

The Cost Of Occupational Safety And Health (OSH) In Construction Project

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Abstract

Accident and injury statistics at the secretary of the construction sector are the highest compared to other sectors every year. Accidents in the work environment are a loss for the company. In development, Indonesia is a developing country that has a high mortality rate according to the International Labor Organization (ILO). This is due to the large number of workers in the project who need good occupational safety and health (OSH) management. With a good occupational health and safety management system, at least it will prevent or reduce the risk of workplace accidents. Minister of Public Works Regulation Number: 05 / PRT / M / 2014 concerning Guidelines for Safety Management and Construction Systems in the Field of Public Works. Mentioning the implementation of Safety Management and Construction Systems work in the field of Public Works must apply in the Public Works Sector. For example, every implementation of field construction work. There are 2 objectives in this study. the first goal is to obtain details of occupational safety and health (OSH) activities for construction projects which include roads, bridges, drainage and buildings. and the second objective is to compare the costs of implementing occupational safety and health (OSH) in construction projects (roads, bridges, and drainage). The benefits of applying occupational safety and health (OSH) can improve the effectiveness of safety and planned, measurable, structured and integrated health protection, can prevent and reduce accidents in the workplace and work-related diseases, can create a safe, comfortable and efficient workplace for encourage productivity. The method used in this study is: literature study, conducting research and analysis and discussion using descriptive analysis methods. The research subject in this study is the Cost Budget Data Plan for several projects, namely building, road, bridge and drainage projects. Details of the implementation of occupational safety and health (OSH) in the field of construction projects, namely occupational safety and health (OSH) preparation , socialization and promotion of occupational safety and health (OSH), work protective equipment, personal protective equipment, insurance and licensing, safety personnel and occupational health (OSH), health facilities, occupational safety and health (OSH). Fulfillment of occupational safety and health (OSH) for construction projects covering roads, bridges, buildings and drainage varies from a minimum of 0.8% to 1.7% of project value. the smallest occupational safety and health (OSH) costs for road construction projects are 0.8% for bridge construction projects 0.9% for drainage construction projects 1.2% and the largest for building construction projects is 1.7% of project costs. With great value from various projects.

Keywords

OSH, Occupational Health and Safety; Management System; Construction; Cost; Benefits

1. Introduction

Construction work is a combination of various kinds of scientific disciplines, both in terms of technical construction and in terms of non-technical aspects and includes the element of human resources (Marleno, Surjokusumo, Oetomo, & Ikhsan, 2018). In construction work it always concerns the implementation of construction work and the community organizing the construction work itself. Where the implementation of this construction work must meet the provisions concerning engineering, occupational safety and health (OSH), labor protection, and local environmental management to ensure the realization of orderly implementation of construction work. Regarding the potential risk of workplace accidents in carrying out construction work, the current knowledge of occupational safety and health (OSH) on a construction project has become a basic requirement. The occupational safety and health (OSH) aspect will not work

as it should without the intervention of management in the form of a planned effort to manage it (safety management), which is often called the Occupational Health and Safety Management System (OSHMS). Occupational safety and health (OSH) construction is not something new, considering that there are several regulations related to occupational safety and health (OSH) that have existed since 1970, such as Law No. 1 of 1970 concerning Occupational Safety, and a few years ago the Government also issued Ministerial Regulation No. 9 of 2008 concerning occupational safety and health (OSH) (Hartanto & Siahaan, 2018).

Some of the objectives of the various forms of Occupational Safety and Health (OSH) include:

a) As a measure of Occupational Safety and Health (OSH) performance in the organization
OSH is used to assess and measure the performance of Occupational Safety and Health (OSH) implementation in organizations. By comparing the achievement of organizational Occupational Safety and Health (OSH) with these requirements, the organization can find out the level of achievement of Occupational Safety and Health (OSH). This measurement is carried out through Occupational Safety and Health (OSH) audits. In Indonesia, the Minister of Manpower Regulation number 05 of 1996 applies to audit of Occupational Safety and Health (OSH) which sets criteria for measuring the company's Occupational Safety and Health (OSH) performance. ISRS serves as a measure of organizational Occupational Safety and Health (OSH) performance achievement through ratings from level 1 to 10 (Kurniawan, 2015).

