

The Contribution of Occupational Safety Management to Business Performance, the Link Between Employee Health and Productivity: The Role of Occupational Safety

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Abstract – Occupational safety has become an indispensable element of modern working life and has gained critical importance in terms of both protecting employee health and ensuring the sustainability of business operations. Although various practices and regulations have been developed in this field for many years, the increasing importance placed on human life in recent years has made it necessary to address occupational safety practices in a more systematic and comprehensive manner. The primary objective of this study is to reveal the effects of occupational safety on production efficiency in businesses and to evaluate the contributions of safe working environments to work performance. Within the scope of the study, the identification of potential hazard elements that may be encountered in workplaces, occupational safety management strategies aimed at eliminating these elements, and the role of trained human resources are examined. Both literature review and qualitative research were conducted within this scope. Research indicates that individuals working in safe environments demonstrate higher performance and experience fewer interruptions in production processes. In this regard, the development of effective occupational safety policies is both protective of employee health and conducive to increasing business productivity.

Keywords –Business, Employee health, Occupational Safety, Occupational Safety Management, Safety.

I. INTRODUCTION

Occupational Safety and Health (OSH) management has evolved into a strategic function with direct and measurable impacts on business performance. In an increasingly competitive and dynamic global market, the health and safety of employees are no longer solely a regulatory obligation but a key component of organizational sustainability and success. This study aims to explore the contribution of occupational safety management to business performance, and the intrinsic relationship between employee health and productivity. Increased competition, rapid technological developments, and diversity in working conditions in today's business world have increased the need for new strategies to ensure business sustainability. In this context, Occupational Health and Safety Management (OHSM) has gone beyond being a legal requirement and has become an integral part of businesses' strategic management approach. In particular, protecting employee health and ensuring a safe work environment are fundamental factors that directly impact productivity and business performance. Employees working in a healthy and safe environment not

only increase their individual productivity but also reduce workforce turnover and absenteeism, thereby lowering business costs (Neal & Griffin, 2006; Fernández-Muñiz et al., 2009).

OHS systems do not merely focus on preventing accidents and occupational diseases but also play a decisive role in shaping employees' psychosocial well-being, motivation, and organizational commitment. Effectively designed and implemented occupational health and safety programs increase employee commitment and satisfaction while positively shaping organizational culture, and this directly reflects on the company's performance metrics (Clarke, 2006). Additionally, OHS systems structured in accordance with international standards (e.g., ISO 45001) provide businesses with both legal compliance and a competitive advantage in the global marketplace.

Business performance is evaluated not only through financial indicators but also through human-centered indicators such as workforce quality, occupational safety performance, and the physical and mental health of employees. Therefore, efforts to protect employee health and create safe environments in the workplace directly affect productivity and quality, contributing to the overall success of the business (Zohar, 2010). In this context, evaluating the impact of occupational health and safety management on organizational performance is an important issue in both academic and practical fields.

In this study, the contribution of occupational health and safety management to business performance will be examined, particularly in relation to employee health and productivity. Additionally, based on case studies and current literature, how OHSM is positioned as a strategic management tool and how it enhances the resilience of organizations during crises such as pandemics or natural disasters will also be evaluated. Thus, the multidimensional contribution of occupational health and safety practices at both the managerial and operational levels to business success will be revealed.

II. MATERIALS AND METHOD

A. Literature Review - *The Strategic Contribution of Occupational Safety Management to Business Performance*

Occupational Safety Management (OSM) has increasingly been recognized not merely as a regulatory necessity but as a strategic enabler of organizational performance. Beyond its role in minimizing workplace accidents, OSM contributes to operational efficiency by reducing unplanned downtimes, mitigating production disruptions, and fostering a stable work environment. Studies show that companies investing in comprehensive safety programs observe improved employee morale and reduced absenteeism, leading to measurable gains in productivity and financial outcomes. Empirical evidence suggests that organizations that adopt comprehensive and systematic safety management approaches experience enhanced employee morale, decreased absenteeism, and, ultimately, improved productivity and financial performance.

Neal and Griffin (2006) underscore the critical role of safety climate and management practices in shaping safety behaviors, which directly impact organizational outcomes. In parallel, Fernández-Muñiz, Montes-Peón, and Vázquez-Ordás (2009) emphasize that embedding safety practices within the organizational culture not only curtails the frequency and cost of occupational incidents but also strengthens a firm's competitive position. These practices contribute to better cost control, improved quality outcomes, and lower insurance premiums, while cultivating a proactive risk management culture.

