

A Study of OHSAS 18001 Towards Sustainable Construction in Renovation Project Stadium Gelora Bung Karno, Indonesia

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— *Review of* —
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ABSTRACT

Currently, competition in the field of construction is inevitable and the demand for quality desired by consumers continues to increase. Therefore, it is necessary to develop sustainable strategies to build consumer confidence in the field of Occupational Safety and Health (OHSAS 18001). This research aims to find out how the implementation of HSE management system based on OHSAS 18001 in the renovation project of Gelora Bung Karno Stadium, Indonesia and To find management system K3 Construction in accordance with construction conditions in Indonesia. The methodology in this study used a qualitative approach. Data were obtained through interviews and observations of 10 key informants and then analyzed data through data reduction and conclusions. The results of this study found that OHSAS 18001 Management System Construction refers to OHSAS 18001 in which there are several supporting factors such as organizational commitment, leadership, safety culture, and communication. With the implementation of a good OHS Management system will create efficiency and effectiveness of project performance to realize sustainable development.

Keywords: OHSAS 18001, Safety Culture, Sustainable Construction

1. INTRODUCTION

Health Safety & Environment (HSE) is a global issue affecting the competitiveness of a company's production, where the ups and downs of accidents are strongly influenced by the implementation of the HSE System and employee behavior. Therefore Health Safety & Environment must be managed as with other aspects of the company such as operations, production, logistics, human resources, finance, and marketing. Aspects of Health Safety & Environment will not be able to run as it is without any intervention from management in the form of a planned effort to manage it. In the field of construction, occupational accidents usually occur due to lack of fulfillment of requirements in the implementation of occupational safety and health. Working accidents that often occur in the construction process can hamper the construction process itself so that the project management objectives are not achieved such as the addition of unnecessary financing due to the occurrence of work accidents and in time will slow down the process of construction work so that contractor performance decreases and obstacles. This is a consideration for contractor companies in implementing a good OHS management system in the construction process which is key to achieving the goal of successful project management and labor security.

In managing the HSE, the company established a Health Safety & Environment Management system aimed at creating a Health Safety & Environment system in the

workplace that involves all parties so as to prevent and reduce accidents and occupational diseases and the creation of safe, efficient and productive workplaces. The Health Safety & Environment Management (HSE) management system is part of the overall management system that includes the organizational structure, planning, responsibilities, implementation, procedures, processes and resources needed for policy development, implementation, achievement, review and maintenance Occupational safety and health in the control of risks associated with work activities for the creation of efficient and productive safe workplaces. HSE Management System is a systematic and comprehensive concept of HSE management in a complete management system through process planning, implementation, measurement, and supervision. Internationally international standards have been set up in relation to HSE Management called OHSAS 18001. In the OHSAS 18001 standard, there are major components that must be fulfilled by the company in the implementation of HSE Management system in the company continuously. In connection with the implementation of Health Safety & Environment (HSE), there are still many shortcomings and weaknesses despite many regulations published. Existing phenomena related to the implementation of Health Safety & Environment in the field of construction projects are Lack of understanding of Health Safety & Environment among project workers, The existence of a work culture that is un-safety to workers and lack of control over the implementation of Health Safety & Environment by the company. The purpose of this study is to examine OHSAS 18001 OHSAS Health Safety & Environment Implementation on Construction Project, Exploring matters affecting the implementation of a construction project and getting OHSAS 18001 Health Safety & Environment model adjusted to the condition of a construction project in Indonesia.

2. LITERATURE REVIEW

OHSAS (Occupational Health and Safety Assessment) Series 18001 is an international standard for Occupational Safety and Health Management (K3) systems. In the International Occupational Safety and Health Standard (OHSAS 18001) there are several components related to:

1. There is a commitment from all the company's management regarding the OHS management system.
2. The existence of planning/analysis of k3 management system programs within the company.
3. Implement implementation/implementation of OHS Management System within the company itself.
4. Inspection and corrective action on the implementation of OSH management system in the company.
5. Conduct a review of the company's management on OHS Management System policy to be practiced in all company activities on an ongoing basis.