b) As a guideline for implementing Occupational Safety and Health (OSH) in the organization
Occupational Health and Safety Management System (OSHMS) is used as a guideline or reference in developing Occupational Safety and Health (OSH). Some forms of OSH used as references include ILO-OSH 2001 Guideline, API 9100A Occupational Health and Safety Management System (OSHMS), ISRS and so on.

c) As a basis for awards
Occupational Health and Safety Management System (OSHMS) is also used as a basis for giving Occupational Safety and Health (OSH) awards for achieving Occupational Safety and Health (OSH) performance. Awards are given by government agencies and other independent institutions such as Sword of Honor from the Five Star British Safety Council, Occupational Safety and Health Management System (OSHMS) from the Indonesian Ministry of Manpower. Occupational Safety and Health (OSH) awards are given for the achievement of Occupational Safety and Health (OSH) performance in accordance with the benchmarks of each organization. Because it is an award, the assessment is only valid for a certain period (Ilfani, 2013).

d) As a certification
Occupational Safety and Health (OSH) can also be used to certify the application of Occupational Health and Safety Management System (OSHMS) in organizations. Certification is given by a certification body that has been accredited by an accreditation body. The current certification system has developed globally, because it can be referred to throughout the world.

Health and safety management system must be supported by an amount of cost to make it efficient in reducing rate of accidents and deaths among the construction workers (Kani, B. R., 2013). The statistic shown that the death rate occurs in the construction sector is among the highest compared to the other industries (Abdul Rahim et al., 2008). This problem was caused by poor handling in health and safety management of contractor due to insufficient amount allocated to meet such compliance (Surya. A., 1844). The occupational safety and health (OSH) management system (OSHMS 18001, 1999) in the organization has five main elements which follow the internationally accepted Demming cycle of Plan-Do-Check-Act, which is the basic to the "system" approach to management (Wijayanti.A.A, 2017). The elements are namely Policy, Organizing, Planning and implementation, Evaluation and Action for improvement as shown in Figure 1 (Kani, B. R., 2013).

Laws and Regulations Regarding OSH, Following are the governing laws and discuss Occupational Safety and Health (OSH):

- a) Constitution
Law No 1 / 1970 discusses and regulates Work Safety
Law No 28 / 2002 discusses and regulates buildings
Law No 13 / 2003 discusses and regulates employment
Law No 30/2009 discusses and regulates electricity
Law No 36/2009 discusses and regulates Health
UU No 2 OF 2016 (36/2009 discusses and regulates the Service Construction)
- b) Government Regulation No. 28/2000 (Business & Role of Acts) No.29 / 2000 (Implementation of construction service)
No 74/2001 discusses and regulates B3 Management

No 36/2005 discussing and regulating the Implementation of Building. Buildings

No 53/2012 discusses and regulates Occupational Safety and Health (OSH)

No 50/2012 discusses and regulates Occupational Health and Safety Management System (OSHMS)

No 12 2015 discusses and regulates about Occupational Health and Safety Management System (OSHMS) Electricity
c) Minister of Manpower

No.01 / 1980 (discuss and regulate about Occupational Health and Safety Management System (OSHMS) Const.
Building Ministerial regulation No 05-PRT-M-2014 Guidance Occupational Health and Safety Management System
(OSHMS) Construction in the field of general development.

d) Constitution no. 1/1970 About Work Safety

Constitution no. 1 of 1970 concerning work safety article 2 paragraph 2 states

that work safety requirements are applied in the workplace, namely the construction, repair, maintenance, cleaning or
demolition of houses, buildings or other buildings including irrigation structures, underground channels or tunnels etc.
or where preparatory work is carried out

In Law No. 1 of 1970 also, in article 9 point 1 the obligation of OSH administrators to show and explain to each new
worker about the conditions and dangers that can arise in the workplace.

e) Joint Decree Minister of Public Works and Minister of Manpower No. 174 / Men / 1986-104 //1986 About
OSH at Construction Activities

In chapter I consists of general contractor obligations, safety organizations and occupational health and first aid.
Chapter II concerning entrances and exits, lighting, ventilation, cleanliness, fire prevention and fire extinguishers,
protection of falling materials and collapsed parts of buildings, protection so that people do not fall. Chapter III on
scaffolding, which is set in great detail includes workplaces, material transport lines, scaffolding from wood, hanging
scaffolding, ladder scaffolding, elbow scaffolding with supports, easel scaffolding, metal pipe scaffolding, movable
scaffolding, hanging chair scaffolding and so on.

f) Regulation No. 05 / Minister of Manpower / 1996

The Occupational Safety and Health Management System is part of the overall management system which includes
the organizational structure, planning, responsibilities, implementation, procedures, processes and resources needed
for the development, implementation, achievement, assessment and maintenance of work safety policies in order to
control risk relating to work activities to create a workplace that is safe, efficient and productive.

