G-Tech : Jurnal Teknologi Terapan
Vol. 9, No. 1, 2025, p. 296-303
E-ISSN: 2623-064X | P-ISSN: 2580-8737

Analysis of Occupational Safety And Health in The Construction Project of Integrated Lecture Building

Harliwanti Prisilia[1], **Dimas Aji Purnomo**[2]✉

[1] Industrial Engineering, Faculty of Engineering, Universitas 17 Agustus 1945 Banyuwangi, Indonesia
[2] Civil Engineering, Faculty of Engineering, Universitas 17 Agustus 1945 Banyuwangi, Indonesia

✉ **Corresponding Author :** Dimas Aji Purnomo (e-mail: dimas@untag-banyuwangi.ac.id)

Article Information

Article History

Received : December 11, 2024
Revised : December 27, 2024
Published : January 10, 2025

***Keywords*:**
Personal Protective Equipment;
Work Accidents;
Occupational Safety and Health.

ABSTRACT

Occupational safety and health (OSH) is an important aspect in the implementation of construction projects, especially building projects that involve various high-risk activities. This research aims to analyze the implementation of the OHS system in building projects, identify potential hazards, and evaluate the effectiveness of mitigation efforts that have been made. The research method used is a quantitative and qualitative approach through field observations, interviews with workers, and analysis of related documents. The results show that the implementation of OHS still faces a number of challenges, such as lack of compliance with safety procedures, limited OHS facilities, and low levels of worker awareness of the importance of OHS. Nevertheless, some mitigation efforts, such as regular training and the use of personal protective equipment (PPE), have proven effective in reducing the risk of work accidents. This study recommends increased supervision, provision of adequate OHS facilities, and educational campaigns to build a safety culture in the work environment. The findings are expected to make a positive contribution to improving occupational safety and health on construction projects in Indonesia.

INTRODUCTION

According to Government Regulation No. 50 Year 2012 on the Implementation of Occupational Safety and Health Management System, accidents and diseases due to poor working conditions can increase health care costs, which burden individuals and the national health system (Saputra et al., 2024). The OHS Management System is part of planning and controlling accidents on construction projects (Anggrayni & Beatrix, 2024). When OHS construction projects are being carried out, there is a very low level of knowledge, understanding and use of safety measures by the people who need to know them (Juan Leonardo, 2023). Construction projects are a series of activities that are only carried out once and are generally short-term (Fitra Sari Lating Ramona et al., 2023). Every construction project is required to implement Occupational Safety and Health (K3) based on these laws in the activity of carrying out construction work in order to create a safe, efficient and productive workplace (Juliana et al., 2023). Construction activities are an important component in a development activity (Wiradarman et al., 2023). In the development of construction projects in Indonesia, the application of Occupational Safety and Health is still not maximized (Mopio et al., 2023). Therefore, the effect of the application of Occupational Safety and Health (K3) in building construction projects must be carried out properly and correctly in accordance with the law well and correctly in accordance with the Law (Hajaria et al., 2022).

This is an open access article under the CC BY license

This is due to the assumption that the K3 program will only be an additional burden on company costs (Nugroho et al., 2023). The task of construction companies in maintaining occupational safety and health concerns human lives, so every construction company must pay attention to the occupational safety and health system (K3) (Pangestika, 2023). The implementation stage in construction service providers requires Occupational Safety and Health (OHS) and the work methods used to achieve the objectives of the development project (Satrio & Wibowo, 2023). Failure to use OHS in construction projects can pose a risk of workplace accidents (A. B. Kurniawan, 2022). The situation in the project site reflects a harsh character and the activities look very complex and difficult to implement so that it requires excellent stamina from the workers who carry out (Acthree et al., 2023). Work accidents are one form of occupational risk (Susanti & Cristalisana, 2023).

Work accidents that occur have a negative impact on workers and companies (Ardiansyah et al., 2024). Many work accidents affect construction workers (Tiurma Elita Saragi, 2019). The labor factor is one of the things that causes work accidents, usually not fully paying attention to work safety standards, the process of choosing the work method is not correct, changing jobs of a different nature so that they must be able to adjust, disputes between workers affect their performance, and the equipment used (Yamsal et al., 2023).

