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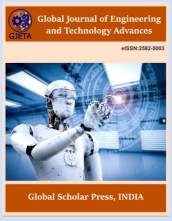

(RESEARCH ARTICLE)

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Implementation of OHS during the Covid 19 pandemic in the Semarang Ocean Pier project

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Abstract

The Covid-19 pandemic has greatly affected the conditions of various sectors of life, one of which is the construction sector. The wharf construction project which must continue requires the addition of health protocols to the application of OHS to prevent the spread of Covid-19 as well as monitoring and controlling the implementation of OHS in the project area. This study aims to find out how the effect of the implementation of OHS as well as the monitoring and control of the implementation of OHS on the project. From the results of processing the questionnaire data sourced from construction workers in the Design and Build project of Strengthening and Elevating the Ocean Pier of Tanjung Emas Port, Semarang, it can be seen that there are 22 (twenty two) items of OHS implementation that have been implemented with the implementation of OHS that The most influential was the making of a circular about the dangers of Covid-19 and the precautions for Covid-19. From the research results it is also known that there are 8 (eight) monitoring and control measures on the implementation of OHS with the most influential action being the application of moderate sanctions for violations of prokes in the project area.

Keywords: Project; Wharf construction; OHS; Health protocol; Covid 19 pandemic

1. Introduction

The development of facilities and infrastructure in Indonesia is growing rapidly, this can be seen from the large number of building constructions, bridge constructions, water constructions and road constructions. In addition to the aspects of cost efficiency and time effectiveness, one aspect that becomes a benchmark for the success of a construction project is the zero work accidents that occurred during the construction process. The zero number of work accidents cannot be separated from the application of OHS in the field.

On 31 December 2019, the World Health Organization (WHO) confirmed the existence of COVID-19 disease in China after infection with COVID-19 in Wuhan residents on 12 December 2019 and 29 December 2019 caused by the Corona virus. On March 2, 2020, President Joko Widodo and Terawan Agus Putranto who at that time served as Minister of Health of the Republic of Indonesia announced the first case of COVID-19 disease in Indonesia and since then the case of COVID-19 has continued to increase every day.

The construction sector is one of those affected by the COVID-19 pandemic, such as delays in the implementation of construction work due to the implementation of Large-Scale Social Restrictions in several cities or Restrictions on Community Activities in Semarang. In addition, there is an additional budget that must be spent by project management to implement health protocols in accordance with the Instruction of the Minister of Public Works and Public Housing Number: 02/IN/M/2020 concerning Protocols to Prevent the Spread of Corona Virus Disease 2019 (Covid-19) in the Implementation of Construction Services.

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Dock construction projects are also very vulnerable to the spread of the Corona virus because the project location is in the open area of Tanjung Emas Port, Semarang and in September 2021 the first case of the spread of the Corona virus was confirmed in 20 dock construction project workers.

This study analyzes the application of OHS during a pandemic due to the COVID-19 outbreak and the actions taken if there are deviations or successful implementation of OHS in the field and how these two affect the Design and Build Project of Strengthening and Elevating the Tanjung Emas Port Ocean Pier in Semarang

A project is a set of organized activities that convert a number of resources into one or more products/services of measurable value in a one-cycle system, with cost and quality time limits set by agreement (Malik: 2010 in Setiyadi: 2012). In general, according to (Husen 2011), construction project categories are divided into 4 categories, namely buildings, residential or residential buildings, heavy engineering buildings and industrial buildings.

The process that occurs in a project certainly involves parties to be able to realize buildings that are of the right quality, on time and on cost, both directly and indirectly. The parties involved in the project consist of 3 (three) parties according to (Tatag, 2018), namely service users, consultants and service providers.