Based on the 5 main components above, the stages in the preparation of OHSAS 18001 OHSAS Management System is divided into 7 stages:

1. Early identification of risks from hazards to the environment
2. Adjusting/implementing the provisions of applicable law and regulations
3. Establish a target company in implementing the program
4. All components in the company implement the planning program for the achievement of targets and objects that have been determined by the company.
5. Require planning for emergency events in operation.
6. Reviewing the targets and implementers of the system
7. Determination of policy as an effort to achieve sustainable progress.

Standard in the implementation of Occupational Health and Safety Management there are 3 stages of the process:

1. Early identification stage of K3-OHSAS 18001 management.
Analysis/identification of the adequacy level of the occupational safety and health system and facilities in the organization.
 - Evaluate the process of the system in the previous organization
 - Examination of existing procedures (documents)
 - Analyze accident rates in the past and prevailing laws and regulations.
2. Phase of Preparation and Implementation of K3-OHSAS 18001 Management
This stage is stage preparation of documents and work programs and implements its implementation. At this stage there are some elements that must be considered, namely:
 - Health and safety policies and their management
 - Organization, resources, and training
 - Operational controls that become the starting point of process procedures, safety, and health regulations and licensing in the work environment
 - Goals and targets of the implementation of occupational health and safety
 - Safety and health system guidance and documentation guidelines
 - The operational controls covered are as follows:
 - Examination and precautions
 - Investigation and remedial action continuously.
3. Phase of OHSAS 18001 OHSAS Management Process Performance Evaluation
This stage is the stage of assessment of the system that has been implemented that includes:
 - Assessment of documentation
 - Verify implementation
 - Continuous improvement / prevention actions required

3. METHODOLOGY

This study uses postpositivist paradigm. Postpositivism views social reality as something holistic/intact, complex, dynamic, meaningful and symptomatic relationships are interactive. The research method used in this research is qualitative research with case study approach. Bogdan and Taylor (in Moleong, 2007:3) suggests that qualitative methodology is a research procedure that produces descriptive data in the form of written or oral words of observed persons and behavior.

To obtain the necessary data in this study, the techniques that researchers will use are in-depth interviews and documentation. An in-depth interview is a way of collecting data or information by way of direct face to face with an informant in order to get complete and in-depth data. The sampling technique used by the researcher for this research is purposive sampling and snowball sampling. Initially, the researcher chose a particular person as an informant who considered giving the required data. Furthermore, based on the data or information obtained from the previous sample, the researcher can assign other samples that are considered will provide a complete data.

The researcher specifies the contractor's Project Manager, Team leader of Construction Management, the leader of Health and Environment (HSE) of construction management, contractor of Health and Environment (HSE) at the Renovation Project of Gelora Bung Karno Stadium Jakarta Indonesia, as a key informant. The researcher will explore the reality of the informant to know the Health Safety & Environment Management System conducted through the project workers.

To do so, the researcher should be able to put himself in the resource position to gain an understanding of the thinking processes of the resource person. Only in this way can the researcher know the reconstruction and perspective of the resource person. In addition to interviews, researchers also use documentation techniques. Documentation method aims to obtain information that supports data analysis and interpretation. Documents may be in the form of writing, drawings or monumental works of a person. In an effort to complete the data, the researcher also conducts library research to gain theoretical knowledge from the views and opinions of experts as a reference to analyze the existing problems.

Data analysis is done by organizing the data, breaking it into units, synthesizing, organizing into patterns, choosing which ones are important and that will be learned and making conclusions. Field data analysis was conducted with reference to Milles and Huberman models. According to Miles and Huberman, 1984 (in Sugiyono, 2012: 246), activity in the analysis of qualitative data is done interactively and lasted continuously until thoroughly so that the data is saturated. Activity in data analysis is data reduction, data presentation, and conclusion.

The validity of this research lies in the process as researchers go to the field to collect data and during the process of data-interpretive analysis. Researchers use two types of validity assessment of qualitative research, which consists of Competency Subject Research and Trustworthiness.