Table 1. Number of Work Accident Cases in Indonesia May 2024

No.	Province	Participant Segment	Quantity
		Construction Services	
1	Aceh	2	391
2	North Sumatra	97	9,319
3	West Sumatera	35	2,601
4	Riau	60	10,482
5	Jambi	3	2,235
6	South Sumatra	7	2,650
7	Bengkulu	4	335
8	Lampung	2	1,499
9	Kep. Bangka Belitung	3	539
10	Kepulauan Riau	88	7,994
11	DKI Jakarta	168	9,317
12	West Java	205	30,259
13	Central Java	129	21,159
14	DI Yogyakarta	39	3,314
15	East Java	307	24,771
16	Banten	93	13,909
17	Bali	10	4,056
18	West Nusa Tenggara	9	443
19	East Nusa Tenggara	13	158
20	West Kalimantan	9	2,133
21	Central Kalimantan	11	3,311

22	South Kalimantan	12	2,698
23	East Kalimantan	85	4,115
24	North Kalimantan	21	415
25	North Sulawesi	5	358
26	Central Sulawesi		95
27	South Sulawesi	- 25	1,002
28	Southeast Sulawesi	2	258
Quantity		1,473	162,327

Source: BPJS Employment

Based on the regulation of the Minister of Public Works No.10 of 2021, the K3 risk category is grouped into 3 (three) parts, namely (Perumahan, 2021) ish igh risk, covering construction work whose implementation is at great risk of endangering public safety, property, human life and the environment as well as disruption of construction work, medium risk, covering construction work whose implementation can be at risk of endangering public safety, property, human life and disruption of construction activities and small risk, covering construction work whose implementation does not endanger public safety, property and disruption of construction activities.

When OHS construction projects are being undertaken, there is a very low level of knowledge, understanding, and the use of safety measures is very low by the people who need to know them (Juan Leonardo, 2023) . In Banyuwangi Regency, the construction of buildings has recently increased. This development will pose various hazards. One of them is work accidents by construction workers. Work accidents can be categorized as minor accidents, moderate accidents and severe accidents. This will have an impact on the implementation time of construction work. Based on BPJS Manpower data in East Java Province, the total number of work accidents is around 10,403 cases. The level of OHS implementation on construction projects can be said to be still low (Soeharto, 1997). This is due to the mindset of companies that still think that implementing OHS is costly and relatively expensive, while workers feel uncomfortable with PPE. This causes the level of work accidents to remain high. This study aims to obtain the results of the evaluation of the implementation of OHS in the Poliwangi Building Construction project and to identify the obstacles faced in the implementation of the project.

RESEARCH METHODS

Respondent data in this study obtained information from project workers, namely 30 respondents. Each respondent has almost the same answer and is different from one respondent to another. This study analyzes the implementation of the Occupational Safety and Health Management System on the construction project under study (A. Kurniawan et al., 2022). In this study, the data collection method will use data from the results of distributing questionnaires and direct observation of the poliwangi building construction project in Banyuwangi district. The project data used is information about the project which includes the name of the project, the duration of the project, the project budget and the location where the project is carried out. The questionnaire distribution was divided into 2 (two) groups. The first group is respondent data which includes gender, position in the project, latest education, work experience, and training on OSH. Group 2 (two) contains a number of questions about the application of OHS carried out in construction projects in the form of site safety factors, work equipment and clothing, occupational health and obstacles to the implementation of OHS at the project site from the company. The latest education taken by respondents is as follows, respondents with elementary school education 9,

respondents with junior high school education 12, respondents with high school / vocational school education 9.

The research flow chart can be seen in the figure below :

