

Evaluation of the Effectiveness of Occupational Safety and Health Management System in Railway Operations: Literatur Review

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Article Info

Article history:

Received May 23, 2025

Revised June 17, 2025

Accepted July 6, 2025

Keywords:

Occupational Safety and Health, Effect and Evaluation, Railway Operation, Systematic Literature Review

ABSTRACT

An effective Occupational safety and health management system is expected to create a safe and healthy working environment for all workers. In the context of railway operations, this system covers various aspects, ranging from safety training, the use of personal protective equipment, to emergency procedures that must be followed by all employees. This study employs library research or literature review. The result is by improving the effectiveness of the OHS system, it is expected that the number of workplace accidents will be reduced, as well as the creation of a safe and healthy working environment, providing benefits not only for workers, but also for the entire community that uses rail transportation service.

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INTRODUCTION

An effective Occupational safety and health management system is expected to create a safe and healthy working environment for all workers. In the context of railway operations, this system covers various aspects, ranging from safety training, the use of personal protective equipment, to emergency procedures that must be followed by all employees. This research will analyze the various elements of the OHS management system implemented in railway companies, as well as the challenges faced in its implementation. By understanding these factors, it is hoped that solutions can be found to improve the effectiveness of the OHS system. (Zidan Ramadan & Mudayat, 2025)

In recent years, Indonesia's rail sector has seen rapid progress, both in terms of infrastructure and passenger numbers. However, the increasing number of train trips also presents new challenges related to occupational safety and health. Accidents in this sector, both involving passengers and workers, indicate that there are still shortcomings in the implementation of an effective OHS management system. Therefore, an assessment of the existing system is crucial to ensure that all aspects of occupational safety and health are taken seriously. (Al-Azhari, 2024)

An effective OHS management system not only focuses on preventing accidents, but also includes improving the health and well-being of workers. In the context of rail operations, workers often face risky work situations, such as noise, vibration and exposure to hazardous materials. It is therefore important to assess how railroad companies are addressing these risks and what measures are being taken to safeguard workers' health. This study will identify leading practices implemented by companies that are successful in managing OHS, as well as compare them with companies that are still struggling in this regard.(Hidayat, 2019)

One of the crucial elements in an OHS management system is training and awareness for workers. This study will investigate the extent to which railway companies provide OHS training for their employees and how effective such training is in raising awareness about work safety. Effective training can help employees identify risks in the work environment and take appropriate preventive measures. In addition, the study will also evaluate the communication function in the OHS management system, including how information on safety is conveyed to all employees.(Saputra, 2023)

This study is expected to make a significant contribution to OSH policy development in the railway sector. By identifying existing challenges and opportunities, it is expected that a more efficient policy can be developed in improving occupational safety and health. In addition, the findings of this study can be used as a guideline for future studies in the field of OHS, both in the railway sector and other industries. Thus, efforts to produce a safe and healthy working environment can continue and benefit the entire community.(Firmansyah, 2025)

METHOD

This study employs library research or literature review. To gather information for literacy studies, you can consult books, local and international research journals, scientific articles, and studies carried out by other researchers. A literature review provides an overview of the existing literature on a subject. This literature review presents insights into recent advancements in the domain. The literature review enables the researcher to present a specific method, enhance a specific method, and acknowledge its connection to philosophy and its association with a specific topic/research outcome. The research instrument employs mobile devices, laptops, and Wi-Fi connections to access existing research data to find journals released within the last five years, from 2019 to 2024. Utilize publication sources to explore the literature or search via Google Scholar and associated references for research.(van Dinter et al., 2021)

RESULTS AND DISCUSSION

Based on the search results regarding Evaluation of the Effectiveness of Occupational safety and Health Management System in Railway Operations, there are several relevant journals related to this research. The results of the analysis of these journals will be described in Table 1 below.

Title	Year	Result
Analysis of the Application of the WASPAS Method in the Decision Support System for Assessing the Performance of the Best Checkers on Trains.(Purwanto, 2023)	2023	Based on the research results, it is concluded that the application of the WASPAS method in a decision support system (SPK) is able to improve the validity and consistency of checker performance assessment. This approach provides managers with the opportunity to conduct a more thorough and fair assessment of all aspects of checker performance. However, careful selection of criterion weights and responsiveness to weight changes are required for optimal results. As such, this study provides greater insight into the application of the WASPAS method in the context of SDM for the evaluation of the best checker performance. The impact can be felt in making more informed and precise decisions in managing individual performance in the workplace. From the results of calculations that have been carried out on 7 choices of Checker data using the WASPAS Method, the best alternative obtained is the fifth alternative named Riski Sudrajat, who gets the highest value of 0.939. Thus, the fifth choice is chosen as the Checker who has the best performance on the Train.

