OHS MANAGEMENT IN PREVENTION OF CONSTRUCTION WORK ACCIDENTS (CASE STUDY OF DEVELOPMENT OF PAYANGAN SUB-DISTRICT GOVERNMENT CENTER)

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ABSTRACT

The general objective of this study is to analyze the preventive efforts and control work accidents in the construction project of PT. Narendra Putra Dewata. Meanwhile, the specific objective of this study is to analyze the implementation of OHS management commitment, OHS organization, OHS rules and procedures, OHS communication, and OHS training on PT. Narendra Putra Dewata. The study was conducted using a qualitative descriptive method with in-depth interviews and observational approaches. The subjects of this study were 4 main informants and 3 triangulation informants. The main informants were OHS expert workers, while triangulation informants were field workers. The data validity test was carried out by using the source triangulation technique, namely checking data to other sources, field workers in this study, and technical triangulation, namely checking data through different techniques, field observation in this study. The result of this research are: 1) PT. Narendra Putra Dewata has committed to implementing OHS as evidenced by the existence of an OHS policy, provision of OHS equipment, and supervision. However, it was not running optimally. 2) PT. Narendra Putra Dewata has an OHS organization in the form of OHSAC. However, it was not following the existing regulations. Besides that, the OHSAC existence has not been fully utilized. 3) PT. Narendra Putra Dewata has and carries out OHS rules and procedures following Government Regulation No. 50 of 2012. The reward and punishment system has been running even though it was not yet optimal. 4) PT. Narendra Putra Dewata has implemented OHS communication and has been running according to regulations. 5) PT. Narendra Putra Dewata has carried out OHS training. There have been special training for workers according to their field of competence. The company is suggested to involve workers in the OHSAC organizational structure according to the regulations. Thus, they can see OHS problems in the field from the workers’ point of view. The company can take firm action on any violation of regulations committed by workers to prevent any similar incident to happen again. The company is suggested to carry out toolbox meetings with all workers.

Keywords: PT. Narendra Putra Dewata, OHS management, Construction Work Accidents

I. INTRODUCTION

The construction sector in Indonesia ranks first with a high rate of work accidents. According to Kesai, construction and manufacturing are the sectors with the highest accident rate at 32 percent, followed by the transportation sector at nine percent, the forestry sector at four percent and the mining sector at two percent, and the rest by other sectors [1].

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Work accidents might cause various kinds of losses, namely losses to the company and losses to workers. Losses to the company can result in paying compensation to workers due to accidents, while losses to workers can result in injuries, disabilities, and even death [2].

The theory of Frank E. Bird and Robert G. Loftus shows that there is a relationship between the role of management work accidents to minimize the occurrence of work accidents [2]. In the implementation of spatial planning involves two components: natural and human, with their interaction. Interaction of the both causes a conflict of interest and will also affect the ecosystem and social system [3].

The challenge to the construction of OHS management in implementing OHS is the support from top management. This is because construction projects require a lot of labor, limited time for construction, little cost, but as much profit as possible. Therefore, construction projects with top management that do not support the implementation of OHS might result in a lack of efforts to prevent and control work accidents such as lack of PPE, lack of medical facilities, weak monitoring, and evaluation related to OHS, and lack of implementation of OHS commitments according to policy because they are only compliance with legislation [31].

Occupational safety is closely related to improving the performance of construction projects. The existence of an occupational safety management system will bring a climate of work security and space. Thus, it greatly assists the relationship between workers and employers which is a strong foundation for the creation of the production. The facts show that the construction service industry is one of the industrial sectors that has a high risk of accidents. Therefore, it is time for the construction service industry players to think together about the implementation of a better construction safety management system in project implementation.

The construction of the Payangan Subdistrict Government Center, Gianyar Regency, was carried out by constructing several buildings and supporting facilities and infrastructure for the subdistrict government center. There are several buildings built, including the sub-district office building, Military Headquarters at the ward level building, multipurpose building, fire station building, and the arrangement of the landscape and sports center to support activities in the center of sub-district government. The construction of the Payangan sub-district government center was carried out by several companies according to the auctioned procurement. PT. Narendra Putra Dewata is one of the construction companies carrying out the construction of a sub-district office that has been certified with ISO 14001, OHSAS, and OHS Management System. Implementation of work began in May 2020 with a recorded number of workers of 150 people. The OHS expert in this project was very active in implementing OHS programs according to the agreement in the contract.