Construction management (construction management) is how the resources involved in the work can be managed effectively and efficiently to achieve project objectives, in accordance with provisions/laws related to construction. (Siswanto, 2019). The types of resources needed in the project are material resources, equipment resources, cost resources, and human resources. Human resources are the main factor in determining the success of a construction project. Even though a construction project is supported by sufficient capital and good equipment, if it is managed by a workforce with limited capabilities, it will certainly not be optimal because the expected performance will certainly not be achieved optimally.

There are several aspects that need to be possessed by workers and must also be maintained so that they can help achieve a goal. Aspects of human resources in question are aspects of work competence, work motivation, work loyalty, work discipline and occupational safety and health.

Of the several aspects of human resources, the aspect of occupational safety and health (OHS) is the most important because one of the benchmarks for the success of a construction development is the zero work accidents that occur during the construction of the construction. a safe and comfortable work environment for its workers. (Siswanto, 2020)

Occupational Safety and Health or which can be abbreviated according to the Decree of the Minister of Manpower of the Republic of Indonesia No. Kep.463/MEN/1993 is a protection effort aimed at keeping workers and other people in the workplace/company safe and healthy and so that every production source can be used safely and efficiently. With the application of occupational safety and health control technology, it is expected that the workforce will achieve high levels of physical endurance, work performance and health. In addition, it is hoped that occupational safety and health can create high work comfort and safety. (Sholihah and Kuncono, 2014).

The wharf construction project which is the focus of this research has a large potential for work accidents for its workers. Why is that ? Port operations such as the process of loading and unloading ship cargo should not be disrupted or hampered even though there is project construction. The project location which is by the sea can also increase the potential for work accidents. Therefore, below, we will discuss the application of OHS in dock construction projects prior to the Covid-19 outbreak, namely the use of personal protective equipment (PPE), provision of project safety facilities, provision of light fire extinguishers (APAR), provision of noise protective equipment, warning if there is a ship loaded with dangerous and explosive goods/liquids, prevention of accidents due to port traffic, emergency response training,

The implementation of the pier construction work, which must continue even during a pandemic, requires the management to determine the steps for implementing OHS in the project area, especially the health protocol, considering that the project area is in an open space and is full of activity which has a high potential for spreading the Corona virus.

The health protocol that is carried out as an addition to the various types of OHS implementation that has been carried out in the pier construction project is the implementation of socialization or counseling programs related to Covid-19 and preventive measures, the provision of public facilities at the project site, the implementation of health facilities, and the provision of protection for workers.

Actions To Take If There Are Deviations/Successful Implementation Of OHS And Health Protocols During The Pandemic Period Due To The COVID-19 Outbreak.

The Covid-19 pandemic has changed many patterns and lifestyles of people both at home and outside the home, such as in the work area. We have to comply with many new regulations and health protocols both in public and at work in order to break the chain of transmission of Covid-19. However, it is undeniable that there are still many people who do not realize the importance of implementing health protocols during this pandemic. Therefore, several steps are needed to prevent deviations from implementing OHS and health protocols in the project area, including establishing a Covid-19 task force, imposing sanctions on minor violations, minor violations and serious violations and awarding employees and workers at projects that adhere to health protocols.

The Effect of OHS Implementation and Taking Action If There Is a Deviation/Success of OHS Implementation on the Project.

The Covid-19 pandemic period set by WHO directly impacted the implementation of construction projects and caused major changes to various things in the project and tested the quality of our human resources in dealing with the impact of Covid-19 so that it would not harm the project business too much and even stop it. Construction projects forever. The impacts felt by the project during the Covid-19 pandemic included delays in implementation time, increased project budget, changes in work activity habits, adjustments to regulations for the conditions of the Covid-19 pandemic and increased worker productivity.

2. Research methods

2.1. Object of research

The research object that is determined according to the problems to be studied is the application of OHS during the Covid-19 pandemic, actions to be taken if there are irregularities or successful implementation of OHS and the effect of implementing OHS during the Covid-19 pandemic on the project.