Implementation of occupational safety and health as an effort to prevent work accidents at PT Perusahaan Gas Negara (Persero) Tbk in 2023.(Sitepu & Tarigan, 2024)	2024	The findings of the study indicate that the application of K3 at PT. Perusahaan Gas Negara Tbk telah berjalan dengan baik dan sesuai dengan peraturan yang berlaku. The K3 policy is created and endorsed by the primary director. HSSE conducts K3 communication to encourage and educate employees on the implementation of occupational health and safety. K3 inspections are conducted to evaluate the status of all equipment, the work environment, and the actions of workers. The K3 assessment is conducted by HSSE and the K3 Audit Institute to evaluate the degree of K3 implementation. As a proposal for research, the operator of the Pasar IX gas station partners with the Fire Department and medical facilities to conduct K3 training aimed at enhancing the awareness and understanding of occupational safety and health among the station employees.
APPLICATION OF SAFETY MANAGEMENT SYSTEM CONSTRUCTION BORED PILE PROJECTS RAILWAY FACILITIES.(Hapsari & Wiriyanto, 2022)	2022	The findings from observations and analyses regarding the execution of SMK3 show satisfactory outcomes, with the primary obstacle to its implementation being the constrained budget (K3). The evaluation of the application of SMK3 across the 5 elements outlined in the PUPR Ministerial Regulation No. 10 of 2021 reached 87%, with 2 elements failing to meet the standards, specifically the leadership and worker participation in safety at work and construction safety support. The phases of bored pile operations involve safe practices, as the highest hazard falls within the medium range
STUDY OF THE APPLICATION OF SMK3 ON RAILROAD CONSTRUCTION PROJECTS IN SOUTH SULAWESI.(Idrus et al., 2023)	2023	Based on this study, it can be concluded that SMK3 has been effectively designed and implemented at the project site. The standards and guidelines applied to manage this system are designed in the Quality Plan, Occupational Safety and Health and Project Environment (RMK3LP). The implementation of SMK3 has had a positive impact on the company and workers, this can be seen from the number of workers experiencing accidents or occupational diseases is still quite low and does not significantly affect the implementation of work.
Implementation of GCG (Good Corporate Governance) at PT Kereta Api Indonesia.(Iqbal et al., 2024)	2024	The findings of this research show that the company implements GCG consistently and sustainably by referring to the indicators/parameters of good corporate governance in SOEs, while still paying attention to the prevailing provisions and norms as well as the company's articles of association. b) In order to implement GCG as referred to in point 1, the company prepares a GCG Manual that includes provisions regarding the Board Manual; risk management guidelines; internal control system; internal supervision; whistleblowing system; information and technology governance; Code of Conduct; procurement of goods and services; quality management system; gratification control and anti-bribery management system; corporate social responsibility; and employment, health and safety (K3). With all of these GCG implementations, PT Kereta Api Indonesia can strengthen the company's reputation, build trust from stakeholders, and achieve long-term goals in a sustainable manner.
IMPLEMENTATION OF PERMEN PUPR NO.8 YEAR 2023 ON THE EVALUATION COST OF RAILWAY CONSTRUCTION K3.(Sabban, 2024)	2024	The study involved 20 risk variables, and after undergoing an expert validation process, 17 variables remained that could be analyzed further. Based on the frequency and impact analysis, 4 variables with high risk were identified, Falling from a height, Slipping or tripping during inspection, Falling on a raised rail, Being caught between a rail and heavy equipment The risk evaluation resulted in administrative actions and the use of additional Personal Protective Equipment (PPE) as a control. The results of the risk evaluation resulted in an increase in OHS costs of Rp7,565,625.00 or 41.12% of the set budget.
The application of (k3) to the workforce of the construction of the double-double track railway project on the jatinegara-manggarai line based on government regulation number 50 of 2012.(Yasir, n.d.)	2019	The results showed that the application of work safety in PT was still not carried out optimally. Utama Karya in accordance with the provisions of Government Regulation Number 50 of 2012 concerning Occupational Safety and Health Management Systems and Law Number 13 of 2003 concerning Manpower Article 77 which regulates working hours for workers.