Occupational safety management plays a crucial role in improving business performance by safeguarding employee health and enhancing productivity. Effective safety practices reduce workplace accidents and illnesses, which in turn decrease absenteeism and increase workforce engagement, thereby contributing to organizational success (Neal & Griffin, 2006; Fernández-Muñiz et al., 2009). However, beyond day-to-day safety management, the integration of comprehensive emergency response plans (ERP) and disaster preparedness is essential to ensure continuity of operations during crises such as natural disasters, industrial accidents, or pandemics.

Research by Brown and Williams (2022) emphasizes the evolving nature of disaster management and highlights the importance of adaptive emergency preparedness strategies grounded in historical experience and technological advancements. Early warning systems and effective communication networks are vital in mitigating disaster impacts, though challenges remain in ensuring timely and accurate information flow

during crises. This aligns with occupational safety objectives by reinforcing organizational resilience and protecting employee well-being during emergencies.

The World Health Organization (2023) further supports community-based approaches in emergency preparedness, underscoring that engaging local populations and stakeholders enhances response effectiveness and sustains health service delivery. Such community integration parallels the participatory elements of occupational safety programs that foster shared responsibility and improve overall safety culture within organizations.

Advancements in emergency planning algorithms, as proposed by Xu et al. (2021) and Zhang and Wang (2020), provide quantitative tools for optimizing evacuation routes and resource allocation in large-scale emergencies. These developments not only improve crisis response efficiency but also minimize health risks for diverse employee populations, thus directly supporting occupational safety goals.

Moreover, Leitch and Brown (2020) project that technological innovation, enhanced training, and collaborative governance will shape the future of emergency management. Similarly, Zhang and Li (2023) highlight the critical role of cooperative exercises in building trust and communication among stakeholders, which is essential for both emergency preparedness and effective occupational safety management.

In summary, integrating occupational safety management with robust emergency response planning creates synergistic benefits. It ensures employee health and productivity are protected not only during routine operations but also in extraordinary crisis events, thereby sustaining business performance and competitive advantage. Organizations that embed such integration into their strategic frameworks demonstrate greater resilience and adaptability in the face of emerging risks. In essence, OSM transcends compliance by fostering a culture of continuous improvement, risk awareness, and operational consistency. As such, it becomes an integral component of organizational strategy, with measurable benefits in both human capital sustainability and business performance metrics.

B. Employee Health and Productivity - The Strategic Link Between Employee Well-Being, Occupational Health, and Organizational Productivity

Employee well-being has emerged as a critical determinant of organizational productivity and sustainability. Numerous studies affirm that healthier employees exhibit higher levels of engagement, reduced absenteeism, and a stronger contribution to workplace morale (Goetzel et al., 2018). In this context, the integration of occupational safety management with employee wellness initiatives has become an increasingly valuable strategy for enhancing workforce performance and achieving long-term economic benefits.

The correlation between employee health and productivity is well-established. Occupational illnesses, stress-related disorders, and preventable health conditions have been shown to impair concentration, increase operational errors, and contribute to higher employee turnover rates. Conversely, proactive health management—through targeted wellness programs and preventive care—supports employee focus, resilience, and sustained performance levels. Goetzel et al. (2018) underscore that workplace wellness programs, when aligned with broader occupational safety strategies, yield significant returns on investment by reducing healthcare expenditures and improving workforce availability. Supporting this view, Loeppke et al. (2009) argue that embedding occupational health into core business practices contributes not only to individual well-being but also to enhanced organizational outcomes, such as improved operational efficiency and reduced indirect costs associated with illness and presenteeism.