The results of a preliminary study carried out through field observations found several violations such as violations in the use of PPE and smoking in the work area. Meanwhile, some regulations obliged to use of PPE, and smoking was prohibited in the work area. There were no medical facilities such as lack of first aid boxes in accidents in the field and there were no company doctors, as well as the lack of emergency facilities.

The results of interviews with a project implementer (OHS expert) and field workers showed that there were still several work accidents that often occurred such as being hit by nails, falling objects from above, scratching and bumping into iron, tripping over unused material, and falling into holes. Furthermore, there were still findings of unsafe conditions, such as unused materials scattered about and interfere with work activities. Many cables were also found hanging and scattered which can interfere with activities and can cause accidents.

The general objective of this study is to analyze the preventive efforts and control work accidents in the construction project of PT. Narendra Putra Dewata. Meanwhile, the specific objective of this study is to analyze the implementation of OHS management commitment, OHS organization, OHS rules and procedures, OHS communication, and OHS training on PT. Narendra Putra Dewata.

II. LITERATURE REVIEW

Definition of Occupational Health and Safety

Occupation is a physical and/or psychological activity to meet the needs of life by producing goods/ works/services to meet the needs of the community. Based on the legal aspect, occupation is what a worker does for the employer in an employment relationship by receiving a wage. Seen from a spiritual aspect, occupation is worship. Thus, a good job fulfills all of the above aspects [4].
Work-related accidents are accidents related to the working relationship at the company. Employment relationship in this case can be defined as an accident that occurs because of work or at the time of carrying out work [5]. Occupational safety is an effort that can guarantee the condition and perfection of workers (both physically and spiritually) along with their work and work equipment in the workplace. These efforts are required to be made by all elements involved in the work process, namely the workers, supervisors (head of workgroups), companies, government, and society in general. Without good cooperation between all these elements, it is impossible for occupational safety to be maximized [4].

Difficulties in the assessment were always found in the study related to the causes of each work accident case. To overcome the problems, it is necessary to classify work accidents into general groups of causes. Therefore, it might be easier to prevent and overcome each accident itself. Thus, the common causes of work accidents are as follows [6]:

1. Hazardous conditions of the workplace (environment) and work equipment, such as slippery work floors, hot workspaces, noise, damaged and unprotected work instruments, and many others.
2. Inappropriate behavior at work, such as the person concerned does not follow the applicable work procedures.
3. Causes which at that time were beyond the reach of those involved as a result of the development of the method of work.

Every time a work accident occurs, the employees, company leaders (management), and the state will suffer losses. In short, all parties will be harmed by the accident [6].

1. Losses to employees include:
   a. Suffering from pain, fear, and sorrow.
   b. Disability.
   c. No longer able to work together.
   d. Suffering from mental disorders.
   e. Loss of livelihood and future.
   f. Not being able to enjoy a decent life and so on.
2. Losses to company leadership (management) include:
   a. Loss of work production/ work time
   b. Decreasing the quality and quantity of labor
   c. Increased overtime work (due to making up for lost work time)
   d. Repair and removal of machinery and other work equipment
   e. Loss of working time for other employees/staff to:
      i. investigate into the accident
      ii. help employees who have suffered accidents
      iii. see/watch the accident
      iv. give sympathy and so on
   a. Placement and training of employees who have suffered accidents (after recovering) for new jobs.
   b. Treatment
   c. Insurance/compensation for accident sufferers
   d. Loss of trust from other employees and their environment.
3. Losses to the employee (who get accidents) include:
   a. Nobody makes a living anymore
   b. Space restrictions
   c. Losing affection

Every work accident that occurs, can be classified into one of the various general features of work accidents to reduce the difficulty in analyzing the existence of the accident. These general features are as follows [6]:

1. Being exposed to something/ human
2. Crashing into something/ human
c. Falling from a high place  
d. Falling from and on the same surface (e.g. slipping)  
e. Trapped by/ under/ between objects  
f. Scratched/ rubbed by an object  
g. The immediate reaction from the body  
h. Excessive effort  
i. Electric shock  
Exposed to very hot objects, light, chemical substances and many others.

**Occupational Safety Management System**

This system is part of the overall management system which includes the organizational structure, planning activities, responsibilities, implementation, procedures, processes, and resources required for the development of implementation. Achievement of assessment and maintenance of occupational safety policies are in the context of controlling risk related to work activities, in order to achieve a safe, efficient, and productive workplace and work environment [4].