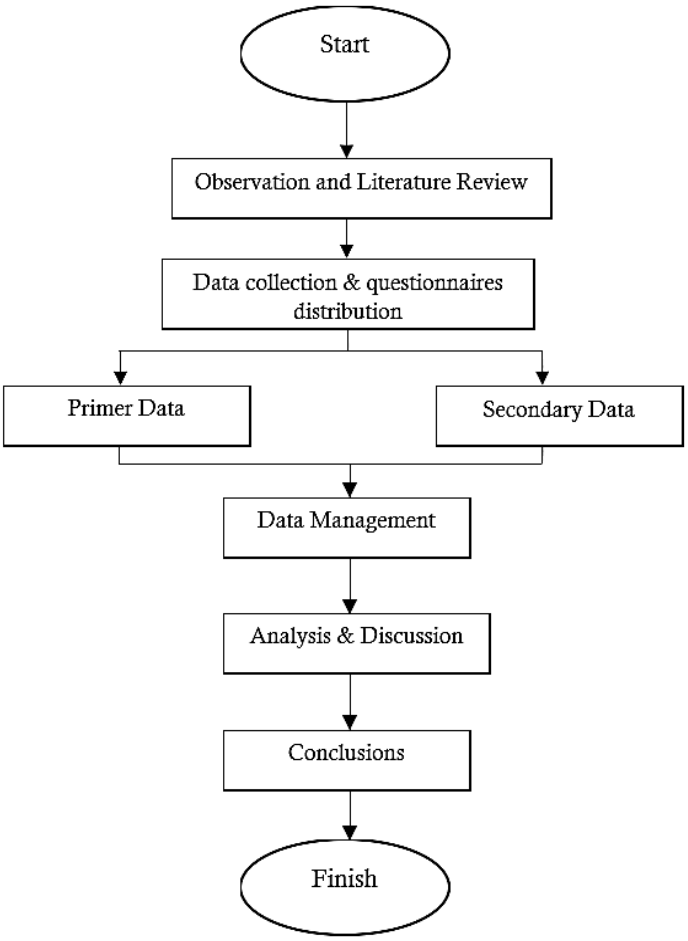

Figure 1. Research Flow Chart

RESULTS AND DISCUSSION

Evaluation of Occupational Safety and Health (OHS) Implementation

The respondents who were given questionnaires were workers who worked in the construction project of the Poliwangi Banyuwangi Building. The answers that have been given by respondents are analyzed as follows:

Table 2. Results of Evaluation of Occupational Safety and Health (K3) Implementation.

No.	Assessment Item	Mean	SD	Rank
1	Project Site Security			
	a. Safety signs have been installed at certain locations in the project area.	3.58	0.427	2
	b. The project site has good lighting and illumination	3.37	0.612	5
	c. The project site is safe from landslides	3.5	0.412	4
	d. Safety Fences Have Been Installed at the Project Site to Anticipate the Fall of Workers	3.47	0.528	3
	e. Every worker can reach the work location safely	4.17	0.726	1

2	Employee equipment and workwear			
	a. Equipment and machinery are operated by experienced workers	4.01	0.51	4
	b. The company conducts periodic maintenance on work tools	4.17	0.518	2
	c. The company provides work clothes, shoes, safety helmets, safety belts and masks	4.1	0.537	3
	d. Equipment and work clothes are in good condition and can be used in accordance with their functions	4.19	0.572	1
	e. Workers use work clothes and equipment when working	3.71	0.416	5
	f. the company prepares tools for work safety such as ladders, nets, etc.	3.62	0.399	6
3	Occupational health			
	a. Providing insurance to workers in cooperation with the hospital/public health center	3.43	0.478	4
	b. Periodic health checks on employees during project implementation	3.40	0.612	5
	c. Availability of adequate bathrooms	3.87	0.583	3
	d. Availability of drinking water and rest rooms for workers	4.17	0.533	1
	e. Availability of medicines and first aid kits as first aid for workers	4.03	0.541	2
4	Fire			
	a. There is a place to store and dispose of flammable items	3.86	0.487	4
	b. Flammable materials have been restricted	4.07	0.627	2
	c. Adequate fire extinguishers have been provided	3.94	0.615	3
	d. There has been a smoking ban in certain locations to anticipate fires.	4.13	0.401	1
5	Protection of the public			
	a. Installation of K3 slogans to remind the need to work safely	3.9	0.661	2
	b. The existence of adequate evacuation routes as alternative emergency response routes	3.71	0.422	3
	c. Signs about the project have been installed around the site	4.21	0.538	1
	d. Security fences have been installed at good entrances and exits around the project site	3.53	0.481	4

Based on the data table above, the results show that the most dominant application of k3 in the construction of the Poliwangi building is that every worker can reach the work location safely, equipment and work clothes are in good condition and can be used according to their function, the availability of drinking water and rest rooms for workers, smoking bans have been implemented in certain locations to anticipate fires, and signs have been posted about the project around the location.

Problems in the Application of Occupational Safety and Health (K3)

Several obstacles were found in the implementation of OHS in the Poliwangi Building construction project which were assessed based on the aspects of workers and companies.