In this research, the researcher uses Triangulate resource, that is by comparing and rechecking the degree of trust from source that is by comparing the result of interview, data with literature study.

4. RESULTS AND DISCUSSION

a. OHSAS 18001 Occupational Health and Safety implementation on construction project

The Occupational Health and Safety implementation in the Project refers to the applicable national and international K3 Regulations and Laws, as Project Manager says:

"OHSAS 18001 policy and OHSAS Management in this project refers to Safety Regulations both internationally such as OHSAS 18001 as well as nationally as Law No. 1 of 1970 concerning work safety, Law No. 13 of 2003 on employment and Government Regulation No. 50 The year 2012 on Implementation of Occupational Safety and Health Management System".

In OHSAS 18001, the OSH Policy established should include:

- a. Commitment to prevent workplace accidents and occupational diseases
- b. Continuous improvement of OHS Management System
- c. Commitment to comply with laws and other requirements related to OHS

It is also explained that in making the OHSAS system the project already refers to OHSAS 18001.

"In the OHSAS Management System, our project is already referring to OHSAS 18001 and applicable legislation. What we do is: Creating the OSH organizational structure for the OSH implementation and job descriptions then make the policy related to the OHS Project"

Occupational Safety and Health Planning and Procedures are made in accordance with the rules that are tailored to the company and project conditions where there are several points to consider:

1. Hazard Identification and Risk Assessment
2. Priority Scale
3. OHS Risk Control
4. Establishment of system, procedure and work program of K3

Based on field observations, related to the OHS system planning has been undertaken by the project are:

1. Hazard Identification and Risk Assessment
 - Identify and determine the Severity / Loss / Impact of Occurrence of Occupational Safety Risk
 - Determining the Occupational Safety Risk Value Level relating to the value of frequency and severity
2. Priority Scale

Implementation of priority scale is applied based on work items that have a high, moderate and small risk, with an explanation: priority 1 (high risk), priority 2 (medium risk), and priority 3 (minor risk). If the risk level is started high, then the job item is a top priority (rank 1) in the control effort.
3. OHS Risk Control

Form of risk control using risk control hierarchy

 - Elimination: redesigning work or replacing materials/materials so that hazards can be eliminated or eliminated
 - Substitution: replacing with safer methods and/or materials at lower hazard levels.
 - Engineering: modify technology or equipment to avoid accidents
 - Administration: control through the implementation of procedures to work safely.
 - use of PPE: personal protective equipment that meets the standards and should be used by the worker on all jobs according to the type of work.
4. Creation of HSE working systems, procedures and programs
 - Occupational Health and Safety procedures are based on the scope of work.
 - Occupational Health and Safety programs include resources, duration, achievement indicators, monitoring, and personnel.

Occupational Health and Safety programs are detailed in relation to the handling of workplace emergencies, risk-appropriate training, and first-aid systems in accidents.

In relation to the HSE program in the project described by the Project HSE Manager as follows:

"Some of the programs we conducted related to the HSE are safety induction for newly employed workers, then every Friday morning held a safety talk in which there are joint gymnastic activities, health checks and HSE related explanations to workers. In addition to supervision of HSE implementation periodically we carry out safety patrol, safety tool box and joint safety patrol with the supervisor of HSE from Construction Management Consultant "

The implementation of the program is explained by the project manager that the project operational control of the HSE program implementation is followed by conducting the evaluation and internal audit process. What about the implementation of the HSE programs?

The HSE Supervisor of Construction Management argues:

"The contractor has indeed made several programs related to the HSE project and we are supervising for its implementation in the field. Some programs are running well but some are still not optimally run. "

Implementation of the HSE program that has not been optimally acknowledged by the contractor, such as the representative opinion of the project HSE manager:

"The implementation of the HSE program has not all gone well because there are some obstacles such as the lack of a number of HSM safety man in the field when the number of workers has been hundreds".

