https://doi.org/10.31871/IJNTR.10.5.18
International Journal of New Technology and Research (IJNTR)
ISSN: 2454-4116, Volume-10, Issue-5, May 2024 Pages 42-45

Leadership influence, Occupational Health Safety Program, and Risk Management on Occupational Health and Safety Performance in Storage Tank Companies

Rosalendro Eddy Nugroho, Agustinus Hariadi Djoko , Mohamad Jihan Shofa

***Abstract*—Paper The achievement of the lagging accident rate indicator, namely the Incident Frequency Rate (IFR) of PT. XYZ in 2021, is 6.3, where the target IFR is not achieved < 3.0, then there are several variables that affect the IFR achievement in 2021. This study aims to determine the influence of variables between safety leadership, OHS (occupational health and safety) work program, risk management on safety performance at PT. XYZ. Respondents from this research conducted at PT. XYZ as many as 100 respondents. Methods of collecting data using a survey, with the research instrument is a questionnaire. The data analysis method used SPSS version 26. The results of the study found that safety leadership, OHS work programs, and risk management had a positive and significant influence on safety performance at PT.XYZ. It can be concluded, the better the implementation of safety leadership, OHS work programs and risk management carried out by the company, the better the safety performance produced in the company.**

***Index Terms*— Safety Leadership, OHS Work Program, Risk Management, Safety Performance, Multiple Linear Regression.**

I. INTRODUCTION

Naji at al. (2020) explained that in a good work safety system, leading and lagging indicators are important elements for monitoring performance results or safety performance. Lagging Indicator is related to the number of accidents, and the incident frequency rate (IFR) indicator, where IFR shows the frequency of accidents. For this reason, the company sets an IFR (Incident Frequency Rate) target number as a measure of Safety Performance used by the company and is stated in the OTP (Objective Target and Program) PT. XYZ is a domestic private company with an integrated logistics services business as an offshore supply base to serve drilling and production activities for oil and gas companies. In its work operations, it is very concerned to integrate safety, occupational health and the environment (HSE) in the company's daily operational activities. In managing the HSE (Health, Safety & Environmental) sector, the company formed an HSE section to manage the K3 program in company activities. The company sets OTP
(Objective, Target and Program), as a reference that must be achieved in the field of K3 by the company. OTP includes lagging indicators and leading indicators..

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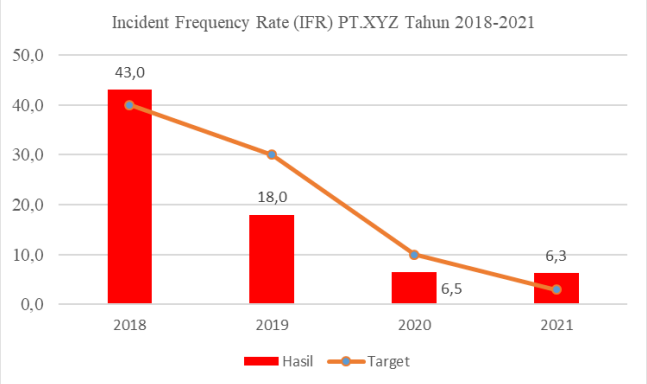

FIGURE 1.. INCIDENT FREQUENCY RATE DATA PT.XYZ

SOURCE: PROCESSED RESEARCHER DATA (2022)

Based on the data above, it shows that the IFR target that the company has not achieved in 2021, namely IFR < 3, where the current position is still in November 2021, there is further potential for the IFR to increase if significant factors are not managed well by the company.
Chua Jing Lun and Wahab (2017). determined that K3 program factors have an influence on reducing accident rates. PT. XYZ has established an K3 program set out in the Perfect Day Every Day concept (as a Leading Indicator target by the company). Where the Company has determined the control of hazardous aspects towards K3 on a daily basis into the "Perfect Card" program for each business unit. In general, the programs implemented include: BBS, Hazob, TSV, Training, Emergency Response, Inspection, reporting and accident programs, and other initiatives according to operational conditions.

Rosalendro Eddy Nugroho, Master Program in Post-Graduate Management from Universitas Mercu Buana Jakarta, Indonesia
Agustinus Hariadi Djoko ,. Master Program in Post-Graduate Management from Universitas Mercu Buana Jakarta Indonesia,
Mohamad Jihan Shofa, under Graduate Industrial Engineering Engineering Faculty Universitas Serang Raya, (UNSERA) Banten, Indonesia

II. THEORITICAL REVIEW

A. Occupational safety and health (K3)

D.A. Patel and K.N. Jha. (2016), the definition of occupational safety and health (K3) or Occupational Safety and Health (OSH) according to the ILO is improving and maintaining the highest level of all employees in terms of physical, mental and social well-being in all types of work, preventing the occurrence of health problems. caused by work, protect workers in each job from risks arising from factors that can interfere with health and safety, place and maintain workers in a work environment that suits the workers' physiological and psychological conditions and to create compatibility between work and workers and each people with their duties.