![Fig. 1. Occupational Safety Management Model System](image)

**Causes of Accidents and OHS Management**

Accidents are adverse events that are not planned, unexpected, and there is no element of intent [7]. There are several theories that explain the causes of an accident. Previously, the theory of the cause of accidents indicated that accidents were caused by the wrong actions of the worker (person) for example, in the Accident-Proneness Theory. Since the introduction of The Chain-of-Events Theory, The Domino Theory, and The Distraction Theory, it is the organization and management that are considered to have played a role as the cause of an accident. The assumption about work accidents originating from unsafe actions by workers has shifted to the assumption that work accidents originate from organizational and management factors (Andi, 2005) [8]. Management is obliged to be responsible for safety. The workers and employees should be directed and controlled by the management to create a safe work activity. In the latest theory, it is increasingly clear that the causes of work accidents are increasingly complex. The new theories include the Multiple Caution Model, and Constraint Response Theory [9]-[10].

Occupational Safety and Health Management is part of the overall management system which includes organizational structure, planning, responsibilities, implementations, procedures, processes, and resources needed for the development, implementation, achievement, assessment, and maintenance of OHS in the context of risk control relating to work activities, in order to create a safe, efficient, and productive workplace. Starting from the Total Project Management Study [11], safety needs to be integrated into the project, from the conception to completion of the project. It was further said that assessment activities on safety, health, and environment need to start from the project planning stage, contracts, tender evaluation, construction, to maintenance, and even demotion [11].

The rational concept of Total Safety Control is an integration of management actions and synergistic implementation actions to promote a safe construction process [12]. There are many approaches in OHS management, including according to OHSAS 18001 and TQM where safety is an integral center and focus in an integrated quality control program [13], which has to be continuously improved to meet customer satisfaction (intern-extern). This study discussed the management functions, the sources involved, and some relevant aspects.

**Overview of Management Functions**

In the case of the management functions, there are planning, organization, implementation, and supervision functions. The planning function, besides focusing on operational tasks, has to include occupational health and safety (OHS) measures, which are prepared to prevent accidents. Responsibilities are required to be clearly
outlined in order to avoid confusion that could endanger. It is also necessary to analyze what dangers might arise in a job and how to overcome them. In an engineering work contract, articles that regulate preventive occupational safety need to be made by referring to the prevailing laws and regulations [14]. In the case of organizational functions, it is necessary to form a task force that can carry out OHS properly. For this reason, it is necessary to provide adequate offices and adequate organization. In a company, it is necessary to establish an Organizing Committee of OHS which is responsible for occupational health and safety in industrial activities [15]. Organizing a safety meeting is recommended for field supervisors and owners to participate in safety meetings, and to hire full-time safety supervisors [15] - [16]. In the case of the implementation functions, what has been planned should be carried out properly. Since the accidents that occur are mostly caused by human factors, management is required to provide clear direction and coordination. Many accidents occur because workers are new and unfamiliar with work processes and equipment. To do this, all management skills are needed, including communication and leadership. In this connection, Pre-project Safety is proposed including safety goals, safety policies and procedures, personal safety, and safety budget. Furthermore, it is said that training and safety incentives have an influence on accident prevention[16].

The supervisory function is an important function because it is a control measure of whether everything planned has been carried out and whether there are obstacles and problems that need to be resolved. To ensure that the OHS management system is implemented properly, the supervisor from the Human Resources Department carries out an assessment which includes:

Building and maintaining OHS commitments,

Documentation strategy and document control,

Job security and monitoring standards,

Reporting and repair of deficiencies,

Data collection and utilization,

Raising awareness and employee/ HR training.

A certificate stating that a company/ economic activity has been implemented the OHS Management System correctly and is goof is issued by the authorities and is valid for 3 years. Furthermore, to ensure consistency of the OHS Management System, periodic audits are carried out by authorized officers. Every week/ month, it is necessary to have a meeting to discuss all matters relating to the implementation of OHS in the company. Therefore, all information and problems can be known by all relevant departments.

Research Methods

The study was conducted using a qualitative descriptive method with in-depth interviews and observational approaches. The subjects of this study were 4 main informants and 3 triangulation informants. The main informants were OHS expert workers, while triangulation informants were field workers.

The data validity test was carried out by using the source triangulation technique, namely checking data to other sources, field workers in this study, and technical triangulation, namely checking data through different techniques, field observation in this study. Data collected were then analyzed qualitatively to make findings and draw conclusions and recommendations [30].