Implementation of HSE programs and activities should be accompanied by an inspection and evaluation process. HSE manager reveals:

"Periodically we conduct an evaluation of the implementation of the program. We conduct the evaluation once a week and involve several parties including HSE subcontractors. The goal is to see if the program is running in accordance with the planning. Every three months conducted an audit K3 from the company's internal"

In connection with the Examination and Evaluation of Occupational Safety and Health Activities:

- Activity inspection and evaluation of OHS performance are done referring to the activities undertaken compared to the planning.
- The results of the examination and evaluation of OHS performance are classified according to the appropriate and non-benchmark categories as set out in the Goals and Programs K3.
- If any matters are not appropriate, including when a work accident occurs a review is taken for corrective action.

Based on the results of field observations, HSE project data and interviews, it can be concluded that the K3 project strategy is as follows:

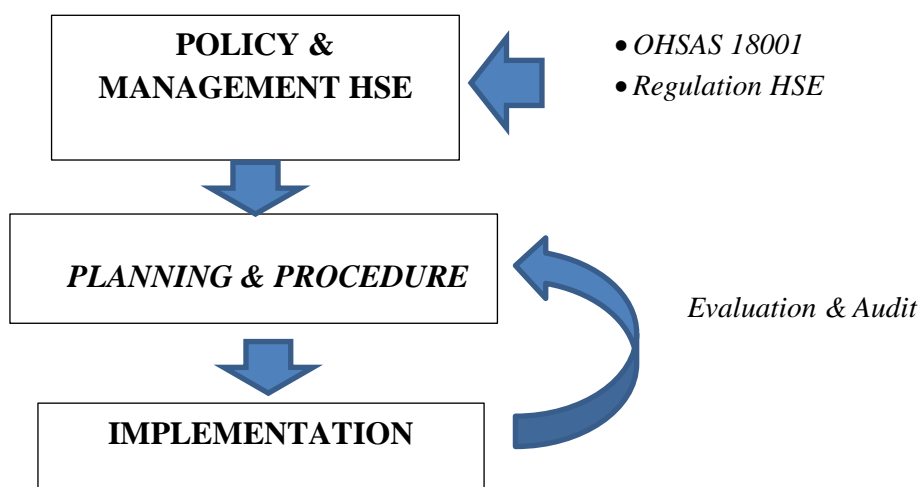


Figure 1. Strategy of *Occupational Health and Safety in Project Construction*

b. Explore things that affect the implementation of OSH Management on construction projects

The implementation of the OHS system in the project has the support of the management as confirmed by the Project Manager K3:

"The OSH regulation should be implemented by all people involved in this project from manager to worker levels, such as the use of PPE in the work area and compliance with OSH"

In addition, it is about the involvement of all parties in the program was noticed.

"In some activities organized by the K3 Division it must be followed by the project management. Such as Safety Talk activities conducted every week. Everyone involved in the project follows, including Construction Management Consultant "

Manager K3 Consultant believes;

"The seriousness of the company (contractor) to carry out K3 properly is necessary. This can be seen by how they allocate funds for the purposes of project K3, such as the purchase of APD that meets the standard "

From the interviews it was found that organizational / management commitment played a significant role in the successful implementation of K3. This is in line with previous research related to management / organizational commitment performed by Osama (2014) which proves there is a correlation between management / organizational commitment with the implementation of work safety especially related to the handling of accident cases. Implementation of OHS Program in the field is not easy, leadership holds a vital role. Cole (2005) argues that Leadership is a combination of strong traits to inspire others to act and the skills they possess that can be used to persuade others to accept voluntary directions and goals.

The Project Manager states:

"OHS programs already made by the project management must be well implemented. To run the program requires a qualified leader "

K3 Manager Construction Management also added:

"Leaders in the OSH division should focus on program achievement."

The project supervisor believes that:

"On the construction project required a firm leader, but also who can motivate his subordinates."

