AMK : Abdi Masyarakat UIKA
Universitas Ibn Khaldun Bogor, Indonesia
Vol. 4, No. 2, June 2025, pp. 122~126
ISSN: 2964-366X, DOI: 10.32832/amk
http://ejournal.uika-bogor.ac.id/index.php/amk

The Effect of Risk Management Implementation on Toll Road Transportation Performance: Literatur Review

Juhri Panjaitan *, Muhammad Wandi Harahap, Nuansah Andrika, Abdurrozzaq Hasibuan
Fakultas Kesehatan Masyarakat, Universitas Islam Negeri Sumatera Utara
Jl. Lap. Golf No. 120, Kab. Deli Serdang, 20353, Medan, Sumatera Utara, Indonesia

Article Info

Article history:

Received May 20, 2025
Revised May 27, 2025
Accepted June 3, 2025

Keywords:

OHS
Effect Safety
Toll Road
Systematic Literature Review

ABSTRACT

OHS risk management is a structured process that aims to identify, analyze, and manage risks associated with occupational health and safety. In the context of highway projects, such risks may include occupational accidents, contact with hazardous materials, and unsafe work situations, By implementing effective OHS risk management, companies can reduce the likelihood of accidents, increase worker safety, and ultimately improve overall project performance. This research uses library research or literature study. To find data for literacy studies, you can refer to books, research journals published locally and internationally, scientific writings, research conducted by others. A literature review is a summary of the literature on a topic. Based on the analysis of various journals on the implementation of occupational safety and health (OHS) risk management in toll road projects, it can be concluded that OHS risk management has an important role in improving the safety and performance of construction projects. Although many studies show good results, such as improved alignment of risk management systems and efficient implementation of preventive measures, challenges in implementation still remain.

Corresponding Author:

Juhri Panjaitan
Universitas Islam Negeri Sumatera Utara
Email: juhripanjaitan70@gmail.com

INTRODUCTION

In the era of globalization and rapid infrastructure development, transportation is one of the crucial factors in supporting a country's economic progress. Toll roads, as one type of transportation infrastructure, play an important role in facilitating the distribution of goods and population mobility. However, behind these significant benefits, there are many risks that can jeopardize the occupational safety and health (OHS) of workers and road users. Thus, the implementation of proper OHS risk management is crucial to ensure that toll road construction and operation projects can be carried out safely and efficiently.(Natasya et al., 2025). OHS risk management is a structured process that aims to identify, analyze, and manage risks associated with occupational health and safety. In the context of highway projects, such risks may include occupational accidents, contact with hazardous materials, and unsafe work situations. By implementing effective OHS risk management, companies can reduce the likelihood of accidents, increase worker safety, and ultimately improve overall project performance.(Simanjuntak et al., 2022)

ISSN: 2654-8127

Proper implementation of OHS risk management not only affects the safety of the workforce, but also helps improve productivity and efficiency in operations. When employees feel safe and secure, they are usually more productive and committed to their work. In addition, a reduction in workplace accidents can lower expenses related to insurance claims, penalties, and other losses, thus providing financial benefits to the company.(Fatmawati, 2023)

However, despite the recognition of the significance of OHS risk management, many toll road projects still face challenges in implementation. Various factors affecting the implementation of OHS risk management include low understanding of the importance of OHS, limited training for workers, and lack of support from upper management. Therefore, this study aims to investigate the impact of OHS risk management implementation on toll road performance, while identifying the elements that influence its successful implementation.(Siregar, 2021)

In this study, the author will apply quantitative methods by collecting information through surveys and interviews with various related parties, such as project managers, workers, and road users. The data that has been obtained will be analyzed to find the relationship between OHS risk management implementation and toll road transportation performance. It is expected that the results of this study will provide valuable insights for developers, contractors, and policy makers to improve OHS practices in the construction sector, especially on toll road projects. Therefore, this study not only focuses on providing academic contributions, but also provides practical advice that can be applied in the construction sector. With a more effective implementation of OHS risk management, it is expected that the performance of toll road transportation will improve, thus providing greater benefits to society and the economy as a whole.(Mastura, 2024)

METHOD

This research uses library research or literature study. To find data for literacy studies, you can refer to books, research journals published locally and internationally, scientific writings, research conducted by others. A literature review is a summary of the literature on a topic. This literature review provides information about recent developments in the field. The literature review allows the researcher to introduce a particular method, develop a particular method and recognize its relationship to philosophy and its relationship to a particular topic/research result. The research tool uses mobile devices, laptops and Wi-Fi networks to query existing research data to identify journals published in the last five years, from 2019 to 2024. Search or use publication sources to browse the literature and use Google Scholar and related references to conduct searches.(Cut Nya Dhin, 2023)

