveness of training remains low, often characterized by formalism and a lack of practical applicability.

Within the support and monitoring system: The inspection apparatus suffers from limited capacity, while sanctioning mechanisms lack sufficient deterrent effect. The national OSH database has yet to be fully systematized and updated. Research and development activities remain underdeveloped relative to actual needs, and, critically, the informal sector continues to represent a major policy blind spot.

These shortcomings stem from a combination of underlying causes, including insufficient awareness, resource constraints, weaknesses in enforcement mechanisms, and cultural barriers. Combined with the emergence of new risk factors in the digital era, this situation calls for more strategic, integrated, and decisive interventions to bring about substantive improvements in OSH in Vietnam.

5.2. Discussions

Building on the analysis of current conditions and underlying causes, this study proposes a strategic system of solutions, structured around five key pillars:

Strengthening the legal and policy framework: Further consolidate and harmonize the system of OSH regulations to ensure alignment with new developmental contexts and international standards.

Enhancing enterprise-level OSH governance: Shift from a reactive, compliance-oriented mindset to proactive prevention, foster a safety culture, and adopt advanced management systems.

Innovating training, communication, and awareness-raising: Redesign training content and methods to emphasize practical application, while diversifying communication channels to disseminate OSH knowledge more broadly across society.

Promoting technological application and digital transformation: Encourage the adoption of Industry 4.0 innovations for workplace monitoring, risk-warning systems, and the development of a national OSH database.

Strengthening multi-stakeholder coordination: Enhance the roles and responsibilities of all relevant actors, including state agencies, trade unions, business associations, research institutions, and workers themselves.

The synchronized, determined, and effective implementation of these five strategic solution pillars is expected to generate a foundational transformation in OSH. Such progress will help shape a safe and humane working environment, thereby contributing to the broader goal of building a prosperous and sustainable Vietnam—one in which the fundamental right of workers to a safe and healthy workplace is genuinely respected and guaranteed.

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