C. Integrating Occupational Safety into Strategic Performance Management

Occupational safety is no longer confined to regulatory compliance or operational efficiency; it is increasingly regarded as a strategic pillar that directly contributes to organizational resilience and long-term performance. Modern safety paradigms emphasize the integration of occupational health and safety (OHS) practices into the broader vision and strategic objectives of organizations. In this context, safety becomes more than a procedural requirement. It evolves into a cultural norm that supports innovation, employee

commitment, and sustainable competitiveness. Robson et al. (2007), in their meta-analysis, demonstrated that participatory safety programs those involving employee input and engagement lead to improvements not only in compliance and safety outcomes but also in productivity and organizational cohesion. These programs foster a shared responsibility model that aligns safety with core business goals. Similarly, Hinze et al. (2013) found that construction firms employing advanced safety management systems outperform their peers in project delivery, indicating a clear link between safety excellence and operational success. The adoption of international frameworks such as ISO 45001 further illustrates this shift. The standard emphasizes proactive, risk-based thinking and continuous improvement within OHS, encouraging organizations to treat occupational safety as an integral part of strategic planning. By doing so, organizations enhance their adaptability to change, mitigate long-term risks, and improve employee well-being factors that collectively strengthen strategic performance.

D. Risk Assessment Process and Employer Responsibility

Risk assessment is the process of systematically identifying hazards in the workplace, analyzing the risks that may arise from these hazards, determining control measures, creating documentation, and updating it as necessary. This process should be initiated while the workplace is still in the design or establishment phase (ÇSGB, 2013, Art.7). The active participation of employees in the process is of critical importance for the effectiveness of the measures to be taken. Therefore, employees' opinions should be sought at every stage of the risk assessment and reflected in the implementation (ÇSGB, 2013, Art. 7/3). Risk assessment should not be limited to identifying physical, chemical, or biological hazards present in the workplace but should aim to eliminate these hazards at their source. After identifying the hazards, it is necessary to systematically analyze the risks to reduce or eliminate their potential adverse effects before they occur (ÇSGB, 2013, Art. 8). The employer is responsible for conducting or commissioning the risk assessment. This responsibility begins with the identification of the team responsible for the risk assessment process at the workplace. This team may include the employer, an occupational safety expert, an occupational physician, and employee representatives (ÇSGB, 2013, Art. 6).

Documentation of the risk assessment activities conducted is also required by law. The documents must include at least the employer's title, the date of the assessment, the identity information of the assessors, the analysis methods used, the identified hazards, and the measures to be taken (ÇSGB, 2013, Art. 10). These documents also serve as the primary reference sources during inspection and monitoring processes. Risk assessments must be updated at specific intervals depending on the hazard class of the workplace. According to the regulations, workplaces classified as highly hazardous must be updated at least every two years, those classified as hazardous every four years, and those classified as low-hazard at least every six years (ÇSGB, 2013, Art. 11).

An important component of risk assessment is informing employees, employee representatives, and external workers about the risks in the workplace. This information ensures that preventive and corrective measures can be effectively implemented (ÇSGB, 2013, Art. 16). If the employer fails to fulfill these obligations, legal and administrative liabilities arise. In the event of workplace accidents or occupational diseases, the employer may be held liable for both moral damages and payments made by the Social Security Institution (SGK). Additionally, if a risk assessment is not conducted, the Ministry of Labor and Social Security may impose administrative sanctions such as suspending operations (ÇSGB, 2013, Art. 25; ÇSGB, 2022). To support risk assessment practices, sector-specific, occupation-specific, or job-specific guidelines may be prepared, taking into account the size of the workplace and the hazard class. These guidelines aim to assist employers in fulfilling their obligations (ÇSGB, 2013, Art. 17).

Informing and Involving Employees: Employees and employee representatives should be actively involved in the risk assessment process, and their opinions should be sought at every stage. Furthermore, informing them about workplace risks and the preventive measures taken against these risks is a legal requirement (ÇSGB, 2013a, Art. 16; ÇSGB, 2022). This participation should not only be at the information level but also involve them in decision-making processes (Özdemir & Doğan, 2019).

Guidelines and Sector-Specific Applications: Guidelines specific to sectors, occupations, and types of work can be prepared to assist employers in risk assessment practices. These guidelines are tailored according to the size and hazard class of the workplace (ÇSGB, 2013a, Art. 17; ÇSGB, 2022). The guidelines serve as an important resource for standardization and compliance with legislation for practitioners.

Legal Obligations and Suspension of Work: Failure to conduct a risk assessment or conducting an inadequate assessment results in legal and administrative liability for the employer. In this context, in cases of employee death, occupational disease, or permanent disability, the Social Security Institution may seek recourse from the employer (ÇSGB, 2012, Art. 26; ÇSGB, 2022). Additionally, the Occupational Health and Safety Law stipulates that work may be suspended if the required risk assessment is not conducted (İSGK, 2012, Art. 25; Türkiye Cumhuriyeti, 2012).