2.2. Research instrument

The instrument used was a closed method questionnaire, where possible answer choices had been determined beforehand and respondents were not given alternative answers. The indicators for these variables are translated into a number of statements in order to obtain qualitative data. This data will be converted into quantitative form with a statistical analysis approach. So in this study using an ordinal Likert scale technique which functions not only to state the category, but also to state the rating being measured.

2.3. Research variable

The variables used in this study are divided into 2 (two), namely the independent variable and the dependent variable. The independent variables used in this study were the application of OHS during the Covid-19 pandemic (X1) and the actions taken when there were irregularities/success of implementing OHS during the Covid-19 pandemic (X2) while the dependent variable used in this study was the effect of implementing OHS and actions taken when there are deviations/successful implementation of OHS during the Covid-19 pandemic for the project.

2.4. Population and sample

The population in this study were employees and workforce in the Design and Build project for Strengthening and Raising the Ocean Pier of Tanjung Emas Port in Semarang, which was under the auspices of PT Hutama Karya (Persero), totaling 50 people, while from the calculation of the Slovin formula, the number of samples used in this study totaling 44 (forty four) people.

2.5. Data Testing

The data from the questionnaire results will then be carried out in several stages of testing using data processing software, namely SPSS version 25 before finally drawing conclusions from the test results. The stages of data testing are instrument testing which is divided into validity and reliability tests, followed by classical assumption testing which is divided into normality tests, multicollinearity tests and heteroscedasticity tests. Independent and dependent variables and followed by testing the hypothesis which is divided into the F test, T test and test the coefficient of determination. The final stage of testing this data is determining the ranking of each variable.

3. Results and discussion

3.1. Questionnaire Results

Respondent's Positionshown in Table 1 below:

Table 1 Respondent's position data

No	Respondent's Position	Number of people)	Percentage (%)
1	Project Head	1	2.27
2	Project Manager	4	9.09
3	Technique	5	11.36
4	*Quality Control* (QC)	2	4.55
5	OHS	5	11.36
6	Other	27	61.36
Total		44	100.00

Respondent's age.which can be seen in Table 2 below:

Table 2 Respondent's age data

No	Respondent Age	Number of people)	Percentage (%)
1	< 20 years	0	0
2	20-30 Years	13	29.55
3	30-40 Years	21	47.73
4	> 40 years	10	22.73
Total		44	100.00

Respondent's education.which can be seen in Table 3 below:

Table 3 Data on last respondent's education

No	Last education	Number of people)	Percentage (%)
1	SD	3	6.82
2	JUNIOR HIGH SCHOOL	3	6.82
3	SMA/SMK	20	45.45
4	Diploma III (D3)	4	9.09
5	Bachelor degree)	14	31.82
6	Other	0	0
Total		44	100.00

Implementation of OHS in the project.can be seen in Table 4 below:

Table 4 OHS implementation data at the project site

No	Implementation of OHS	Number of people)	Percentage (%)
1	Not Implemented	0	0
2	Partially Implemented	5	11.36
3	Fully Implemented	39	88.64
Total		44	100.00

Implementation of prevention of the spread of covid-19 in the project.

Can be seen in Table 5 below:

Table 5 Implementation of prevention of the spread of covid-19 at the project site

No	Covid-19 prevention	Number of people)	Percentage (%)
1	Not Implemented	0	0
2	Partially Implemented	0	0
3	Fully Implemented	44	100
Total		44	100.00

Complete health protocol facilities.can be seen in Table 6 below:

Table 6 Complete health protocol facilities

No	Completeness of Health Protocol Facilities	Amount (person)	Percentage (%)
1	Yes, Very Complete	38	86.36
2	Yes, Incomplete	6	13.64
3	There isn't any	0	0
Total		44	100.00

Cooperation with health agencies.shown in Table 7 below:

Table 7 Cooperation with health agencies

No	Collaboration with Health Agencies	Number of people)	Percentage (%)
1	Not implemented	0	0
2	Not Implemented	0	0
3	Has been done	44	100
Total		44	100.00

