Occupational Safety And Health Of Construction Projects In Dili, Timor Leste

(Case Study: Construction of ETO Tower Timor Leste, Construction of Dili Financial Business Center, Construction of New Office of Tribunal Distrital De Dili, Construction of Hospital Audian, Dili)

Maria Madalena De Jesus Soares, Fredy Kurniawan
Departement of Civil Engineering, Faculty of Civil Engineering
Narotama University, Surabaya, Indonesia
soareslya@gmail.com, fredy@narotama.ac.id

Abstract

Occupational Safety and Health is the program to protect workers from the dangers of work accidents and occupational diseases that may occur during work. This study was conducted to determine the implementation performance of occupational safety and health program, to find out the obstacles during the implementation occupational safety and health programs, as well as labor laws and regulations relating to OSH on construction projects in Dili Timor Leste. This study collected data by distributing questionnaires to employees who work on the four (4) ongoing construction projects in Dili. Data analysis was carried out on Microsoft Excel which further processed the data using the mean count to determine the average value of the questionnaire and the standard deviation. This study found that the project in Dili has implemented the Occupational Safety and Health program. This can be seen from the overall results of the analysis with a mean value of 4.49 and a standard deviation of 0.473. From these results, it can be concluded that every construction project company prioritizes the implementation of OHS. The second result is the obstacles in applying OHS; from the analysis results show that the barriers from the worker side are rank 1 with a mean value of 2.90 and a standard deviation of 0.925. It can be concluded that many obstacles in implementing the OSH program occur from the workers' side due to the lack of awareness and knowledge of workers about OSH in working on construction projects. The result of the third analysis is Timor Leste's labor laws and regulations. The results of the analysis show that it is sufficient for companies to apply Law no. 4/2012 on employment in the areas of security, hygiene and health in the workplace.

Keywords:

Mean, PPE, Occupational safety and health, obstacles, OHS

1. Introduction

Dili is the capital of Timor Leste. This city is also a center for government, security, social, economic, business and industrial which has various facilities and infrastructure to support life. Timor Leste as a small country located in the Asia Pacific and just obtained its sovereignty in 2002. As a new country, it is very important to develop the country's economy. This can be seen from various areas in Dili, the number of ongoing construction projects such as the implementation of government office buildings, hotel and apartment building construction, port construction, highway construction, and the implementation of other constructions.

The process of building a construction project is generally an activity that contains many elements of danger. This causes the construction industry to have a poor record in terms of occupational safety and health. Therefore, occupational safety is an aspect that must be addressed at any time because the problem of occupational safety and health is a very complex problem which includes problems in terms of humanity, economic costs and benefits, legal aspects, accountability and the image of an organization itself (Ervianto 2015).

The implementation of occupational safety and health in construction projects is a form of effort to create a safer, healthier, and more prosperous work environment, free from work accidents and diseases due to hard work and free from environmental pollution towards increasing productivity.

In the last ten (10) years (2010-2020), there have been quite a number of accidents occurring at work on construction projects in Dili. Based on data from the "Inspesaua Geral do Trabalho (IGT)" or general labor inspection, there were 21 cases and 17 of them died.

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From the problems above, in this research, the author tries to conduct a study of occupational safety and health on construction projects in Dili to find out how the implementation of occupational safety and health programs in this city. The method used by the author in collecting data is by distributing questionnaires to several construction project workers and direct observation in the projects. The results obtained from the questionnaire are then analyzed and then conclusions will be drawn regarding the obstacles in implementing the occupational safety and health program on construction projects in Dili, Timor Leste (Erni Kurniawati 2018).

2. Methodology

This research was conducted to find out how the implementation of the OSH program in Dili. Data collection methods were consisted of questionnaires and direct observation to construction projects. The data processing method in this study consists of an editing process to improve the quality of data obtained from questionnaires, entering, and analyzing. The data analysis method used to calculate the results of the questionnaire distribution is to use several formulas to calculate the mean value to find the average value and calculate the standard deviation.

3. Result and Discussion

In this study, the problem discussed is how to apply the occupational safety and health management system in Timor Leste. Data collection was carried out on 4 (four) major ongoing projects in the city of Dili. The method used is the distribution of questionnaires and direct observation to the construction site. The number of questionnaires distributed was 40 questionnaires and the respondents involved were workers who worked in construction sites (Soares and Amaral 2019).

3.1 Projects Data

The distribution of the questionnaires was carried out on ongoing construction projects in Dili. Classification of project data is carried out based on the type of the building, the number of floors of the building, and the project owner.