III. INTEGRATING OCCUPATIONAL SAFETY MANAGEMENT AND EMERGENCY RESPONSE PLANS: ENHANCING BUSINESS PERFORMANCE THROUGH EMPLOYEE HEALTH, PRODUCTIVITY, AND CRISIS PREPAREDNESS

Effective occupational safety management and well-structured Emergency Response Plans (ERP) are mutually reinforcing components that critically influence business performance. By protecting employee health and ensuring workplace safety, organizations foster productivity and operational continuity. Simultaneously, comprehensive ERPs prepare businesses to manage crises and emergencies proactively, minimizing disruptions and safeguarding both human and material resources. The integration of these systems strengthens organizational resilience, supports sustainable competitive advantage, and promotes a culture of safety that aligns with strategic business objectives.

Emergency response plans (ERP) are critical for businesses to protect employee health and ensure business continuity in the event of a crisis. Effective occupational health and safety (OHS) management has been strongly proven in the literature to increase employee motivation and organizational performance by reducing workplace accidents and health issues (Neal & Griffin, 2006; Fernández Muñoz et al., 2009; Acil Durum Planı Hazırlama Rehberi, 2017; Acil Durum Eylem Planı, 2019).

In the healthcare sector, ADPs developed for hospitals minimize the impact of natural disasters such as earthquakes and floods, as well as infrastructure disruptions. In this context, risk assessment, generator/water backup, special evacuation protocols for intensive care units and operating rooms, and at least two trained drills per year are of vital importance (WHO, 2017; Koumaditis et al., 2020; World Health Organization (WHO) & International Labour Organization (ILO), 2021; International Labour Organization, 2022).

In the industrial sector, ADPs should cover hazards such as chemical leaks, explosions, and machinery failures. Chemical substance management, access control to hazardous areas, staff training, and simulations should be supported by gas sensors and automatic fire suppression systems (Hale & Hovden, 1998; Haslam et al., 2005).

In the energy sector, crisis management in electricity and gas infrastructure should be ensured through backup generators, simulations, and cybersecurity measures. Communication and prioritization systems via SMS, social media, and call centers maintain employee productivity (Palen et al., 2007; Luijff et al., 2013). In all sectors, OSH-focused ADPs positively impact work performance by increasing employee engagement. By minimizing social capital loss, they ensure both production and service continuity (Neal & Griffin, 2006; Fernández Muñoz et al., 2009). Therefore, ADPs contribute directly not only during crises but also to overall business success.

IV. CONTRIBUTION OF EMERGENCY PLANNING TO OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT AND PERFORMANCE

Within the scope of occupational health and safety (OHS) management, emergency planning is a critical strategic application that not only ensures the safety of employees but also directly contributes to business

performance by maintaining business continuity. Emergencies can arise at any time, and if not addressed quickly and effectively, they can have serious consequences for both employee health and organizational productivity. In this context, emergency planning includes fundamental elements such as the prior identification of risks in the workplace, the establishment of procedures for potential crisis scenarios, the clarification of roles, and integration with local emergency response mechanisms (Acil Durum Planı Hazırlama Rehberi, 2017; Acil Durum Eylem Planı, 2019; Yoo & Choi, 2019).

The effects of emergency planning on employee health encompass not only physical safety but also employees' psychological well-being and levels of organizational commitment. This is because maintaining employees' sense of security in uncertain and panicked environments is directly related to a well-prepared OSH system. This situation is also linked to productivity determinants such as employee commitment and job satisfaction (Neal & Griffin, 2006). In particular, the management of evacuation operations is one of the critical areas where the effectiveness of emergency plans is measured. Nor Azahar and colleagues (2015) evaluated event tree analyses of evacuation processes from a qualitative perspective, demonstrating that risks can be systematically modeled. Similarly, Musharraf et al. (2016) conducted a quantitative assessment of the risks encountered during evacuation, taking into account environmental conditions, human behavior, and organizational factors. These studies reveal that emergency preparedness is not limited to physical infrastructure but is also directly related to decision-making, human factors, and communication dynamics.