Supervision of the implementation of OHS / health protocols.as shown in Table 8 below:

Table 8 Supervision of OHS/health protocols implementation

No	Supervision of OHS/healthy protocols Implementation	Amount (person)	Percentage (%)
1	Not tight	0	0
2	Pretty Tight	7	15.91
3	Very tight	37	84.09
Total		44	100.00

Instrument Testing Results

X1 validity test.can be seen in Table 9 below:

Table 9 The results of the validity test of the variable x1

Sub Variable	Pearson Correlation (Rcount)	Sig.	Rtable	Criteria
X1.1	0.593	0.000	0.2973	Valid
X1.2	0.347	0.014	0.2973	Valid
X1.3	0.365	0.009	0.2973	Valid
X1.4	0.308	0.029	0.2973	Valid
X1.5	0.351	0.012	0.2973	Valid
X1.6	0.660	0.000	0.2973	Valid
X1.7	0.660	0.000	0.2973	Valid
X1.8	0.541	0.000	0.2973	Valid
X1.9	0.593	0.000	0.2973	Valid
X1.10	0.590	0.000	0.2973	Valid
X1.11	0.518	0.000	0.2973	Valid
X1.12	0.554	0.000	0.2973	Valid
X1.13	0.554	0.000	0.2973	Valid
X1.14	0.627	0.000	0.2973	Valid
X1.15	0.627	0.000	0.2973	Valid
X1.16	0.541	0.000	0.2973	Valid
X1.17	0.627	0.000	0.2973	Valid
X1.18	0.609	0.000	0.2973	Valid
X1.19	0.565	0.000	0.2973	Valid
X1.20	0.563	0.000	0.2973	Valid
X1.21	0.541	0.000	0.2973	Valid
X1.22	0.660	0.000	0.2973	Valid

X2 validity test.can be seen in Table 10 below:

Table 10 The results of the validity test of the x2 variable

Sub Variable	Pearson Correlation (Rcount)	Sig.	Rtable	Criteria
X2.1	0.588	0.000	0.2973	Valid
X2.2	0.731	0.000	0.2973	Valid
X2.3	0.737	0.000	0.2973	Valid
X2.4	0.594	0.000	0.2973	Valid
X2.5	0.716	0.000	0.2973	Valid
X2.6	0.733	0.000	0.2973	Valid
X2.7	0.547	0.000	0.2973	Valid
X2.8	0.588	0.000	0.2973	Valid

Y validity test.can be seen in Table 11 below:

Table 11 The results of the validity test of the variable y

Sub Variable	Pearson Correlation (Rcount)	Sig.	Rtable	Criteria
Y1	0.319	0.035	0.2973	Valid
Y2	0.407	0.006	0.2973	Valid
Y3	0.345	0.022	0.2973	Valid
Y4	0.336	0.026	0.2973	Valid
Y5	0.433	0.003	0.2973	Valid
Y6	0.367	0.014	0.2973	Valid
Y7	0.367	0.014	0.2973	Valid
Y8	0.409	0.006	0.2973	Valid
Y9	0.520	0.000	0.2973	Valid
Y10	0.330	0.029	0.2973	Valid
Y11	0.490	0.001	0.2973	Valid
Y12	0.588	0.000	0.2973	Valid
Y13	0.501	0.001	0.2973	Valid
Y14	0.330	0.029	0.2973	Valid
Y15	0.306	0.044	0.2973	Valid

Reliability test. Can be seen in Table 12 below:

Table 12 Reliability test results

Variable	Cronbach Alpha (αcritical)	Sig.	αcritical	Criteria
X1	0.866	0.000	0.6	Reliable
X2	0.787	0.000	0.6	Reliable
Y	0.623	0.000	0.6	Reliable

3.2. Classical Assumption Test Results

3.2.1. Normality test

From the results of the normality test, the probability result is 0.234 which is greater than the α value of 0.05 so that it can be said that the distribution of the regression model is normal

3.2.2. Multicollinearity test

From the results of the multicollinearity test in the Tolerance column it can be seen that the tolerance value for the independent variables X1 and X2 each has a value of 1 which is greater than 0.1 and the VIF value for the independent variables X1 and X2 is 1 which is smaller than 10 so that between variables independent is not linearly correlated or multicollinearity free.