Similar opinion was also submitted by the project's safetyman:

"Leadership in the project is diverse. We prefer communicative leaders who want to understand their subordinates "

Based on the results of interviews found that the leadership affects the successful implementation of K3 Project. This is in line with previous research related to leadership and occupational safety and health management systems. In some studies, it has been proven that leadership has an effect on the successful implementation of OHS management systems such as the research conducted by Chunlin Wu (2016) which states that Leadership is a key factor impacting the safety of construction. While Colin Pilbeam's (2016) study proves that leadership in occupational safety positively affects employees in implementing OSH programs. With regard to Safety Culture, in the implementation of OSH system in the project there are some behaviors from workers that hamper the creation of Zero Accident which became the slogan of K3 Project. It seems that delivered by Supervisor of K3 from Construction Management Consultant:

"In the field, workers often use Personal Protective Equipment (APD) incompletely in the work. Minimum standards in the use of PPE are helmets, project shoes, vests, gloves, and masks. Participants sometimes only wear shoes or helmets only "

K3 Safetyman also claimed that:

"The full use of APD by workers at work only when there are a supervisor and a lack of discipline of workers in following the rules and project safety raids"

Based on interviews with some workers in the field, reluctance to use APD in work is caused by

1. Workers assume the use of APD will slow down their work
 2. Inadequate quality of APD makes workers less comfortable wearing it
- Awareness of workers with regard to safety culture is still lacking this is due to several things, as explained by Team Leader Construction Management Consultant:

"The cause of workers' unawareness in the culture of safety is one of them because their low level of education in addition to their knowledge will work in safety is also less"

K3 Manager of Construction Management Consultants also adds:

"Knowledge of good working methods for workers is lacking so sometimes they work regardless of the risk of accidents"

Based on the above explanation than the factors that affect workers to work in a safe manner

1. Education workers who average SD sd SMU (low educations)
2. Workers' knowledge about working in safety is lacking
3. Knowledge of workers to work with working methods that safety is still lacking

In addition to the above 3 factors, there is an interesting phenomenon related to the awareness of working in safety as revealed by the Project Manager K3.

"Workers who come from the industrial area awareness to work safety ya higher than workers from agricultural and rural areas"

It turns out that the area and environment of origin of the workers also affect workers' views on safety culture in the workplace.

To address the lack of OSH understanding on project workers has already undertaken several programs, as explained by the project OHS Manager;

"We do several programs for the workers: 1) Safety Induction: a program that must be followed by the workers before working on the project. In this activity, the workers are given explanations regarding the project's OHS system and the Self-Protection Tool; 2. Safety talk: a program that is held every Friday followed by all workers in which is filled with socialization related to OSH program, and 3) other programs "

What about the socialization of OHS programs to workers?

The project manager's representative of K3 explained:

"In disseminating K3 programs we deliver in coordination meetings with OSH officers from subcontractors, later the information will be submitted to the foremen"

Coordination between the parts involved in the implementation of K3 is done regularly. Project K3 Manager states:

"Field supervisors and foremen always socialize to workers about how to work properly and safely, even though at the beginning of their entry they have followed the safety induction"

It is quite interesting to find relating to communications with workers as stated by the Safetyman project:

"We usually use local language in explaining, reprimanding or advising workers. Usually, they understand better when using the local language where they come from. "

So the language factor is quite an important factor in communicating in the project. From the various discussions, interviews and observations in the field can be

concluded that several factors that affect the successful implementation of OSH management are:

- Organizational Commitment
- Leadership
- Safety culture
- Communications

c. **OHSAS 18001 Health Safety & Environment Model adjusted to the condition of construction project in Indonesia**