III. RESULT AND DISCUSSION

Analysis of the Implementation of OHS Management Commitment

The commitment of OHS management in implementing OHS can be seen from the existence of an OHS policy which was written and stated in a work contract, as evidence of a statement of its commitment to be responsible for OHS [17]. Payangan sub-district office construction project by PT. Narendra Putra Dewata has a written OHS policy and has been signed by the company's leadership as stated in the Agreement on May 19. 2020. This policy has been disseminated to all workers directly, during early safety induction activities and routine physical meetings, namely toolbox meetings, and safety talk. The OHS policy has been documented in the form of a printout and laminated and posted on the information board of the keet directors in the project. However, in
formulating the policy, PT. Narendra Putra Dewata has not involved worker representatives. This contrary to Government Regulation No. 50 of 2012 Article 7 paragraph 3c, wherein policy making is required to consider input from workers/ laborers [18].

If the policymaking does not consider input from workers, then the policy taken does not necessarily accommodate the interests of workers and only looks at the interests of the company. Thus, it can cause the policies that have been set, do not to work optimally [18].

Another form of OHS Management commitment is through the provision of OHS equipment such as PPE, fire extinguisher, and first aid box. However, in reality, PPE was given to workers free of charge at the beginning and if it was damaged, PPE might be replaced through salary deductions. This is not in compliance with Law No. 1 of 1970 article 14C which states that companies are required to provide PPE free of charge to all workers and guests who enter the workplace [19].

The provision of PPE with this system can have a negative impact in the form of workers reluctant to report and request for replacement of damaged PPE. Therefore, their salary would not be deducted. This can increase the risk of work accidents since the PPE is not functioning as it was in good condition. Therefore, PPE management is needed, because, with good management, the PPE used will be more in accordance with the potential hazards that exist and carried out comprehensive management [20].

Moreover, the company has not provided fire extinguishers and first aid kits in the number and placement according to regulations. This can increase the risk of a more severe accident because it is known that a fire extinguisher is one of the most important pieces of supporting equipment when a fire occurs. Furthermore, the first aid kit is an important piece of equipment for the first treatment if there is a wound due to a work accident.

A further form of OHS management commitment in making efforts to prevent and control work accidents is supervision. Supervision can help to assess whether the management function is effective in its implementation. After supervision is carried out, the company can take necessary corrective actions to ensure that the company’s goals can be achieved [21].

In this Payangan sub-district office building construction project, supervision was carried out by the Supervisory Consultant, CV. Tataring Bali. Meanwhile, contractor management has not been involved in the implementation of OHS Implementation Supervision for workers. Supervision activities have been carried out following the schedule made. Besides that, there were also sudden field inspections without a schedule. This is under the objectives of the supervision carried out, namely to measure the applicable in the field and compared with existing standards and make corrections if there are deviations [22].

The failure of the company directors to participate in supervisory activities is a mismatch with the management function, controlling or supervising. This might result in a lack of commitment of workers in implementing OHS because supervision will not run optimally if only one party is doing it. Other than that, because of its role as decision-makers, the company director should be involved in the supervision to see firsthand the problem that exists in the field [23].

Effective supervision runs and affects workers who will be reluctant to commit violations and the feeling of security obtained of workers. This is supporting the results of research conducted by Ahmad Chandra where people behave more obediently if there is supervision and behave less well if there is no supervision [24].

Analysis of the Implementation of the OHS Organization

In order to fulfill the obligations in government Government Regulation No. 50/2012, PT. Narendra Putra Dewata has an OHS organization, namely Occupational Health and Safety Advisory Committee (OHSAC) in the Payangan sub-district office building construction project. This is known through field observations made by the researcher where there was an OHSAC structure in the keet boardroom and information boards. In the OHSAC structure, the project manager serves as the head of the organization and the OHS expert in the project serves as the OHSAC secretary. Meanwhile, OHSAC members were the contractor executor, a circular letter from the supervisory consultant, and staff of PT Narendra Putra Dewata. It can be seen that there were no representatives of workers as the members of OHSAC. This clearly contradicts Government Regulation No. 50/2012 which
states that members of the OHSAC structure should involve company representatives and labor or worker representatives [18].

The OHSAC structure membership should involve a worker representative. This is because OHSAC is a forum for cooperation between employers and workers in implementing and supervising the implementation of OHS. Furthermore, workers are the people who best understand the problems related to OHS in the field. Thus, their advice and information are needed for the benefit of the organization [25].

The organizational function should be a provider of input and advice, and not only as a fulfillment of legislation. OHSAC in this project had not been fully utilized. This can be seen from OHSAC meetings which were not held regularly. This is not following Article 12 of Regulation of Ministry of Manpower No. 4 of 1987 which states that OHSAC activities are required to be reported to the Minister/authorities. Thus, routine OHSAC meetings should be held [25].