3.2.3. Heteroscedasticity test

From the results of the heteroscedasticity test between the variables X1, X2 and Y, no specific pattern was formed so that the regression model can be used because there is no heteroscedasticity.

3.3. Results of Multiple Linear Regression Analysis

From data processing, there are numbers that describe the coefficients of each independent variable which can form a multiple linear regression equation, namely Y = 59,013 + 0,743 X1 + 0,244 X2.

The meaning of the multiple linear regression equation is as follows: a constant of 59,013 means that if the application of OHS (X1) and the control measures for implementing OHS (X2) have a value of 0, the effect on the project (Y) has a value of 59,013. If the application of OHS (X1) has an increase in value of 1 and the value of control measures for the application of OHS (X2) is fixed, the effect on the project (Y) has increased by 0.743 and if the application of OHS (X1) has a fixed value and the control measures for the application of OHS (X2) have increased value 1, the effect on the project (Y) has increased by 0.244.

3.4. Hypothesis Test Results

Test T x1 against y. From the test results, the tcount x1 is 2,982 greater than the ttable which is 2,019 or the significance value of the calculation is 0.032 less than 0.05 so that the x1 variable partially affects the y variable.

Test T x2 against y. From the test results, the tcount x2 is 2.478 greater than the ttable which is 2.019 or the significance value of the calculation is 0.019 less than α 0.05 so that the X2 variable partially affects the Y variable.

F test. From the test results, the value of fcount is 4.190 greater than ftable which is worth 3.230 or the significance value of the calculation is 0.024 less than 0.05 so that variables X1 and X2 simultaneously affect variable Y.

Test the coefficient of determination. The value of R2 is 0.169 so if multiplied by 100 it becomes 16.9% and this is the percentage of how much influence X1 and X2 simultaneously have on variable Y.

3.5. Rating Determination Results

X1 variable rating. Determination of the ranking of the variable x1 is based on the order of the IKR value from the largest to the lowest as can be seen in Table 13 below:

Table 13 Ranking of OHS implementation during the covid-19 pandemic

No	Analysis of the Application of OHS During the Pandemic Due to the Covid-19 Outbreak in the Semarang Ocean Pier Construction Project	rank
1	Make circulars about the dangers of COVID-19, preventive measures and sanctions given if it is proven that they have not implemented the health protocol while in the project environment	1
2	Spraying with disinfectant regularly in the project office area, project warehouse, project vehicles and workers' mess	1
3	Provision of hand washing/hand sanitizer facilities in several locations in the project office area, field and workers' mess	1
4	Measurement of body temperature and oxygen saturation for all employees and workforce every morning before starting work	1
5	Carrying out periodic rapid tests for all employees and workers in the project area, including after permission is absent from work	1
6	Implementation of PCR Tests for employees or workers who are indicated to be reactive/positive for Covid-19 after carrying out a rapid test	1
7	Provision of vitamins & health supplements regularly to employees & workforce to maintain body stamina	1
8	The enactment of the regulations requires that a health certificate and/or a Covid-19 free certificate be brought after permission is absent from the office	1
9	Provision of medical personnel who live in the project area	2
10	Provision of medical equipment facilities in the health room such as medicines, thermometers, oxygen cylinders, rapid test kits, and others in a sterile condition	2
11	Provision of personal protective equipment for each employee and workforce in the project area	2
12	Installing information media in strategic locations that contain calls for every workforce to implement health protocols and maintain a healthy work environment during the Covid-19 outbreak	3
13	Provision of self-isolation mess for employees and workers who are positive for Covid-19 (especially for people without symptoms and mild symptoms such as coughing) with strict medical supervision.	3
14	Collaborate with the nearest Health Center or Hospital and the local Health Office	3
15	Provision of medical masks, cloth masks and gloves	3
16	Provision of costs and health insurance for every employee and labor who is sick or exposed to Covid-19 while in the project area	3
17	Insulation between employee desks and meeting rooms in the project office	4
18	Provision of a health room in the project area	4
19	Conduct safety induction for new workers and guests entering the project area.	5
20	Collaborate with the Semarang City Health Office in providing education to all employees and workforce about COVID-19, the dangers it poses and the application of health protocols.	5
21	Provision of personal cutlery for employees and project workers	5
22	Hold discussions with the workforce to explain the Occupational Safety and Health Management system that was implemented in the project during the Covid-19 pandemic.	6