2. Research Methods

The purpose of this study is to investigate the details of the activities and costs used in the occupational health and
safety system. The two objectives have been set as follows:

1. To identify details of Occupational Safety and Health (OSH) activities in projects construction
2. To investigate the cost of details of Occupational Safety and Health (OSH) activities in projects construction
(roads, bridges, buildings and drainage)

Research Subject: What is meant by the subject of research, is the person, place, or object chosen in the framework of
growth as a target (Indonesian Language Dictionary, 1989: 862). As the subject of research in this study, is the Cost
Budget Data several projects namely building projects, road projects, bridge projects, and drainage projects.

The research method which is problem solving research is carried out in a planned and meticulous manner to explore
and explore the objects that are being targeted. One method that can be used for this research is descriptive study. The
research method used in this study is a descriptive comparative method using quantitative research. Research using
comparative study methods (Comparative Study) is done by comparing facts and phenomena to find out what factors
can cause a particular event. This research began by gathering facts about the details and costs of Occupational Safety
and Health (OSH) from building projects and civil building projects then compared. After understanding the
similarities and differences in causes, the factors are determined which cause the rotation of the facts caused, what
causes the difference. Descriptive studies in this study began with variables namely the use of detailed Safety and
Health (OSH) activities and Safety and Health (OSH) costs.(Abdul R.A.H., 2014)

The research design is as follows:

- a) Start
- b) Problems
- c) Preliminary research studies
- d) Literature Review
- e) Identification of Problems
- f) data collection
- g) Analysis of the details of Occupational Safety and Health (OSH) activities from project costs

- h) Cost analysis in accordance with the details of Occupational Safety and Health activities of the construction project
- i) Compare the details of the average activities and costs of Occupational Safety and Health (OSH) of the project costs
- j) Conclusion of suggestion funds
- k) Finish

3. Results and Discussion

- a) Planning for Occupational Safety and Health (OSH) preparation activities

Occupational Health and Safety Contract (OSH) The Occupational Safety and Health (OSH) planning activity is a reference for the implementation of the Occupational Safety and Health Management System (OSHMS) for General Worker Field Construction which can be implemented systematically, planned, integrated, and coordinated. In order for interest to know and understand the duties and obligations in the management of field development for General Workers specifically for this work. The scope of OSH regulates the implementation of the construction management system for Occupational Health and Safety (OSH) in the Public Works sector for the implementation of this work with all employment descriptions from preparation to completion of work that has been calculated as projects with High Accident Risk. Occupational Health and Safety Management System (OSHMS) Promotion and Promotion Occupational Safety and Health (OSH) can take place well, it should be considered regarding OSH socialization and promotion consisting of Induction Occupational Safety and Health (OSH) (safety induction) only specifically for new workers, Safety Briefing with Safety Meetings (Safety Talk / or Tool Box Meeting) each the day, Occupational Safety and Health (OSH) Training consisted of (Working at Altitude, Occupational Safety and Health (OSH) Construction & Use of Chemical Equipment (MSDS), Safety-Based Behavior (OSH Culture), First Aid), Occupational Safety and Health (OSH) Simulation, banner making, Poster and OSH Information Board.

- b) Work protective equipment

Companies and workers alike must know about work safety in accordance with applicable standards, one of which is by using Personal Protective Equipment (PPE) that complies with standardization. Work protective equipment consists of Safety Network, Safety Strap (Life Line), Safety deck, Safety Fence, Area Restrictor.

- c) Personal protective equipment

Personal Protective Equipment (PPE) or Personal Protective Equipment, equipment that must be used to protect and maintain the safety of workers when doing work that has a potential hazard or the risk of workplace accidents. Personal protective equipment (PPE) that is used must be in accordance with the potential hazards and risks of the work so that it effectively protects workers as users. Personal protective equipment consists of a Protective Hat (safety helmet), Face Shield (Face Shield), Eye Protection (Goggles, Spectacles), Diving Masks (Breathing Apparatus), Ear Protectors (Ear Plug, Ear Muff), Protective and Mouth Protection (Masks), Gloves (Safety Gloves), Safety Shoes (Safety Shoes) apply to Staff, Safety Shoes (Rubber Safety Shoes), Full Body Harness, Safety Vest, Apron / Coveralls, Fall Arrestor.