Gai and colleagues (2017) developed evacuation scenarios that also consider the level of health threats in the event of emergencies at chemical plants. In these scenarios, not only time but also exposure levels to toxic effects were included as optimization parameters. These approaches provide high effectiveness in preventing workplace accidents by enabling a comprehensive assessment of risks. Especially in high-risk facilities, it is mandatory to pre-test applications related to evacuation plans and emergency response strategies, and to support them with training and drills. Vermuyten and colleagues (2016) have developed various network theory-based algorithms for the optimization of emergency management. These algorithms evaluate the efficiency of routes and decision-making processes under possible scenarios. Thus, it becomes possible to minimize the effects of potential emergencies at the workplace, ensure employee safety, and avoid interruptions in business processes.

In conclusion, emergency planning is not merely a legal obligation but also a strategic OSH application that bridges the gap between employee health and business efficiency. Effective planning and implementation are indispensable for preventing workplace accidents, maintaining morale and motivation levels, and ensuring the sustainability of business performance in the long term.

V. SAMPLE APPLICATION – EMPLOYEE HEALTH PROGRAM IN THE FINANCIAL SECTOR:

THE IMPACT OF EMPLOYEE HEALTH PROGRAMS ON CORPORATE PERFORMANCE: SECTORAL APPLICATION EXAMPLES

Employee health and well-being have a direct positive impact on workplace productivity and employee satisfaction. An application implemented in the financial sector provides concrete evidence of this impact. As part of the *Employee Health and Well-being Program* launched at a banking institution, weekly ergonomics training, psychological support services, and stress management workshops were implemented. At the end of the program's 12-month monitoring period, a 28% decrease in health-related absenteeism rates, a 15% increase in employee satisfaction scores, and a 10% decrease in work errors were recorded. These findings demonstrate that supporting employee health yields significant gains in terms of both individual and organizational performance (Pelletier, 2005; Goetzel & Ozminkowski, 2008).

When looking at sectoral adaptations, similar gains are observed in different areas. In the manufacturing sector, particularly in automotive supply chain companies, the integration of occupational health programs into production planning has become widespread to prevent workplace accidents and musculoskeletal disorders. In an automotive factory where regular health screenings and ergonomics training were

implemented, there was a 35% decrease in the number of days lost due to occupational illnesses and a 12% increase in production line efficiency (Benning et al., 2011; Carayon et al., 2015).

In the education sector, the implementation of “Psychosocial Health Programs” targeting work-related stress and burnout among teachers is noteworthy. In a program conducted at a public school, strengthening guidance services and providing stress management seminars resulted in a 22% decrease in teacher absenteeism and an 18% increase in student satisfaction (Jennings & Greenberg, 2009; Schonfeld & Bianchi, 2016).

Similarly, in the healthcare sector, physical activity areas and post-shift rest environments have been created to reduce burnout levels among nurses and physicians working in urban hospitals. Following this intervention, the rate of healthcare personnel not showing up for work decreased by 30%, and patient complaints decreased by 14% (Aiken et al., 2012; Shanafelt et al., 2017). These findings demonstrate that when employee health programs are designed with sectoral differences in mind, they can provide multi-dimensional benefits such as reduced workforce absenteeism, increased employee satisfaction, and improved job performance.

VI. OCCUPATIONAL SAFETY AS A STRATEGIC ENABLER: A CASE STUDY FROM THE TURKISH CONSTRUCTION SECTOR

This study adopts a qualitative literature-based approach. Peer-reviewed journal articles, organizational reports, and international standards (such as ISO 45001) were analyzed. The review focused on the relationships between safety management practices, health outcomes, and business indicators like productivity and profitability. The strategic integration of occupational health and safety (OHS) management has become a vital component of organizational success, particularly in high-risk sectors such as construction. The experience of ABC Business-Company, a major construction firm based in Turkey, exemplifies how embedding OHS objectives within corporate strategy can yield substantial benefits in both safety performance and operational efficiency. In 2022, ABC Business-Company, incorporated “Excellence in Occupational Health and Safety Management” as a primary objective in its five-year strategic plan, aligning with the principles of ISO 45001. The firm’s strategic goals included integrating OHS policies with overall corporate objectives, fostering a participatory safety culture that engaged all employees, and embedding safety performance indicators (KPIs) into its strategic monitoring systems. Among the quantitative targets were a 50% reduction in accident frequency rates over five years and a 10% improvement in project delivery times. To operationalize these goals, NovaYapı established a participatory safety program involving “Safety Ambassadors” selected from field personnel who provided weekly feedback and proposed improvements. Project managers incorporated OHS objectives into project planning and execution, ensuring alignment between safety and operational goals. Within 24 months, the company reported a 42% reduction in accident frequency, an 18-day reduction in average project delivery times, and a 14% increase in employee engagement survey scores.