X2 variable rating. Determination of the ranking of the variable x2 is based on the order of the IKR value from the largest to the lowest as can be seen in Table 14 below:

Table 14 Rating of actions taken if there are irregularities/success in implementing OHS during the Covid-19 pandemic

No	Actions To Take If There Are Irregularities/Successful Implementation Of OHS/health protocols During The Covid-19 Pandemic	rank
1	Application of moderate sanctions (community work on the project, a fine of Rp. 200,000) for violations of health protocols that cause other people to imitate these violations, such as crowding, inviting to smoke together, etc.	1
2	Giving awards to workers who report violations of the health protocols by fellow workers	1
3	Application of severe sanctions (official warning from the company, layoffs) for violations of health protocols that have ignored regulations such as wandering from the mess area during self-isolation	3
4	Outreach to workers regarding sanctions for violating OHS/ health protocols and rewards for obeying OHS/ health protocols	4
5	Coordinate with the project owner and the local health office regarding the implementation of the prokes in the project and the flow if there are workers who are positive for Covid-19	5
6	Selection of workers who comply with health protocols every week	5
7	Coordination with project management regarding what actions will be taken if OHS/ health protocols violations are found by workers	7
8	Application of light sanctions (verbal warnings, writing sanctions in the Covid-19 task force violation book) for violations of health protocols such as not wearing masks properly, not washing hands diligently, etc.	8

4. Conclusion

Based on the data analysis, it can be seen what the implementation of OHS was during the pandemic due to the COVID-19 outbreak at the Samudera Semarang pier construction project and from ranking the implementation of OHS / health protocols it can be concluded that there were 8 (eight) out of 22 (twenty two) implementations of OHS / health protocols which is considered very influential in preventing the spread of the Corona virus during the Covid-19 pandemic.

For monitoring and controlling the implementation of OHS/ health protocols during the Covid-19 pandemic, several actions were taken to prevent irregularities and appreciate the successful implementation of OHS / health protocols carried out by the workforce.

From the results of data analysis, the indicator variable X1 totaling 22 (twenty two) and the indicator variable X2 totaling 8 (eight) and the indicator variable Y totaling 15 (fifteen) are declared valid and reliable, this means that the instrument being tested is declared adequate and can be trusted if submitted at different times. As well as from the results of testing the classical assumptions it can be stated that the variables X1, X2, and Y are normally distributed, the independent variables are not linearly correlated or free of multicollinearity and free of heteroscedasticity.

Furthermore, from the results of multiple linear regression analysis it can be found a relationship between variables X1, X2 and Y through the equation Y = 59.013 + 0.743 X1 + 0.244 X2 then from the results of hypothesis testing it can be seen that variable X1 is the application of OHS during the Covid-19 period and variable X2 namely the actions taken if there are irregularities/successful implementation of OHS/Prokes during the Covid-19 pandemic each partially or simultaneously have an effect of 16.90% on the Semarang Ocean Pier project, this means that the remaining percentage of 83.10% is affected by the factors others which are not the subject of this study.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declared no potential conflicts of interest concerning the research, authorship, and or/publication of this article.

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