Tabel 1 Projects Data

No.	Building Type	N	Percentage (%)
1	Oficce	3	75
2	Apartement	0	0
4	Hotel	0	0
5	Shopping Center	0	0
6	Others	1	25
	Total	4	100
No.	Number of Floors	N	Percentage (%)
1.	Basement		
	0 – 2 Floor	4	100
	3 – 5 Floor	0	0
	Total	4	100
2.	Superstructure		
	1 – 5 Floor	2	50
	6 – 10 Floor	1	25
	11 – 20 Floor	1	25
	Total	4	100
No.	Project Owner	N	Percentage (%)
1.	Goverment	1	25
2.	Private	3	75
3.	Others	0	0
	Total	4	100

Table 1 shows that generally the type of buildings built in Dili are more in office buildings with a total of 3 (three) units of construction buildings. The number of building floors in construction projects in Dili, the highest value for the basement is 0 – 2 floors with a total of 2 buildings. For the highest value in the superstructure, 2 buildings are obtained, namely from floors 1 – 5 and floors from 6 – 20, obtained 2 buildings. The owner of the building project built in Dili is owned by a private construction service with a total of 3 projects and 1 project built with government construction services.

3.2 Respondent Data

In this research, the respondents involved are workers who work in construction sites. The workers in question are from project managers to builders. The reason for choosing these respondents are that based on the existing questionnaire, it includes questions from the management side and the workers side. Respondents were classified based on their name, age, last education level, position in the project and work experience. These factors are considered to have a considerable influence in the implementation of construction projects.

Tabel 2 Respondent Data

No.	Age	N	Percentage (%)
1.	≤ 25	12	30%
2.	26 – 35	13	32,5%
3.	36 – 45	12	30%
4.	≥ 46	3	7,5%
	Total	40	100%
No	Last Education	N	Percentage (%)
1.	Primary School	4	10
2.	Junior High School	11	27,5
3.	Senior High School	16	40
4.	Diploma	4	10
5.	Bachelor	5	12,5
6.	Others	0	0
	Total	40	100
No.	Position	N	Percentage (%)
1.	Site engineer	4	10
2.	Safety officer	5	12,5
3.	Foremen and other Staffs	13	32,5
4.	Workers	18	45
	Total	40	100
No.	Work Experience	N	Percentage (%)
1.	≤ 3 Years	16	40
2.	4 - 6 Years	13	32,5
3.	7 - 9 Years	2	5
4.	≥ 10 Years	9	22,5
	Total	40	100

Table 2 shows that generally construction workers in Dili from the 4 projects visited were mostly aged from 26-35 years old with a percentage of 32.5% and respondents aged 46 years had a low percentage of 7.5% or 3 person. Characteristics of respondents based on the latest education of workers on construction projects are generally high school graduates with a percentage of 40% or as many as 16 people, and respondents with the last education level of Bachelor are 5 people with a percentage of 12.5%. The classification of respondents based on the position in the project, namely handyman (worker) has the highest number with 45% or as many as 18 people, and the lowest rank is owned by respondents with positions as site engineer, which is 10% or as many as 4 people. Classification of Respondents Based on Work Experience of less than 3 years (≤ 3 years) has the first rank of 16 people. Respondents with 7 to 9 years of work experience with a percentage of 5% had the lowest number, which was only 2 people.

3.3 Identifying the Implementation of Occupational Health and Safety Program

In identifying the implementation of the OSH program, it includes workplace safety in the project, work equipment and clothing (PPE), fire, protection of the public, occupational and general health. The results of this classification can be seen in table 3.3 as follows:

Table 3 Results of the Analysis of the Occupational Safety and Health Program

No.	Occupational Safety and Health Program	Mean	SD	Rank
1.	Workplace Safety in Projects	4,68	0,440	1
2.	Equipment and Work Clothes (PPE)	4,68	0,440	1
3.	Fire	4,43	0,481	3
4.	Protection of The Public	4,54	0,554	2
5.	Occupational Health	4,36	0,534	4
6.	General	4,24	0,496	5
	Σ Mean	4,49		
	Σ SD		0,473	

Table 3 analysis results show that the occupational safety and health program in the 4 projects visited has an average value of 4.49 and a standard deviation of 0.473. From these results, workplace safety in the project and equipment and work clothes has rank 1 or the first rank with a mean value of 4.68 and a standard deviation of 0.440. This shows that each project site has good lighting and lighting, safety fences and open spaces have been installed in the project to prevent the fall of workers, and equipment and work clothes have been provided by the construction service company and are used properly by the workers.

3.4 Identifying Obstacles in Implementing Occupational Safety and Health

In identifying Obstacles in Implementing Occupational Safety and Health include barriers from the worker side and obstacles from the company side. The results of this classification can be seen in table 4 as follows:

Table 4 Results of Obstacle Analysis in Implementing Occupational Safety and Health

No.	Obstacles in implementing Occupational Safety and Health	Mean	SD	Rank
1.	Barriers From The Workers Side	2,90	0,925	1
2.	Brriers From The Company Side	2,25	0,881	2
	Σ Mean	2,57		
	Σ SD		0.903	

Table 4 analysis results show that the constraints in implementing occupational safety and health have a total mean value of 2.57 and a standard deviation of 0.903. From these results, labor barriers have the first rank in the construction project in Dili with an average value of 2.90 and a standard deviation of 0.925. This shows that limited knowledge about work safety makes workers reluctant to work with personal protective equipment and many workers do not know the guarantees on existing construction projects.