- d) Insurance and licensing

Insurance and permits for Occupational Safety and Health (OSH) consist of BPJS Employment and Occupational Health; (Based on Ministerial Decree number: kep-196 / men / 1999, for Project Daily Workers), Permit for Equipment Completion, Operator Permit, Approval Permit for Occupational Safety and Health Development Committee (OSHDC).

- e) Occupational Safety and Health (OSH) personnel

The role of Occupational Safety and Health (OSH) Construction composes the Occupational Safety and Health (OSH) program and its application in construction with HSE personnel consisting of Occupational Safety and Health (OSH) Officers, OSH Experts, Emergency Response Officers, First Aid Officers, Safety Assistance Officer / Safety Man / Traffic Management (Flagman), Media Officers.

- f) Health facilities

Health facilities for Occupational Safety and Health (OSH) consist of first aid kits (first aid kit, stretcher, oxygen tube, wound medicine, bandage, etc.), Occupational Safety and Health (OSH) room (patient bed, stethoscope, weight scales, tension meter, etc.), fogging equipment, Smoked Medicine.

- g) Signs

Occupational Safety and Health (OSH) signs consist of Signs for Prohibited Signs, Warning Signs, Signs of Obligation, Information Signs, Temporary Work Signs, Traffic Control Sticks (Warning Light Sticks), Traffic Cones, Rotary Lights (Rotary Lamp), Last Hose Lights Cross.

h) Others related to Occupational Safety and Health (OSH) risk control.
Other tools related to Occupational Safety and Health (OSH) risk control consist of a Light Fire Extinguisher (LFE); 10Kg, Siren, Occupational Safety and Health (OSH) Flag, Emergency Lamp, Evacuation Line (Escape Route), Reporting and Investigation of Incidents, Internal Inspection and Audit Programs..

OSH fulfillment for projects construction:

Table 1. Details of Activities and Cost of Occupational Safety and Health (OSH)

No	Details of activities Occupational Safety and Health (OSH)	Cost Of Compliance Street (%)	Cost Of Compliance Bridge (%)	Cost Of Compliance Drainage (%)	Cost Of Compliance Building (%)
1	Planning for Occupational Safety and Health (OSH) preparation activities	0.007	0.007	0.004	0.027
2	Work protective equipment	0.040	0.040	0.028	0.082
3	Personal protective equipment	0.052	0.052	0.026	0.086
4	Insurance and licensing	0.184	0.189	0.756	0.363
5	Occupational Safety and Health (OSH) personnel	0.160	0.160	0.224	0.246
6	HSE personnel	0.320	0.380	0.203	0.465
7	Health facilities	0.036	0.036	0.021	0.131
8	Signs - Signs	0.023	0.023	0.008	0.034
9	Others Regarding Occupational Safety and Health (OSH) Risk Control	0.018	0.018	0.018	0.274
Total		0.840	0.905	1.290	1.708

From the table above, it can be seen the total cost of Occupational Safety and Health (OSH) for construction projects. Occupational Safety and Health (OSH) fees are expressed in% (percentage) of project costs. the project cost of each project varies. Compliance with Occupational Safety and Health (OSH) for building projects and civil building projects varies from a minimum of 0.8% to 1.7% of project value. The smallest Occupational Safety and Health (OSH) costs for road projects are 0.8% for bridge projects 0.9% for drainage projects 1.2% and the biggest for building projects is 1.7% of project costs. with great value from various projects

4. Conclusion

Details of OSH activities :

- a) Planning activity Occupational Safety and Health (OSH) preparation
- b) Occupational Safety and Health (OSH) Promotion and Promotion
- c) Work protective equipment
- d) Personal protective equipment
- e) Insurance and licensing
- f) Occupational Safety and Health (OSH) personnel
- g) Health facilities
- h) Signs
- i) Others related to Occupational Safety and Health (OSH) risk control.

Occupational Safety and Health (OSH) fulfillment for project construction varies from a minimum of 0.8% to 1.7% of project value. The smallest Occupational Safety and Health (OSH) cost for road projects is 0.8% for bridge projects 0.9% for drainage projects 1.2% and the biggest for building projects is 1.7% of project costs. with a large value of different projects.

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