Table 3. Comparison between constraints on the implementation of OHS from the aspects of workers and companies

No.	Assessment Item	Mean	SD	Rank
1	**Workers**			
	a. Insufficient OHS tools available compared to the number of workers	3.37	0.495	7
	b. Not accustomed to working according to the SOP of k3	3.47	0.572	3
	c. Workers' minimal mindset about occupational health safety (K3)	3.43	0.471	4
	d. Lack of communication between workers about OHS programs	3.27	0.463	8
	e. Workers' demands are more on basic needs or basic needs	3.77	0.419	1
	f. The amount of work that does not guarantee the implementation of OHS on the project	0.62	0.521	10
	g. limited knowledge about OHS so that workers do not work with PPE	3.5	0.481	5
	h. Available tools are not in accordance with the needs of workers	3.32	0.456	6
	i. Workers are used to working without PPE	3.17	0.467	9
	j. Not comfortable with the PPE provided	3.6	0.519	2
2	**Company**			
	a. No periodic inspection of K3 equipment	3.33	0.497	9
	b. Absence of internal and security training on K3	3.17	0.461	13
	c. No safety manuals and SOPs on OSH	3.57	0.518	3
	d. The company minimizes costs to implement the K3 program	3.69	0.519	1
	e. There is no company concern about the implementation of K3	3.09	0.052	12
	f. There is no rest room and p3k box provided in the project.	3.17	0.471	11
	g. PPE that is not available by the company	3.27	0.46	10
	h. No strict sanctions for violations from the company	3.5	0.447	4
	i. Weak supervision from the government in the application of k3 at the project site	3.59	0.523	2
	j. The company does not include workers in insurance but prefers incentives for workers	3.5	0.449	5
	k. uncoordinated application of hazardous work due to poor management	3.4	0.432	6
	l. The company does not provide funds in case something happens to workers due to lack of awareness on health and safety.	3.37	0.482	7
	m. the company does not provide training and education to workers on the importance of health and safety.	3.33	0.491	8

So that workers can avoid unwanted things, every construction must have an OHS program. The number of obstacles to the implementation of the K3 program is due to the lack of awareness of each worker. The demands of workers are more on basic needs or basic needs, and not only that, workers also do not have safety manuals and SOPs regarding K3 and workers are not used to working according to SOPs regarding the implementation of K3. Meanwhile, from the company's side, the company minimizes the cost of implementing the OHS program besides that. supervision from the government is weak in the application of OHS at the project site. The implementation of OSH will have a positive impact if the company carries out better OSH management and approaches workers in the form of socialization of the importance of OSH supported by supervision from the government in ensuring the implementation of OSH on the construction project.

CONCLUSION

Based on these conclusions, the author can also provide suggestions for practical action, theory development, and further research Based on the results of the research on the construction project of the Banyuwangi Poliwangi Building, the conclusion that can be drawn is that many obstacles found in the implementation of the K3 program occur from the aspect of workers. Where it is necessary to increase knowledge about K3 and awareness of these workers. Workers prioritize basic or basic needs over K3 when carrying out work while working.

In relation to the K3 implementation activities carried out in the Poliwangi Integrated Lecture Building (GKT) Construction Work, the first suggestion that can be used as input is K3 activities, namely Every worker is given socialization about K3 before starting work to provide initial insight into the dangers and risks of working in the project area, Implementation of safety talk every day for all employees and workers as an effective K3 information media and Recruitment of local nonskilled workers to open up opportunities to become skilled workers. Second, environmental management activities include monitoring and management of environmental impacts that arise (water, dust, noise) in the project area, limiting night work for heavy equipment with high noise such as breakers so as not to disturb the rest of residents who intersect with the project area and managing surface water flow. Third, occupational safety and health planning can be implemented by using APD, building worker security facilities, preparing a safety plan, security plan and prioritizing order & cleanliness of the project (House keeping).

ACKNOWLEDGEMENTS

We would like to thank PT Kembar Jaya Karya for providing project data to assist our research.

REFERENCES

Acthree, D., Haryanto, B., & P. Arifin, T. S. (2023). Analysis of Occupational Safety and Health (K3) Using the Hazard Analysis Method (Case Study on the Samarinda City Korpri Hospital Construction Project). Civil Technology: Journal of Science and Technology, 7(1), 18.

Anggrayni, I. N., & Beatrix, M. (2024). Evaluation of Factors Affecting the Application of Occupational Safety and Health (K3) in the Smpn 9 Building Construction Project Kediri City - East Java. Journal of Scientech Research and Development, 6(1), 571–579.

Ardiansyah, R., Widyaningrum, D., & Jufriyanto, M. (2024). Implementation of Occupational Safety and Health (K3) on Public Facility Improvement Project Work (Mosque Construction) with Jsa and Hirarc Methods. Journal Of Information Technologi and Computer Science, 7, 1397–1403.