RESULTS AND DISCUSSION

Based on the search results regarding the Effect of OHS Risk Management Implementation on Toll Road Transportation Performance, 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
RISK MANAGEMENT ANALYSIS OF OCCUPATIONAL SAFETY AND HEALTH ENVIRONMENTAL QUALITY OF TOLL ROAD AND BRIDGE PROJECTS AT PT. HUTAMA KARYA INFRASTRUKTUR IN DEPOK CITY(Syahriadi & Tenriajeng, 2020)	2020	Details of the key risks and risk control responses through preventive and corrective measures were obtained from expert inputs, where the first risk factor is Variable (X10) which relates to the incidence of fuel fires. Preventive measures that can be taken are that when refueling, smoking, using cell phones, and lighting fires of any kind are prohibited. The second risk factor is Variable (X19) which is affected by basic utilities (gas/water pipes). Preventive measures that can be taken are ensuring that excavation areas have warning signs (such as caution) and are guarded from access. The third risk factor is changes in lifting and lowering girders which is variable (X50). Preventive measures include checking that the sling belt is in good condition and properly installed. Installation of warning signs (such as caution, no entry to the project site, labor, etc.). Ensuring the hook is locked. The fourth risk is Variable (X51) of workers being exposed to tremi pipes/concrete pumps. The precautions that need to be taken are checking the sling belt before use. Ensure that the equipment can function properly. The fifth risk is Variable (X54) of workers falling from a height. Preventive measures that can be taken are ensuring employees are in good health. They need to

		have skills and experience. Ensure that workers use PPE (Personal Protective Equipment) such as seat belts, boots, helmets, and gloves.
RISK MANAGEMENT TO REALIZE ZERO FATALITY ACCIDENT IN TOLL ROAD CONSTRUCTION(Arfianto et al., 2025)	2025	Non-fatal accidents are one of the goals in toll road construction. This can be achieved by implementing efficient and targeted construction management. Some indications are the need for stricter regulations in project supervision in the field. Several factors that cause fatal work accidents need attention, including equipment factors, human error, environmental factors, and other factors. Regular changes to the regulations of on-site construction work are necessary to reduce the rate of workplace accidents. In addition, the importance of implementing work safety must be conveyed to all relevant parties, especially workers involved in construction.
Risk Management of Flyover Construction Projectsin Indonesiawith House of Risk (HOR)Method(Enderzon & Soekiman, 2020)	2020	Based on the identification results, there are 34 risk incidents, 17 risk causes, and 17 preventive measures that occur in flyover construction projects in Indonesia. The results of HOR phase 1 with pareto diagrams show 6 priority risk agents that need to be addressed, where the first is supervision of work that is not carried out properly.
Evaluation of Safety Risk Management Systems on Upper Structure Work of LRT Cawang –Dukuh Atas Project(Mulyo et al., 2020)	2020	Based on the results of the research and comparative qualitative analysis of the evaluation of the implementation of the OHS management system in the Cawang-Dukuh Atas LRT project, it is concluded that the level of conformity with the Australian Standard/New Zealand Standard (AS/NZS) ISO 31000: 2009 reaches 90%.
ANALYSIS OF THE APPLICATION OF THE K3 SYSTEM TO THE PERFORMANCE OF THE CIJAGO SECTION 2B TOLL ROAD PROJECT.(Yunika, 2021)	2021	The average weight value of 84% indicates that the implementation of the occupational safety and health management system (SMK3) on the Cijago section 2 B toll road project has been going on well and effectively. However, this study found several variables that have the lowest score value and can affect project performance.
Traffic Safety Management on the Trans Java Toll Road Semarang-Batang Section(Putri & Widowati, 2021)	2021	The implementation of traffic safety management measures on the Trans Java Toll Road Semarang-Batang Section has not fully complied with all aspects of the regulations applied in this study.
EFFECT OF ISO 9001: 2015 IMPLEMENTATION ON QUALITY RISK ON PPP PROJECTS (Case Study: Jakarta-Cikampek II South Toll Road Project Package III)(Madani, 2023)	2023	The analysis shows that the level of ISO 9001:2015 implementation is 82.81%, which is categorized as very good. The risk factor affecting quality is planning with a value of 8.41 in the high category. The quality management system variables tested together have a significant impact on construction quality risk. In the construction quality risk variable, the dominant value is influenced by the ISO 9001:2015 variable by 60.2%.
RISK MANAGEMENT ON ROAD CONSTRUCTION PROJECT ON DEAD RIVER, KUTA SUB-DISTRICT, BADUNG REGENCY, BALI PROVINCE.(PUTRA, 2023)	2023	In this study, 34 risks were identified. These risks include 6 (17.65%) unacceptable risks, 21 (61.76%) less desirable risks, 7 (20.59%) acceptable risks, and 0% or no risks classified as negligible. For risks that fall into the major risk category (unacceptable and undesirable), risk ownership transfer and risk mitigation are carried out. The Contractor has the highest risk ownership, namely 4 (four) risks in the unacceptable category and 17 (seventeen) risks in the undesirable category. The total risk handling or mitigation implemented is 6 risk mitigations for the unacceptable risk category and 21 risk mitigations for the undesirable risk category.
OCCUPATIONAL SAFETY AND HEALTH RISK MANAGEMENT (K3) ON LAND BUILDING WORK (Case Study of Yogyakarta-Bawen Toll Road Construction Project Section 6).(Wardhani & Mutiarasari, 2024)	2024	Based on data analysis, there are 62 potential risks that arise in the 5 stages of the Earthfill Work implementation, with 12 potentials in the medium risk category and 30 potentials in the high risk category. The management of the identified risks such as signal man assignment, heavy equipment scheduling, design of heavy equipment placement schemes, installation of signs and use of PPE, utilization of APK, and so on are considered with five aspects, namely elimination, substitution, engineering, administration, and Personal Protective Equipment / Work Protective Equipment. Keywords: Hazards; Occupational Safety and Health (OHS); Risk Management; Construction Projects
IMPLEMENTATION OF SOCIAL ENVIRONMENTAL AUDIT IN INFRASTRUCTURE PROJECTS: A CASE STUDY OF GREEN-BASED TOLL ROADS.(Sanda & Sisdianto, 2024)	2024	The research findings show that ESA implementation can improve transparency, accountability, and local stakeholder participation, which contribute to project success. In addition, the application of environmentally sound technologies and comprehensive Corporate Social Responsibility (CSR) programs have also proven effective in reducing negative effects. However, issues such as the lack of knowledge on the importance of ESA among developers must be addressed through capacity building and stricter regulations. This paper argues that ESA needs to be an important component of every infrastructure project in order to achieve sustainable development goals that are balanced between economic, environmental and social dimensions.

