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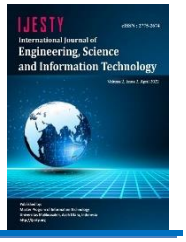

Implementation Of Construction Safety Management System on The Building Project of Haji Hospital Of Surabaya

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Abstract

Safety and accidents at work are the most serious thing to note, on building projects stroke center at Haji Hospital of Surabaya is still a lot of workers are less aware and less understanding about the safety and accidents caused due to neglect of the problem of workplace accidents. It is necessary to analyze the implementation of safety management system construction as well as the influence of the cost of the implementation of the project. This research method uses quantitative description based on the analysis about the application of the safety management system of construction on building projects stroke center Haji Hospital Surabaya, data collection through questionnaires (primary) which is distributed to 30 respondents consisting of the executive team (contractor), supervisory (MK) project and also some of the foreman of the workers, and observation and also documentation, where data is the results of the questionnaire were analyzed using the software IBM SPSS version 25, looking for the results of the multiple linear regression, T-test, an F-test. The results of linear regression analysis, T-test and F test obtained the value of T count > T table where X1 = 3,071, X2 = 5,5658, X6 = 3,006 and X7 = 3,560 and F count= 54,308 > F table = 2,46, the meaning that the variable of X1, X2, X6 and X7 are significant to application of safety management of the construction with the cost of implementation of construction projects.

Keywords: *SMKK, Haji Hospital of Surabaya, Cost, SPSS.*

1. Introduction

Every job has risks of its own-each is inseparable from the construction work, there are still a lot of companies that do not yet carry out the implementation of work safety, and even a lot of workers in construction ignore the importance of implementing safety work properly, the application of the safety work that is not done according to the rules has the risk of accidents is higher, plus a pandemic that is sweeping across the world including Indonesia, where in melakasanakan construction services not only the application of safety is all that matters, but also maintain the health to stay healthy and protected from diseases that are struck i.e., Coronavirus Disease 2019 (covid-19), while maintaining the protocol of health [1] [2] [3].

According to the data issued by the BPJamsostek numbers claim work accident at the beginning of the semester, 2020 is January to June 2020 128% this Figure jumped from the previous 85.109 cases be 108.573 cases. In fact, according to the ILO, every year there are more than 250 million accidents in the workplace and more than 160 Million workers become ill because of the danger in the workplace [4] [5].

To avoid the risk of accidents in construction projects whether mild or severe any work required to run the management system of occupational safety or commonly known as SMKK, so very important to running safety and run protocol health in the work during the pandemic coronavirus disease 19 (COVID-19) and to prevent the spread of coronavirus disease 19, so that is set in the legislation and the regulation of the minister of development and housing (PUPR) [6] [7].

Regulation of the minister of PUPR No.2/IN/M/2020 about the protocols of prevention of the spread of coronavirus disease 2019 (Covid-19) in the implementation of construction services which contains about instructed in the prevention impact of covid-19 is necessary protocol prevention of the spread of covid-19 in the implementation of construction services for service users and service providers, in order to realize the construction safety, including occupational safety and health based on the background that the researcher can determine a formulation of the problem will be identified how relationships and the influence of factors K3 against the costs of implementing the Construction Safety Management System (SMKK) on building projects stroke center Haji Hospital Surabaya? [8] [9] [10], what dominant factor is the most applied to the implementation of the Construction Safety Management System ? and than how to manage construction safety management during the pandemic, by keeping health protocols in check ?. the aim of the study is to analyze and incorporate the implementation of the construction safety management system in the Surabaya hajj services central building project and its effect on the cost of the project [11].

According to the hurt members of the K3, most of the accidents are sourced from the man with action that is not safe (unsafe act). The factors influencing that who don't know, can't afford and don't want to [12]. Does not know that is not aware of the availability of the rules, the danger, or the way work is safe up to do a mistake. 't afford those concerned have been aware of the implementation of the right job, yet the ability of other than the physical, technical, and non-technically not endorse, and don't want to that is pertinent to know and able to work well but don't want to do the appropriate regulations. Such factors is a form of connectedness about the behavior and concern for the safety of the work. The elements of workplace accidents are people, equipments, materials and environment [13] [14].
Safety is all activities to ensure and protect the safety through the prevention of accidents at work and occupational diseases in the construction work. Safety job done with business-business that must be implemented by all the elements involved in the process of work, namely the workers, the supervisor/head of the working group, company, government and society in general, safety will not be realized without the cooperation with all the elements involved in order to achieve the desired goal [15] [16].
Based on ministerial regulation number 11/SE/M/2019 about technical instructions on the cost of the implementation of the Safety Management System Construction (SMKK), in which there are explanations about the details of the activities of organizing a System of Safety Management of the Construction that covers are preparation of the construction safety plan, the socialization and promotion of K3, self-protecting device and work protecting device, insurance and permits,t K3 personnel, facilities for medical infrastructure, a sign of K3 and the last risk about safety work [17] [18] [19] [20].