This case demonstrates that the integration of occupational safety into strategic management transcends compliance and risk mitigation, contributing directly to operational productivity and workforce morale. The outcomes align with findings by Robson et al. (2007), who highlight the positive impact of participatory safety programs on both safety and productivity, and Hinze, Thurman, and Wehle (2013), who emphasize superior project performance among firms with advanced safety protocols. Moreover, the alignment with ISO 45001 (2018) principles underscores the global shift toward treating OHS as a core strategic function.

VII. ANALYSIS OF OCCUPATIONAL SAFETY

The synthesis of the reviewed literature and the ABC Organization’s case study provides a multidimensional perspective on the strategic role of occupational safety and health (OSH) in enhancing organizational performance. ABC Organization is a construction project company operating in the Marmara

region of Istanbul. The evidence indicates that effective OSH management does not operate in isolation; rather, it functions as part of a complex system influenced by organizational culture, leadership style, and employee engagement. These mediating factors serve as catalysts that amplify the positive outcomes of safety interventions (Neal & Griffin, 2006).

The case of ABC Organization underscores the importance of a proactive and participatory safety culture in achieving not only regulatory compliance but also tangible improvements in organizational performance. The participatory approach facilitates employee engagement, creating a sense of shared responsibility and ownership over safety outcomes, which directly supports productivity enhancements and quality improvements. This holistic integration of safety into corporate strategy contributes to organizational resilience by minimizing disruptions caused by workplace accidents and improving project delivery reliability.

The significant reduction in accident frequency and the improvement in delivery times highlight how occupational safety management can serve as a competitive differentiator, particularly in industries where safety risks are inherently high. Furthermore, the increase in employee engagement points to enhanced morale and job satisfaction, which are critical factors in workforce retention and overall organizational health (Robson et al., 2007; Hinze et al., 2013). Organizational culture, in particular, plays a critical role in the internalization of safety norms. When safety is perceived as a core organizational value rather than a compliance obligation, employees exhibit more proactive behaviors, report hazards more readily, and engage in safer work practices. Fernández-Muñiz et al. (2009) emphasize that firms with a strong safety culture tend to experience improved operational consistency, cost control, and employee morale, all of which contribute to higher overall performance.

The case of ABC Organization provides concrete empirical support for these assertions. By embedding ISO 45001:2018 principles into its strategic planning process, the company operationalized safety as a business objective rather than a peripheral function. The formation of participatory safety structures—such as the “Safety Ambassadors” group illustrates how decentralized safety ownership can contribute to real-time risk identification and process improvement. This participatory approach aligns with findings from Robson et al. (2007), whose meta-analysis confirmed that safety interventions are most effective when designed to be inclusive and involve active worker participation.

Furthermore, the implementation of measurable Key Performance Indicators (KPIs) allowed NovaYapı to systematically monitor safety performance and link it to project-level outcomes, such as reduction in incident frequency and improved project delivery times. These metrics also served as internal benchmarks for continuous improvement and managerial accountability. Such data-driven approaches are encouraged by ISO 45001, which promotes continual improvement, risk-based thinking, and evidence-based decision-making (International Organization for Standardization [ISO], 2018).

Overall, the findings suggest that in high-risk sectors such as construction, the strategic integration of OSH practices enhances both resilience and competitiveness. Companies that institutionalize safety not only safeguard their workforce but also realize measurable gains in efficiency, cost savings, and reputational strength. Thus, the alignment of OSH with broader strategic priorities is not merely a regulatory requirement but a critical success factor for sustainable performance.