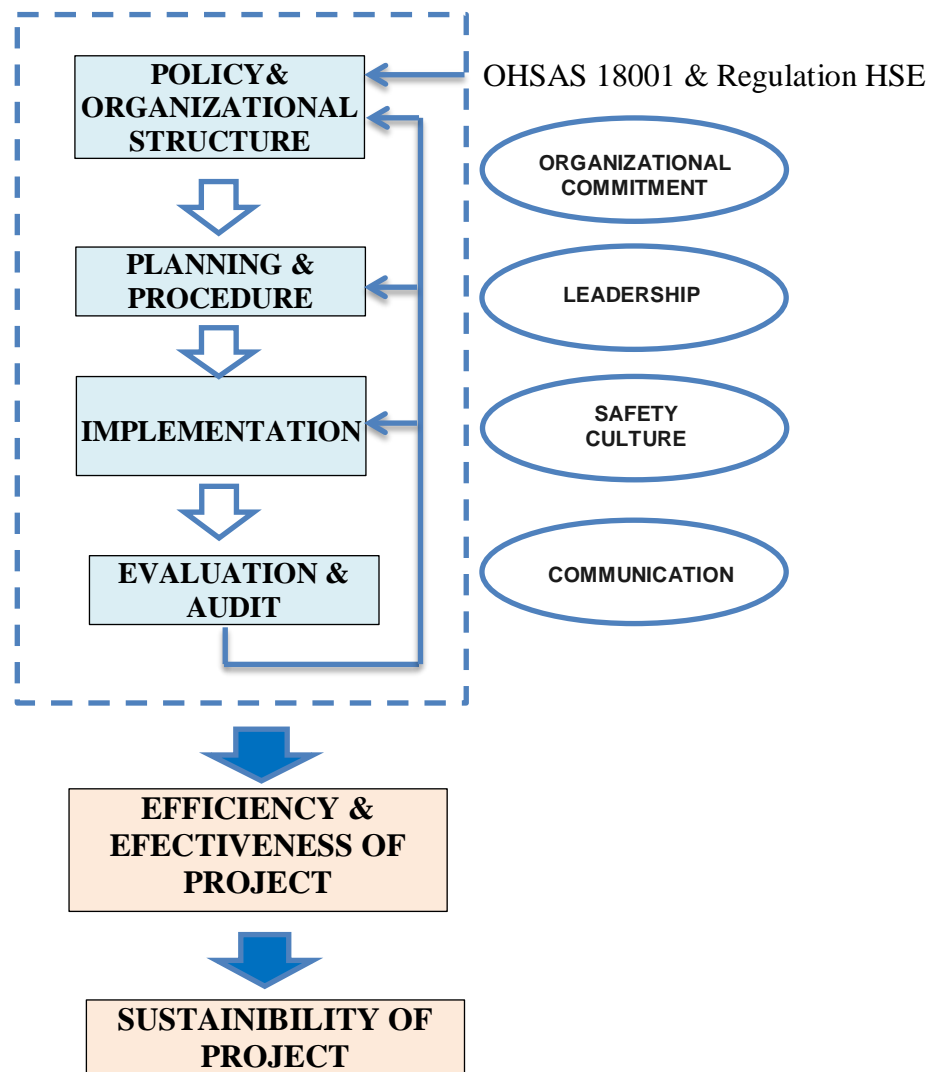


Figure 2. Strategy Management Occupational Health and Safety Base on OHSAS 18001 in construction project

The picture above is a model of K3 Management Strategy that occurs in the construction company which is divided into 4 stages.

The first stage is called **the Stages of Policy and the creation of an organizational structure**. In making OSH policy must understand the international standard related to OHSAS 18001 and other OSH regulation. In accordance with the OHSAS 18001, the initial Policies adopted are the OH & S General Policy which includes: 1) a