Fitra Sari Lating Ramona, Serang Rudi, Gasperz Wellem, Rimesye Apalem Delvi, Tuanakotta, & Abraham. (2023). Analysis of the Effect of Occupational Safety and Health (K3) on Workers' Performance in the Primary Hospital Construction Project in Hitu Village, Malteng Regency. Journal Agregate, VOL.2(1), hlm. 94-100.

Hajaria, L. W., Ahadian, E. R., Taufiq, M., Saputra, Y., Nagu, N., & Tuhuteru, E. (2022). Analysis of the Effect of Implementation of Occupational Safety and Health (K3) on the Performance of Ternate City Workers. Scientific Journal of Sipi Engineeringl, 3(1), 8–15.

Juan Leonardo, S. B. (2023). Analysis of Occupational Safety and Health (K3) Risk Management in the HollandBakery Ancol Barat Iii Building Construction Project Pt. Gelora Bangun Lestari. JT: Engineering Journal k, 12(01), 34–47.

Juliana, A., Purnomo, A., & Berliana, R. (2023). Implementation of Occupational Safety and

Health (K3) in Office Building Construction Projects. Tambusai Education Journa, 7, 29591–29599.

Kurniawan, A. B. (2022). Analysis of the Application of Occupational Safety and Health Management System (SMK3) (Case Study on the Construction Project of Health Affairs Building (URKES) POLRES Lamongan). DEARSIP : Journal of Architecture and Civil, 2(2), 144–154.

Kurniawan, A., Moruk, A. E., Irawan, D., & Aditya, C. (2022). Work on the Malacca Regency Mako Polres (Resort Police) Building Construction Project. Scientific Journal of Civil and Environmental Engineering, 2 (2), 13–19.

Mopio, I., Maulana, R., Heicqal Ardian, O., & Novita Sari, S. (2023). Implementation of Occupational Safety and Health (K3) in the Public Service Mall (MPP) Construction Project with a Zero Accident Target. Unida Engineering Scientific Journal, 4(1), 203–214.

Nugroho, K. A., Subkhan, F., & Novianto, D. (2023). Analysis of Occupational Safety and Health (K3) Towards Zero Accident in the Student Center Building Construction Project of Malang State Polytechnic Phase I. Online Journal of Thesis, 4(1), 73–78.

Pangestika, E. Q. (2023). Implementation of Occupational Safety and Health (K3) Regulations on Housing Development Projects in the DIY Region. Sasana Law Journal, 9 (1), 31–40.

Perumahan, P. M. P. U. dan R. (2021). Regulation of the Minister of Public Works and Housing Number 10 of 2021 concerning Guidelines for Construction Safety Management Systems.

Saputra, K., Budianto, I. R. D., & Pratikno, Y. (2024). The Effect of Occupational Safety and Health (OHS) Compliance Fines, Implementation of Toolboox Meetings and Occupational Safety and Health (OHS) Training on Organizational Performance on the SFD Building Construction Project at the State University of Jakarta. Cahaya Mandalika, 487–495.

Satrio, E. M., & Wibowo, K. (2023). Application of Job Safety Analysis (Jsa) in Analyzing Occupational Safety and Health (K3) in Development Projects. Journal of Civil Engineering and Architecture, 28(2), 89–94.

Soeharto, I. (1997). Project Management From Conceptual to Operational.Erlangga.

Susanti, R., & Cristalisana, C. (2023). Application of Occupational Safety and Health (K3) in the Unma Cikaliung Reading Park Construction Project. *Civil Connection*, *3*(1).

Tiurma Elita Saragi, R. E. S. (2019). Occupational Safety and Health (K3) at the Advanced Flat Construction Project of North Sumatra Province I Medan. Smart Scientific Journal, *III* (2), 68–80.

Wiradarman, lalu wirahman, Handayani, T., Gazalba, Z., & Suteja, I. W. (2023). Evaluation of Potential Occupational Safety and Health (K3) Risks in the Lombok Pltmgu (Peaker) Construction Project 130 - 150 Megawatts with the Job Safety Analysis (Jsa) Method. *Ganec Swara*, *17*(3), 927.

Yamsal, Latupeirissa, J. E., & Tiyow, H. C. P. (2023). Analysis of Workers' Knowledge Level of Occupational Safety and Health (K3) at the Makassar Eye Hospital Construction Project. *Paulus Civil Engineering Journal*, *5*(3), 516–524.