Analysis of the Application of the Regulation and Procedures of OHS

PT. Narendra Putra Dewata has disseminated OHS rules and procedures to all workers. OHS regulations and procedures were conveyed through routine physical activities such as toolbox meetings and safety talks. Besides that, they also utilized printed media in the form of posters and banners. This is supporting Soehatman Ramli’s statement that communication and procedures are needed to increase knowledge and skills. Safe work procedures are expected to make workers can work safely and prevent as well as control the occurrence of work accidents [26].

Payangan sub-district office construction project by PT. Narendra Putra Dewata had and implemented a reward and punishment system. In this system, workers were expected to improve their quality of work and be more responsible at work [27]. In its application, the system was not following what it should be, where one of the triangulation informants stated that the safety officer was still not strict in taking action against workers who violate the regulations. This is because there are workers who were not aware of OHS and lack supervision by related parties.

The reward and punishment system is one of the OHS management efforts to increase the commitment of workers. This is supporting a previous study conducted by Mungki Primesty where the reward and punishment system has a positive effect on workforce commitment even though there are still obstacles in its implementations [28].

Analysis of the Application of OHS Communication

OHS communication stated in the Payangan sub-district office construction project by PT. Narendra Putra Dewata, was safety induction, safety talk, toolbox meeting, and OHS signs under the commitments stated in the agreement. PT. Narendra Putra Dewata has carried out routine toolbox meetings twice a week on Tuesday and Friday. However, only 50% of workers were obliged to participate in this activity. This is because the company only makes the minimum requirement for worker attendance at the toolbox meeting to be only 50%, even though the toolbox meeting activity has an important influence in preventing and controlling work accidents.

The percentage of workers participating in toolbox meeting activity varied widely with one another. Some were diligent in joining, and some rarely participated. This results in an inequality of knowledge between workers. Whereas, the work to be carried out and the hazard that might occur, procedures for working safely, and PPE that must be used were informed during the toolbox meeting. If there are workers who do not participate in the toolbox meeting, the workers do not know this information. It will lead to an increased risk of work accidents.

Safety induction activities had been carried out following Law No. 1 of 1970 article 9, where safety induction is provided to all people who enter the project area, both new workers and guests. In this activity, a brief description of the project profile, followed by an explanation of the potential hazards that can occur and the PPE that must be used are explained [19]. Apart from that, PT. Narendra Putra Dewata has implemented OHS communication in the form of printed media such as posters, banners, and safety signs that have been installed in several points [19]. However, there are still signs on posters and safety signs that are starting to fade and are not easily accessible to the eye.

Analysis of the Implementation of OHS Training
According to Government Regulation No. 50 of 2012, there is a need for guidance to workers regarding OHS. This is because OHS will not run by itself but OHS is formed through training and coaching [18]. The ILO stated that one of the efforts to prevent and control workplace accidents is by providing training and education [29]. PT. Narendra Putra Dewata has carried out OHS training, namely training on the use of PPE and fire extinguisher. PT. Narendra Putra Dewata also conducts special training according to the needs of workers, such as special training for workers who work at high altitudes, namely by giving training related to the full body harness that other parts do not get. This is in accordance with Government Regulation No. 50 of 2012 which states that training is carried out based on the competencies required for the type of work of each worker [18]. The training has also been carried out according to the schedule made and there is a positive effect that is felt by the workers.

### IV. CONCLUSION AND SUGGESTION

**Conclusions**

PT. Narendra Putra Dewata has committed to implementing OHS as evidenced by the existence of an OHS policy, provision of OHS equipment, and supervision. However, it was not running optimally. PT. Narendra Putra Dewata has an OHS organization in the form of OHSAC. However, it was not following the existing regulations. Besides that, the OHSAC existence has not been fully utilized. PT. Narendra Putra Dewata has and carries out OHS rules and procedures following Government Regulation No. 50 of 2012. The reward and punishment system has been running even though it was not yet optimal. PT. Narendra Putra Dewata has implemented OHS communication and has been running according to regulations. PT. Narendra Putra Dewata has carried out OHS training. There have been special training for workers according to their field of competence.

**Suggestions**

The company is suggested to involve workers in the OHSAC organizational structure according to the regulations. Thus, they can see OHS problems in the field from the workers' point of view. The company can take firm action on any violation of regulations committed by workers to prevent any similar incident to happen again. The company is suggested to carry out toolbox meetings with all workers.

### REFERENCES

23. RomauliSR.TheInfluenceofSupervisionandWorkExperienceonEmployeePerformanceatPT.MitraKaryaAnugrah.UniversityofPrimaI ndonesia