commitment to prevent occupational injuries and illnesses; 2) Continuous improvement of OHS Management System; 3) commitment to comply with laws and regulations and other requirements related to OHS. After that, the organizational structure of K3 for K3 implementation and job description is made. **The second stage** is called **the Planning and Procedure stage**, which consists of 1) Hazard Identification and Risk Assessment; Identifying and Determining the Severity / Loss / Impact of Occurrence of Occupational Safety Risk; 2) Establish a Priority Scale based on work items that have a high, medium and small K3 risk level; 3) OHS Risk Control (Elimination, Substitution, Engineering, Administration and use of Personal Protective Equipment) and 4) Establishment of OHS systems, procedures and work programs. **The third stage** is called **Implementation**. At this stage, the implementation of Safety and Health Policy is done effectively by developing the capability and supporting mechanism needed to achieve the policy, goals, and objectives of Health and Safety system. Besides that, operational control in the form of work procedures shall be conducted, including all the control measures which include: 1) Appointing the Responsible Activity of Occupational Health and Safety Management System Organized in OSH Organization Structure and Job Description; 2) Seek control over the scope of occupational safety; 3) Predict and make handling of emergency conditions of the workplace; 4) Implementing detailed training programs as per risk control; And 5) First-aid system in accidents. **The fourth stage** is called **Evaluation & Audit**. Stages of review are the stage of assessment of the system that has been implemented or implemented by the company, including documents, application verification and corrective action required. Hereinafter is Audit stage, In this case Company shall establish and maintain a periodic audit program and procedure for OHS management system implemented in order to determine whether OHSAS management system implemented in accordance with OHSAS 18001 requirements, implemented and maintained well and effectively against policy and Corporate or organizational OHS goals, review results of previous audits and report audit results to management. The audit program should be based on the results of a risk assessment of the company or organizational activities and the results of previous audits. Audit procedures shall include the scope, frequency, methodology and competencies such as the responsibilities and requirements for performing audit and reporting of audit results. The audit program should be conducted by independent personnel who have direct responsibility for the activity being examined.

Some of the factors that influence the success of OHS Management System are:

1. **Organization commitment**

The organization's commitment to implement the OH & S Management System must be carried out by Management. Management must recognize that those who are most responsible for the success and failure of the OSH Management System implementation. These commitments should be poured in concrete and socialized action from top management to bottom-layer employees. This management commitment is also supported by all employees so that it becomes the organization's commitment.

2. **Leadership**

Leadership is a key factor that impacts occupational safety in the field of construction.

- Leadership in OSH is leadership that prioritizes and controls exemplary factors, strong work ethic, responsibility, character, openness, consistency, communication, and confidence.
- OHS leadership is also a leadership that can motivate others to change following the rules and procedures about K3.
- Occupational Safety and Health Leadership is a leadership that carries out control over the targeted activities and OSH programs, maintains performance according to standards, and provides clear clarification of the scope of work, expectations, and responsibilities.
- Occupational Safety and Health Leadership should also be able to create a culture that supports and promotes a strong performance of Health and Safety within an organization is essential.

3. **Safety Culture**

Safety culture is part of an organizational culture that touches on the OSH aspects of individuals/organizations that stress the importance of safety. The culture refers to the values, attitudes, competencies, and behavior patterns that determine the commitment to the OHS program. There are 3 aspects in K3 culture, namely the psychological aspects, aspects of behavior and aspects of the situation. These three aspects affect each other.

Changing safety culture is a long-term strategy that requires ongoing effort. The consistency of behavior against agreed standards must be achieved with good safety behavior and should be the working conditions considered in the performance appraisal. The establishment of a good safety culture can help control and reduce construction costs and improve the efficiency of ongoing operations over the long term.

4. **Communication**

Communication is important in ensuring the project implementation process works well. Successful projects are characterized by a good work pattern in which communication interactions are also effective. Some forms of communication are internal and external communications, formal and informal and vertical or horizontal. An important point in communication on projects is to manage the communication processes that occur in the project to be effective. Project Communication Management is required to ensure project information can be collected, organized, distributed and stored. Communication Management consists of communication planning and communication distribution.

- Communication planning is identified about: information required by the organization and methods for delivering it as well as the party responsible for delivering the information.
- Information Distribution: Forms of distribution of communications in the project there are several kinds, such as: Meetings and Distribution of data.

In the project also needed competent human resources in the communication of human resources who have knowledge, skills, and a good attitude in communication for the efficiency and effectiveness of the project. With the implementation of a good HSE system will create efficiency and effectiveness of project performance to realize sustainable development.

5. CONCLUSION

OHS management system consisting of policy and organizational Structure, Planing & Procedure, implementation and evaluation and audit supported by commitment, leadership, safety culture and good communication will lead to efficiency and effectiveness in the project.

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