3.5 Timor Leste Labour Laws (Lei Trabalho No.4/2012) Concerning Safety, Hygiene and Health in the Workplace.

In identifying Timor Leste's Labour Laws (Lei Trabalho No.4/2012) concerning Security, Hygiene and Health in the Workplace, it includes general Requirements, general obligations of employer and general obligations of workers. The results of this classification can be seen in table 5 as follows:

Table 5 Results of Analysis of Timor Leste's General Employment Laws and Regulations (Lei Trabalho No. 4/2012 Concerning Safety, Hygiene and Health in the Workplace

No.	Timor Leste Labour Laws (Lei Trabalho No.4/2012) Concerning Safety, Hygiene and Health in the Workplace.	Mean	SD	Rank
1.	General Requirements	4,68	0,474	1
2.	General Obligations of Employers	4,61	0,493	2
3.	General Obligations of Workers	4,58	0,483	3
	Σ Mean	4,62		
	Σ SD		0,483	

Table 5 results of the analysis show that Timor Leste Labour Laws (Lei Trabalho No.4/2012) Concerning Safety, Hygiene and Health in the Workplace has a total mean value of 4.62 and a standard deviation of 0.483. From these results indicate that the companies comply with the law both from the company and workers

3.6 Result Of Field Observations

The results of the field observations on occupational safety and health in the 4 (four) projects visited have been running well. In the construction project, the workers are required to use the PPE attribute in order to avoid unwanted events.

It can be seen that the workers wear personal protective equipment (PPE) correctly but some do not wear personal protective equipment (PPE) while at the construction site. Based on interviews with the HSE team, there were workers who did not comply with the regulations and were difficult to reprimand.

Based on the observations in these 4 (four) projects, occupational health and safety such as workplace security, protection of the public and occupational health and others have followed the existing OHS regulations.

4. Conclusion

Based on the results of the analysis and discussion of the data, the authors obtain conclusions that can be drawn from research on Occupational Safety and Health in Dili Timor Leste with Case Study Construction of ETO Tower Timor Leste, Construction of Dili Financial Business Center, Construction of New Office of Tribunal Distrital De Dili, Construction of Hospital Audian, Dili as follows:

1. Based on the results of the analysis on the data, it shows that companies or construction workers simply apply Law no. 4/2012 concerning employment in the security, hygiene and health divisions in the workplace.
2. Based on the results of the analysis of the implementation of the Occupational Safety and Health program on construction projects in Dili, it was found that the occupational safety and health implementation program that took place in Dili City prioritized occupational safety and health programs. This can be seen from the overall results of the analysis with a mean value of 4.49 and a standard deviation of 0.473. From these results, it can be concluded that every construction project company prioritizes the application of as workplace safety in the project, work equipment and clothing, fire, protection of the public, occupational health and the general public.
3. Based on the results of the analysis of the constraints in implementing the occupational safety and health program, it was found that in identifying the Obstacles in Implementing Occupational Safety and Health included barriers from the worker side and barriers from the company side. From the results of the analysis on the data, it shows that the barriers from the worker side are rank 1 or rank first with a mean value of 2.90 and a standard deviation of 0.925. It can be concluded that many obstacles in implementing occupational safety and health programs occur from the workers' side due to the lack of awareness and knowledge of workers about in working on construction projects and many workers who do not know the guarantees on existing construction projects. Another thing that becomes an obstacle from the workers' side from the results of the analysis and direct observations in the field is that workers do not comply with K3 regulations such as not using PPE when working at construction sites and being difficult to be reprimanded by the HSE team.

5. Suggestions

Based on the conclusions above, the suggestions that the author can give are as follows:

1. Workers who work in construction sites are generally difficult to reprimand if they do not comply with the OHS regulations for example not wearing PPE, therefore the government is advised to emphasize OHS regulations, especially strong sanctions to workers in order to avoid work accidents.

2. For the government, especially in the SEFOPE section or general labor inspection, it is recommended to conduct OHS training so that workers who work in construction sites can better understand occupational safety and health regulations in the workplace.

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Biography

Maria Madalena De Jesus Soares was born in Dili, Timor Leste on March 20, 1995. In 2006 the author graduated from SD Negeri no.04. Fatuhada Dili, 2009 graduated from SMP Negeri 30 Comoro Dili, in 2013 graduated from SMA 05 Negeri 05 Maio Becora Dili. In 2017 the author was accepted as a student with the Civil Engineering study program at Narotama University Surabaya, Indonesia through an international scholarship. In 2021 Praise God will lead the author to get a Bachelor's degree in Civil Engineering.