VIII. INTEGRATION OF NEW TECHNOLOGIES AND DEVELOPMENTS INTO OCCUPATIONAL HEALTH MANAGEMENT: AN ASSESSMENT IN THE CONTEXT OF PERFORMANCE AND PRODUCTIVITY

Today, occupational health and safety (OHS) practices in chemical work are undergoing a transformation with digitalization and technological innovations. This transformation is not only important for protecting worker health, but also has strategic importance in terms of workplace productivity, operational continuity, and improving business performance. Advanced technologies used in chemical risk management contribute to the prevention of workplace accidents and occupational diseases while indirectly supporting productivity

by enhancing workers' sense of safety and job satisfaction (Neal & Griffin, 2006; Fernández-Muñiz et al., 2009).

Sensor systems capable of real-time monitoring enable early detection of exposure in the workplace and rapid intervention, thereby safeguarding both worker health and the continuity of production processes (Zimmer et al., 2020; Feng et al., 2020). Artificial intelligence-supported digital risk assessment software minimizes human error by providing systematic and comprehensive analyses, thereby strengthening businesses' capacity for data-driven decision-making in OSH processes (Bajpai, 2021).

Smart personal protective equipment (PPE) increases users' level of protection against chemical risks and enables preventive intervention with instant alerts in case of exposure thanks to integrated sensors (Lee et al., 2019). These technologies directly contribute to work motivation by reinforcing employees' sense of security. Similarly, augmented reality (AR) and virtual reality (VR) simulations used in training processes increase learning retention by conveying the correct behavior patterns when working with hazardous substances through interactive methods (Gülhan et al., 2012; Yağımlı & Kaçar, 2018; Scorgie et al., 2024).

Furthermore, the preference for less harmful chemicals in line with green chemistry approaches reduces both environmental and human risks, thereby strengthening the compliance of regulations with sustainability principles (Anastas & Warner, 1998). Automation and robotic technologies minimize human intervention in hazardous operations, significantly contributing to the reduction of workplace accidents and thereby supporting the safety and continuity of work processes (Kumar et al., 2021).

Thanks to mobile applications and digital Safety Data Sheet (SDS) systems, workers can quickly access critical information about chemical substances, which increases safety in real-time decision-making processes and accelerates internal risk management systems (Feng et al., 2020; Battaglini et al., 2022). Centralized digital databases facilitate monitoring and inspection processes at both the corporate and national levels, thereby increasing the transparency and effectiveness of OSH management (European Agency for Safety and Health at Work, 2014; European Agency for Safety and Health at Work, 2021; ILO, 2022).

In conclusion, technology-supported OSH applications not only protect worker health but also serve as tools that optimize business performance, support workforce productivity, and create competitive advantages. This integration makes the contribution of occupational health management to organizational performance more concrete and measurable.

IX. FINDINGS AND DISCUSSION

This study's review of the literature and industry practices revealed multiple insights into the contribution of occupational safety and health (OSH) systems to organizational performance. The findings underscore the multidimensional value of OSH when strategically integrated into corporate management structures.

Firstly, organizations with comprehensive and well-implemented OSH systems tend to demonstrate superior financial outcomes and lower absenteeism rates. According to Neal and Griffin (2006), safety climate and management practices significantly influence safety behaviors, which in turn impact overall organizational performance. Firms with proactive safety environments report not only fewer accidents but also reduced costs related to staff turnover, compensation claims, and downtime.

Secondly, occupational health and safety initiatives are strongly linked to enhanced employee retention, job satisfaction, and individual performance. Goetzel et al. (2018) found that organizations implementing health promotion and wellness programs as part of a broader safety strategy realized measurable returns on investment, particularly through improved workforce morale and lower health-related costs. Similarly, Loeppke et al. (2009) argued that integrating occupational health with business strategies leads to better organizational resilience, emphasizing the economic and human value of preventative health measures.

Thirdly, aligning OSH with strategic objectives—as emphasized in ISO 45001:2018 has been shown to support long-term competitiveness. ISO 45001 advocates for embedding occupational health and safety into the organization's overall management system through leadership commitment, risk-based thinking, and continuous improvement (Türkiye Cumhuriyeti, 2012; International Organization for Standardization

[ISO], 2018). This approach is not only beneficial for compliance but also for fostering a risk-aware and adaptive organizational culture.