2. Method

2.1 Population

According to Ismiyanto, the population is the whole object or the totality of the subject of study which can be people, objects, or things in it that can be obtained and / or provide the information (data) of the study. In this study, the population studied is the workers building projects stroke center General Hospital Haji Surabaya.

2.2 Sample of Study

The sample is a portion of the number and characteristics possessed by the population or a small part of the population is taken according to a specific procedure so that it can represent the population. This study, uses a random sampling technique from some of the workers of the project that is implementing the project (contractor), the project supervisor (MK), and some of the workers, and how to determine the number of sampling using formula solving.

$$n = \frac{N}{1 + N(e)^2}$$

2.3 Scheme of the Protocol for Prevention of Covid-19 In the Implementation of Construction Services

The minister of Common Development and People's Housing (PUPR) issued a regulation of the minister of protocol prevention of covid-19 in organizing the construction, where such a scheme is:

a. The formation of a Taskforce (task Force) prevention of COVID-19
b. Provides the Facility Prevention of COVID-19
c. Educate all people to keep themselves from COVID-19
d. Measure the temperature of all people every morning, afternoon, and evening
e. Make cooperate in the handling of suspect COVID-19 with the HOSPITAL and the local health center
f. To Temporarily stop a job if there are indications of the workforce who are exposed to COVID-19
g. Do the actions of insulation and spraying disinfectant facilities and infrastructure of the office and the field

2.4 Research Variable

The determination of the variables in this study is determined the data field is the Budget Plan (RAB) of the budget cost of the implementation of the Safety and Occupational Accidents (K3) and reinforced with journal literature “Analysis of the Implementation of Occupational Safety and Health Towards the Cost of the Building Construction Project In the City of Ambon”. While the dependent variable (dependent) is the variable is affected by the dependent variable in this study of the impact on the cost of construction of the building is the cost of construction safety in the form of the magnitude of the cost of work safety issued in the construction of the project.

Table 1. Implementation of SMKK

variable	Implementation of SMKK
X1	The socialization and promotion of K3
X2	Work protecting device
X3	Self-protecting device
X4	Facilities for medical infrastructure
X5	Sign of work for construction
X6	Other thins about K3
X7	K3 Personnel
Y	Cost of SMKK

2.5 Data Analyze

In this research technical analysis of the data used leads to quantitative analysis. In analyzing the data for research purposes, researchers used a tool that is SPSS software. The data that has been obtained from the field through literature studies and processing of questionnaire variables based on previous research, is then analyzed using the following statistical techniques:

2.5.1 Validity Test

That the validity of factors is measured when items are arranged using more than one factor (between factors with each other there are similarities). Measuring the validity of these factors by correlated between the factor score (the summation of items in one factor) and the total factor score (the total of the total factors). Measure the validity of an item by correlated between the item score and the total score of the item. The validity of the item is indicated by the correlation or support of the total item (total score). When we use more than one factor, it means testing the validity of an item by correlated between the item score and the factor score, then continuing to correlate between the item and the total factor score (the summation of several factors). From the results of the correlation calculation will be able to be a correlation coefficient used to measure the validity rate of an item and determine whether an item is worth using or not. In determining whether or not an item is used, calculate the correlation between each statement and the total score by using the product-moment correlation formula. This research conducted a reliability test wita h statistical package for social sciences (SPSS 25.0 for Windows) software program tools.

2.5.2 Reliability Test

A reliability test is used to determine the consistency of the measuring instrument, and whether the measuring instrument used is reliable and consistent if the measurement is repeated. To measure the reliability of a scale or questionnaire used the formula Conbach's Alpha as follows :

$$\mathbf{r_{tt}} = \left[\frac{\boldsymbol{K}}{\boldsymbol{K-1}}\right]\left[\mathbf{1} - \left[\frac{\sum \boldsymbol{\delta_b^2}}{\sum \boldsymbol{\delta_t^2}}\right]\right]$$

2.6 Test Multiple Linear Regression

To determine and analyze the system of safety management of the construction and its influence on the cost of implementation in building projects stroke center General Hospital Haji Surabaya, using multiple linear regression. Multiple linear regression can be expressed by the following equation:

$$\mathbf{Y = a + b1X1 + b2X2 + \cdots + bnXn}$$

2.6.1 F Test (Annova)

The F test is known as the concurrent test or model test/test annova ie a test to see how the influence of all variables free in together against the dependent variable, or to test whether the regression that we make will be good/significant or non-significant.

$$F = \frac{R^2/k}{(1 - R^{2)})/(n - k - 1)}$$

2.6.2 T Test (Parsial Test)

The T test is known by the partial test, i.e. to test how the influence of each variable free in their own against the variable binding. This test is performed by comparing test T count T table or view column significance pasa each t count.