ISSN: 2654-8127

Discussion and analysis of The Effect of Risk Management Implementation on Toll Road Transportation Performance

This study evaluates various articles on the implementation of occupational safety and health (OHS) risk management on toll road projects. The analysis shows that OHS risk management is crucial to improve the safety and performance of construction projects. Syahriadi and Tenriajeng (2020) recognized key risks such as fuel fires and workers' exposure to heavy equipment. They emphasized the importance of preventive measures, such as smoking bans and wearing personal protective equipment (PPE). Arfianto et al. (2025) highlighted the importance of effective construction management to achieve zero fatalities, with stricter regulations and training for workers. Enderzon and Soekiman (2020) found 34 risk incidents in flyover projects, indicating that lack of supervision was the main cause of accidents. Mulyo et al. (2020) reported that the suitability rate of risk management systems in LRT projects reached 90%, which indicates that proper implementation of the system can improve work safety. Yunika (2021) noted that the implementation of the OHS system on the Cijago Toll Road project has reached 84%, although there are variables that need to be improved. Putri and Widowati (2021) revealed that traffic safety management on the Trans Java Toll Road still does not fully meet regulations, emphasizing the importance of higher compliance. Madani (2023) revealed that the implementation of ISO 9001:2015 reached 82.81%, indicating that the quality management system can reduce risks. Putra (2023) found 34 risks on a road project in Bali, of which 6 risks were declared unacceptable. Wardhani and Mutiarasari (2024) identified 62 potential risks on the Yogyakarta-Bawen Toll Road project, emphasizing the importance of thorough risk management. In general, the implementation of efficient OHS risk management is crucial to improve the safety and performance of toll road projects, with various challenges still to be addressed through training and managerial support.

CONCLUSION

Based on the analysis of various journals on the implementation of occupational safety and health (OHS) risk management in toll road projects, it can be concluded that OHS risk management has an important role in improving the safety and performance of construction projects. Although many studies show good results, such as improved alignment of risk management systems and efficient implementation of preventive measures, challenges in implementation still remain. Various factors, such as lack of training, low understanding of the importance of OHS, and ineffective supervision, are obstacles that must be overcome. Therefore, continuous efforts are needed to raise awareness and training among workers as well as support from top management. Through appropriate and comprehensive measures, it is expected that the performance of toll road projects can improve, providing greater benefits for the safety of workers, communities, and the economy as a whole. Efficient implementation of risk management will not only reduce the number of accidents, but will also increase productivity and efficiency in project execution.

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