ANALYSIS OF PUBLIC TRANSPORTATION INNOVATION FROM PRAMBANAN EXPRESS TO ELECTRIC TRAIN (KRL) IN AN EFFORT TO IMPROVE SERVICES TO THE JOGJA - SOLO COMMUNITY.(Pratama & Agustina, 2025)	2025	The implementation of public transportation innovation from Prambanan Ekspres to Kereta Api Listrik (KRL) is assessed through 5 (five) dimensions, namely 1) Relative Advantage or relative benefits, 2) Suitability or compatibility, 3) Complexity or complexity, 4) Possibility or trialability to try, 5) Observability or ease of observation. Public transportation innovation from Prambanan Ekspres transforming into an Electric Train (KRL) provides a higher quality of service and Quality, which means KRL Jogja - Solo offers better service than before and is supported by user skills in utilizing digital applications. From the five dimensions, it is known that the application of public transportation innovations from Prambanan Ekspres to Kereta Api Listrik (KRL) in an effort to improve services can be said to have functioned properly and in accordance with the expectations of the government and society.
Factors Affecting Managerial Performance (Empirical Study on Pt Kereta Api Indonesia Operation Area 6 Yogyakarta).(ADITAMA, 2023)	2023	Findings from multiple regressions indicate that management accounting system variables, information technology, and leadership style have a significant positive influence on managerial performance. Meanwhile, the variables of reward, environmental uncertainty, and organizational culture do not affect managerial performance. Keywords: management accounting, information technology, rewards, environmental uncertainty, corporate culture, leadership style, managerial performance.
The Effect of Occupational Safety and Health (K3) on the Performance of Operational Employees at PT KAI UPT Simpang Station Divre III Palembang.(Hanifa et al., 2025)	2025	This study was conducted to determine the effect of work safety and occupational health variables partially on employee performance at PT KAI UPT Station Simpang Divre III Palembang. Cammingn Bone Regency. In this study, the independent variables used are occupational safety (X1) and occupational health (X2), while the dependent variable is employee performance. Based on the research findings and discussions that have been presented previously, it can be concluded that occupational safety and health variables separately have a positive and significant influence on employee performance at PT KAI UPT Stasiun Simpang Divre III Palembang.

Discussion and analysis of Evaluation of the Effectiveness of Occupational safety and Health Management System in Railway Operations

In this section, the findings of ten journals related to the effectiveness of Occupational Safety and Health (OHS) Management Systems in railroad operations are discussed. The journal written by Purwanto (2023) revealed that the application of the WASPAS method can improve validity and consistency in the assessment of checker performance, which plays a role in improving work safety. Sitepu & Tarigan (2024) revealed that the OHS policy at PT Perusahaan Gas Negara has been running effectively, and OHS communication carried out by HSSE has contributed greatly to increasing worker awareness. Hapsari & Wiriyanto (2022) stated that although the implementation of the OHS management system resulted in a positive impact, budgetary issues became a barrier, with two aspects of OHS that needed to be improved. Idrus et al. (2023) revealed that the implementation of SMK3 in construction projects has been done well, showing a positive impact in the form of a small number of work accidents. Iqbal et al. (2024) emphasized the importance of GCG in improving company reputation and building trust, by integrating OHS in GCG.

Sabban (2024) emphasized the significant risks in rail construction projects, showing that proper risk assessment can add to OHS costs. Yasir (n.d.) stated that OHS implementation in the double railroad project was still suboptimal, indicating the need to improve compliance with OHS regulations. Pratama & Agustina (2025) highlighted that innovation in the public transportation sector can improve service quality as well as work safety. Aditama (2023) stated that there is a positive relationship between management accounting systems and information technology on managerial performance, which can strengthen the implementation of OHS more efficiently. Finally, Hanifa et al. (2025) stated that OHS has a positive and significant influence on employee performance, emphasizing the need for efficient OHS implementation to improve productivity and

work safety. Based on this analysis, it can be concluded that the implementation of an effective OHS Management System in the railway sector is essential to improve occupational safety and health.

CONCLUSION

Based on an analysis of ten journals that evaluated the effectiveness of Occupational Health and Safety (OHS) Management Systems in rail operations, it was concluded that effective OHS implementation is essential to improving occupational safety and health in the railway industry. The research revealed that various strategies and policies, such as the use of the WASPAS method, efficient OHS communication, as well as the incorporation of OHS in Good Corporate Governance (GCG), contribute positively to improving employee awareness and performance. Despite challenges, such as budget constraints and regulatory compliance, the best practices identified in this study provide useful guidance for railway companies to improve their OHS management systems. By improving the effectiveness of the OHS system, it is expected that the number of workplace accidents will be reduced, as well as the creation of a safe and healthy working environment, providing benefits not only for workers, but also for the entire community that uses rail transportation services. Therefore, all parties involved need to continue to commit to implementing and improving a better OHS management system in this area.

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