B. Safety Leadership

Nugroho, R.E (2020) Safety Leadership (work safety leadership) is an ability possessed by leaders to mobilize organizational members to be enthusiastic in efforts to control work and operational risks, so that detrimental incidents (humans, property and the environment) can be prevented. Leaders and managers in a company always set an example regarding safety, namely through their direct individual involvement in training and supervision of important activities. Every individual employee in the organization strives to emulate the behavior and values demonstrated by individual leadership. So as a benchmark, a standard should be set in the organization as an important factor in leadership towards occupational safety and health. Wu at al., (2008).

C. Occupational Health Safety Work Program

Organizations must set occupational safety and health /K3 objectives at relevant functions and levels in order to maintain and improve the management system and occupational safety and health /K3 performance on an ongoing basis (ISO 45001, 2018). The company's occupational safety and health/ K3 objectives are usually stated in the Objective, Target and Program (OTP) document.To achieve the OTP that has been determined, the company must develop a work program that will realize the commitments stated in the company policy. According to (Nugroho, R.E 2021) , work plans are prepared for each level of management as a basis for considering operations, explained that several parts of the Occupational Safety and Health (K3) work program are as follows: Completeness of K3 Administration, Implementation of K3 Activities in the Field and K3 Training. However, work programs are made according to existing problems in an organization.

D. Safety Performance

In a quote from Wu, T, Chen, C & Li, C. (2008), safety performance is defined as the performance of activities carried out by an organization to ensure work safety in an organization. Safety performance is planned to measure the level of occupational safety and health (K3) in an organization. Safety performance is measured based on organizational dimensions and occupational safety and health /K3 management. Safety performance includes reactive indicators (lagging indicators) and active indicators (leading indicators).

E. Formulation of The Problem

Safety Leadership involvement at management level is still below the set target shows that achievement is still below the target of 5 (five) percent in January – September. Achievement of the K3 Work Program related to leading indicators in the company has not been maximized that there are several business units whose K3 work program achievements are still below 98% as set by the company. Risk management related to work is not optimalshows that there are still many high risk activities that must be stopped temporarily to carry out hazard mitigation measures to prevent potential accidents.

By paying attention to the background and identification of research problems, which have been explained above, the formulation of each research problem can be formulated as follows:

1. Is there a positive and significant influence between safety leadership on safety performance at PT XYZ?
2. Is there a positive and significant influence between the achievement of the occupational safety and health/ K3 work program on safety performance at PT XYZ?
3. Is there a positive and significant influence between risk management on safety performance at PT XYZ?
4. Is there a positive and significant influence between safety leadership, achievement of the occupational safety and health/K3 work program, and risk management simultaneously on safety performance at PT. XYZ?

E. Research Purposes.

Based on considerations in the problem formulation mentioned above, the research objectives are as follows:

1. Knowing the influence of safety leadership on safety performance at PT XYZ
2. Knowing the influence of the occupational safety and health /K3 work program on safety performance at PT XYZ
3. Understand the influence of risk management on safety performance at PT XYZ
4. Knowing the influence of safety leadership, achievement of the occupational safety and health /K3 work program, and risk management simultaneously on safety performance at PT.XYZ.

III. METHOD

The dependent (bound) variable used in this research is Safety Performance (Y). In a quote from Wu, T, Chen, C & Li, C. (2008), Safety Performance is defined as the performance of activities carried out by an organization to ensure work safety in an organization. The independent (free) variables used in this research are safety leadership (X1), K3 work program, risk management (X3). The relationship between the two variables is that the results and values of the dependent (dependent) variable are influenced by the independent (free) variable. Below is the definition of each variable:

1. Safety Performance. Safety Performance is a performance of activities carried out by an organization to ensure work safety in an organization Wu, T, Chen, C & Li, C. (2008)
2. Safety leadership. (Nugroho, R.E. and Sunbara.A 2021) Safety leadership (work safety leadership) is an ability that leaders have to mobilize organizational members to be enthusiastic in efforts to control work and operational risks, so

that detrimental incidents (humans, property and the environment) can be prevented.

3. K3 work program. According to the Canadian Center for Occupational Health and Safety , they provide examples of several occupational safety and health work programs in an organization, which can be an inspiration for a company to implement. (Nugroho, R.E 2021) explains that several parts of the Occupational Safety and Health (K3) work program can be implemented, but the work program is made in accordance with existing problems in an organization.

4. Risk management. (ISO 31000, 2018) risk management is part of governance and leadership, and is the basis of how organizations are managed at all levels. This contributes to improving the occupational safety and health (K3) management system. Proactive implementation of risk management has a direct, positive effect on work safety outcomes (Beatriz Fernandez Muniz at al., 2014).

IV. RESULT AND DISCUSSION

This analysis was carried out to obtain an assessment of the influence of the factors Safety Leadership (X1), Occupational Safety and Health /K3 Work Program (X2) and Risk Management (X3) on the Safety Performance of PT. XYZ.