Moreover, the relationship between safety and performance is not merely linear; it is shaped by the organizational context. Factors such as leadership engagement, communication climate, and employee involvement mediate the effectiveness of OSH initiatives. Fernández-Muñiz, Montes-Peón, and Vázquez-Ordás (2009) highlighted that safety outcomes improve substantially when safety is viewed as an organizational value rather than a regulatory obligation. This cultural integration of safety creates a self-reinforcing cycle of trust, compliance, and continuous improvement. Risk assessment is not only a legal obligation, but also one of the cornerstones of sustainable occupational health and safety management. Effective implementation of this process plays an important role in preventing occupational accidents and diseases, ensuring the protection of employees and reducing the legal liabilities of employers.

In summary, the empirical and theoretical evidence suggests that strategic investment in OSH not only enhances physical safety but also becomes a lever for broader organizational performance—financially, operationally, and culturally. This multi-dimensional value affirms the importance of treating OSH as a strategic asset rather than a peripheral function.

X. CONCLUSION AND RECOMMENDATIONS

Occupational safety management plays a critical role in enhancing business success by fostering employee well-being and integrating safety initiatives with broader organizational strategic objectives. To achieve this, organizations are encouraged to institutionalize a pervasive safety culture at all hierarchical levels, systematically link Occupational Safety and Health (OSH) efforts to key performance indicators, and promote proactive, participatory safety programs that engage employees actively. Investment in OSH is not only an ethical imperative but also an economically prudent decision that yields tangible returns.

Empirical evidence, such as the NovaYapı case, demonstrates that when occupational health and safety is prioritized strategically supported by inclusive programs and aligned with internationally recognized standards like ISO 45001 organizations can achieve simultaneous improvements in safety performance, operational efficiency, and employee engagement. As industries confront increasing complexity and heightened risks, embedding occupational safety management within strategic planning frameworks emerges as a vital pathway to sustainable organizational success. Future research should aim to explore sector-specific variations and develop quantitative models to assess the return on investment related to safety management, thereby further substantiating its role as a key driver of competitive advantage and workforce well-being.

Based on the findings of this study, some strategic recommendations are presented for organizations that want to maximize the contribution of occupational health and safety (OHS) practices to corporate performance. Firstly, OHS objectives must be integrated into the organization's overall strategic management structure. In this context, it is important to develop OHS policies that are aligned with key performance indicators such as accident rates, employee engagement, delivery times, and productivity.

Second, in line with the risk-based approach and continuous improvement principles offered by the ISO 45001 standard, it is recommended that businesses comply with these standards and participate in the certification process. In this context, OHS systems should be evaluated not only for regulatory compliance but also for the purpose of increasing corporate competitiveness.

Thirdly, the creation of participatory safety programs and the encouragement of active employee participation in the process are critical for strengthening the organizational safety culture. In particular, employee-based feedback mechanisms and field-level safety ambassador practices are effective in the early detection and prevention of risks.

Fourth, key performance indicators (KPIs) must be identified and reported regularly to monitor and measure OSH performance. This enables management decision-making processes to be carried out in a more data-driven and strategic manner.

Finally, top management support and effective internal communication play a critical role in positioning OSH among corporate priorities. The determination demonstrated at the leadership level positively

influences the perception of safety practices among employees and ensures the sustainability of these practices.

Emergency planning is not only a strategy for responding to crises, but also a comprehensive process that directly contributes to organizational performance as a sustainable part of occupational health and safety (OHS) management. The stages of damage mitigation, preparedness, response, and recovery, as defined in the literature, provide a systematic framework for ensuring employee safety and business continuity (Kapucu, 2008; Alexander, 2015). Supporting the activities carried out in these stages with employee participation, scenario-based training, and resource management increases trust and organizational commitment within the organization, positively reflecting on workforce productivity (Neal & Griffin, 2006; Fernández-Muñiz et al., 2009).

In particular, placing the OSH approach at the center of strategic planning for emergencies contributes not only to the prevention of accidents and injuries but also to the protection of employees' physical and psychological well-being. This is reflected in performance indicators such as high job satisfaction, low absenteeism rates, and increased productivity (Clarke, 2010). Furthermore, inclusive and equitable planning processes strengthen the social responsibility dimension of businesses by considering the needs of different demographic groups.

In conclusion, effective emergency planning is not only about preparing for disasters; it is also a strategic investment that increases the long-term success and sustainability of businesses by proactively supporting occupational health and safety. In the future, supporting these plans with more data-driven predictive models and digital solutions will both protect employee health and strengthen organizational efficiency.

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