$$\boldsymbol{t_{hitung}} = r\,\frac{\sqrt{n-2}}{\sqrt{1-r^2}}$$

3. Result and Discussion

3.1 Validity Test

Table 2. Result of Validity Test

Variabel	Nilai R hitung (Pearson correlation)	Nilai R tabel	Nilai Sig
P1	.829	.361	.000
P2	.569	.361	.002
P3	.697	.361	.000
P4	.704	.361	.000
P5	.743	.361	.000
P6	.630	.361	.000
P7	.565	.361	.001
P8	.581	.361	.001

P9	.710	.361	.000
P10	.706	.361	.000
P11	.870	.361	.000
P12	.747	.361	.000
P13	.892	.361	.000
P14	.739	.361	.000
P15	.562	.361	.004
P16	.604	.361	.001
P17	.572	.361	.001
P18	.725	.361	.000
P19	.894	.361	.000
P20	.834	.361	.000
P21	.871	.361	.000
P22	.713	.361	.000
P23	.820	.361	.000
P24	.775	.361	.000
P25	.820	.361	.000
P26	1.000	.361	.000
P27	.817	.361	.000
P28	.608	.361	.001
P29	.434	.361	.021
P30	.623	.361	.000
Y1	.548	.361	.003
Y2	.824	.361	.000
Y3	.729	.361	.000
Y4	.758	.361	.000

Based on table 1. 34 questions are valid because value of significant more than 0,05

3.2 Reability Test

Table 3. Result of Reability Test

Reliability Statistics

Cronbach's Alpha	N of Items
,913	34

The value of Cronbach's Alpha (see column Cronbach's Alpha in the table the results of Reliability test) value, when compared with the value of the required constant of 0.6 then based on the results of the calculation of the Alpha value of 0.913, > constant value (0.6) so to 34 questions declared reliable and can be analyzed further.

3.3 F Test (Annova)

Table 4. Result of F Test (Annova)

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	69,589	7	9,941	54,308	,000[b]
	Residual	3,661	20	,183		
	Total	73,250	27			

a. Dependent Variable: Cost

b. Predictors: (Constant), Personil K3, Signs, Personal Protective Equipment, Work Protective Equipment, Socialization K3, Others related to K3, Health Facilities

From the results of the F test, the value of F count > F table (54.308 > 2.46) which means that the independent variable (independent) together or the overall effect on the cost.

3.4 T Test (Coefficients)

Table 5. Result of T Test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	,383	1,015		,378	,710
	X1	,467	,152	,271	3,071	,006
	X2	,517	,091	,623	5,658	,000
	X3	,019	,041	,064	,464	,648
	X4	-,454	,228	-,318	-1,995	,060
	X5	-,009	,045	-,018	-,213	,833
	X6	-,818	,272	-,287	-3,009	,007
	X7	,335	,094	,534	3,560	,002

a. Dependent Variable: Y

From the test results coefficients or the T-test obtained t count for the variables X1, X2, X6, and X7 > t table, where is the value of T count X1 3.072 > the 2,048, t X2 5.658 > the 2,048,t count X6 3,009 > 2,048 and t X7 3.560 > 2,048 the third variable has a very big influence on the cost, the order of variables is the largest protective equipment work, personnel K3, and K3 socialization. So we get the equation:
Y = 0,383 + 0,467.X1 + 0,517.X2 + 0,019.X3 - 0,454.X4 - 0,009.X5 - 0,818.X6 + 0.335.X7
From the results of the test conducted, not all variables affect the cost of the implementation of the safety management system of the construction, there are 4 variables that take effect significantly to the cost of that is X1 (the dissemination and promotion of K3), X2 (protective gear Work), X6 (other-other related K3), X7 (personnel K3). these results contrast with the journal used as a reference in this study, where the results of his is that all research variables have a significant effect on the cost of the implementation of the project

4. Conclusion

a. Variable construction safety in the application of the safety management system construction (SMKK) not all variables affect the cost in the implementation of construction projects the construction of the building stroke center Haji Hospital Surabaya, there are only 4 variables that have a significant effect (T-test) of the cost of the implementation of the construction of construction projects, namely protective equipment work, personnel K3, socialization, promotion of K3 and the last personal protective equipment, the application of K3 is not fully applied with the good along with the financing and if the work accident then an influence on the cost will be much greater on the implementation of construction projects
b. The dominant factor in the application of system safety construction (SMKK) on building projects at the stroke center Haji Hospital Surabaya is the factor of personal protective equipment and protective gear work, where both variables are dominant applied in the implementation of K3, which is assessed from the results of observation.
c. The application of the protocol health in performing construction services instructed in accordance with the rules of the government that has been set in the regulation of the minister of public works and public housing in order to avoid the spread of the coronavirus disease 19 (Covid-19) is not implemented well, a lot of workers who do not wear masks health and don't even wash your hands with hand sanitizer that has been provided prior to doing the work.

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