In this analysis, the output in the form of the most influential factors is as follows:

Table 1. Multiple Linear Regression Results

Coefficients[a]						
Model		Unstandardized Coefficients	t	Sig.	Nilai Signifikan	Hasil
		B				
1	(Constant)	0,602	0,928	0,356	> 0.05	tidak signifikan
	Safety Leadership (X1)	0,146	2,813	0,006	< 0.05	signifikan
	Program Kerja K3 (X2)	0,074	2,432	0,017	< 0.05	signifikan
	Manajemen Risiko (X3)	0,178	5,298	0,000	< 0.05	signifikan
a. Dependent Variable: Safety Performance (Y)						

Author processed data source from SPSS (2022)

Based on table 1, the multiple linear regression equation is as follows:

Y = 0,602 + 0,146X1 + 0,074X2 + 0,178X3

To find out whether the regression equation above can be used to predict or predict the magnitude of the dependent variable (X) based on the independent variable (X), hypothesis testing is carried out to determine the significance between the two variables.

From the equation above, the multiple linear regression coefficient above can be interpreted as follows:

a) The constant coefficient has a positive sign and is not significant, indicating that assuming the absence of the Safety Leadership (X1), K3 Work Program (X2), and Risk Management (X3) variables, the consistent value of Safety Performance (Y) is 0.602. And it has no significant effect on Safety Performance.

b) The regression coefficient is positive and significant for Safety Leadership (X1), stating that Safety Leadership (X1) assumes there are no variables other independent, then if there is an addition of 1% Safety Leadership (X1), then Safety Performance (Y) will increase by 0.146.

c) The regression coefficient is positive and significant for the K3 Work Program (X2), stating that the K3 Work Program (X2) assumes there are no other independent variables, then if there is an addition of 1% to the K3 Work Program (X2), then Safety Performance (Y) will increase by

a) Partial influence of each variable X with Y, if the sig value < 0.05, or t count > t table

b) Simultaneous influence of variables X and Y, if the sig value < 0.05, or F count > F table

c) Form a simultaneous relationship with multiple correlation coefficients

d) Influence of the percentage of the coefficient

The hypotheses in this research are:

a) Hypothesis 1 (H1): It is suspected that there is a positive and significant influence between the safety leadership variable (X1) on safety performance (Y)

b) Hypothesis 2 (H2): It is suspected that there is a positive and significant influence between the Occupational Safety and Health/K3 Work program variables on Safety Performance (Y)

c) Hypothesis 3 (H3): It is suspected that there is a positive and significant influence between the Risk Management variable on Safety Performance (Y).

d) Hypothesis 4 (H4): It is suspected that there is a positive and significant influence between the variables safety leadership, Occupational Safety and Health /K3 work program and risk management simultaneously on safety performance.

0.074.

d) The regression coefficient is positive and significant for Risk Management (X3), stating that Risk Management (X3) assuming there are no other independent variables, then if there is an addition of 1% Risk Management (X3), then Safety Performance (Y) will increase of 0.178.

V.CONCLUSION

Based on the research results and discussion of hypothesis testing regarding the influence of safety leadership, Occupational Safety and Health /K3 work programs, and risk management on safety performance at PT.

1. Safety leadership has a positive and significant effect on safety performance, with the safety appreciation dimension having the strongest influence and the safety caring dimension having the lowest influence.

2. The Occupational Safety and Health /K3 work program has a positive and significant effect on safety performance, with the accident reporting dimension having the strongest influence and the Occupational Safety and Health /K3 training dimension having the lowest influence.

3. Risk management has a positive and significant effect on safety performance, with the accident reporting dimension having the strongest impact on implementation of level 1 risk management and the risk management follow-up dimension having the lowest effect.

4. Together (simultaneously) safety leadership, Occupational Safety and Health/ K3 work programs, and risk management have a positive and significant effect on safety performance.

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Rosalendro Eddy Nugroho is currently a fulltime senior lecturer in Master Program in Post-Graduate Management from Universitas Mercu Buana Jakarta. He holds a Bachelor of Science degree in Chemichal Engineering from Gadjah Mada University, Master of Management from Universitas Satyagama Jakarta, and PhD in Management from Bogor Agriculture University. He has taught courses in operation management, supply chain management, enterprise resource planning, and managerial economic.

Agustinus Hariadi. **Djoko** is currently a fulltime senior lecturer in Master Program in Post-Graduate Management from Universitas Mercu Buana Jakarta. He holds a Bachelor of Science degree in Chemichal Engineering from Bandung Institute Of Technology, , UMIST And The Victoria University Of Manchester, and PhD in Management from Bogor Agriculture University. He has taught courses in operation management, supply chain management, enterprise resource planning, and managerial economic.

Mohamad Jihan Shofa is currently a fulltime Full time teaching at under graduate program Industrial Engineering, Serang Raya University

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