

ANALYSIS OF FACTORS INFLUENCING THE IMPLEMENTATION OF MINING SAFETY MANAGEMENT SYSTEM (SMKP) & OHS MANAGEMENT SYSTEM (SMK3) BASED ON THE PRINCIPLE OF RESILIENCE AT PT. MITRA SETIA TANAH BUMBU

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Abstract : PT Mitra Setia Tanah Bumbu is a company engaged in mining, one of the industries that has a high work risk. Efforts made by the company to reduce risk are to implement SMKP and SMK3 safety. The methodology used in this study is quantitative multiple regression analysis, by looking at the relationship between the implementation of the Mining Safety Management System (SMKP) and the K3 Management System (SMK3) on the Safety Maturity Level of workers. The results of the partial test (t-test) obtained in this study are the t-value of the SMKP variable on the Safety Maturity Level is 7.542, while the SMK3 variable on the Safety Maturity Level is 3.032. From the results of the partial test, the two variables are known to be greater than the t-table value of 1.67303. This shows that the implementation of SMKP and SMK3 has a significant effect on the Safety Maturity Level. Based on the results of the determination coefficient test (R^2), the adjusted R Square value is known to be 0.623. This shows the ability of the SMKP and SMK3 variables to explain the Safety Maturity Level variable together, which is 62.3%, the remaining 37.7% can be explained by other factors outside this study.

Keywords: SMKP, SMK3, Safety Maturity Level

Abstrak : PT Mitra Setia Tanah Bumbu merupakan perusahaan yang bergerak di bidang pertambangan, salah satu industri yang memiliki risiko kerja yang tinggi. Upaya yang dilakukan oleh perusahaan untuk mengurangi risiko adalah menerapkan keselamatan SMKP dan SMK3. Metodologi yang digunakan dalam penelitian ini adalah analisis kuantitatif regresi berganda, dengan melihat hubungan dari penerapan Sistem Manajemen Keselamatan Pertambangan (SMKP) dan Sistem Manajemen K3 (SMK3) terhadap Safety Maturity Level para pekerja. Hasil uji parsial (uji t) yang didapatkan dalam penelitian ini adalah nilai t-hitung variabel SMKP terhadap Safety Maturity Level adalah 7,542, sedangkan variabel SMK3 terhadap Safety Maturity Level adalah 3,032. Dari hasil uji parsial kedua variabel tersebut diketahui lebih besar dibandingkan nilai t-tabel yaitu 1,67303. Hal tersebut menunjukkan bahwa penerapan SMKP dan SMK3 memiliki pengaruh yang signifikan terhadap Safety Maturity Level. Berdasarkan hasil uji koefisien determinasi (R^2), diketahui nilai adjusted R Square yaitu sebesar 0,623. Hal tersebut menunjukkan kemampuan variabel SMKP dan SMK3 dalam menjelaskan variabel Safety Maturity Level secara bersama-sama yaitu sebesar 62,3% sisanya 37,7% dapat dijelaskan oleh faktor lain di luar penelitian ini.

Kata kunci: SMKP, SMK3, Safety Maturity Level, Kuantitatif

INTRODUCTION

The mining industry is a capital-intensive industry and has the highest risk, where every year there are always accidents that result in material losses and even death with an average of 30 victims (Wiskan, 2016). In every business process of mining activities there is always the potential for danger and risk. Therefore, we must know the cause of an accident, so that a program or plan can be prepared for preventive measures so that in the program a strategy is formulated to eliminate or control potential hazards that have been known from the beginning (Tarwaka, 2008).

The concept and model of maturity is an innovation in research in the field of occupational safety and has been applied in the development of occupational safety culture in high-risk companies such as petrochemical, oil and gas companies, even aviation and mining companies (Kilaparthi, 2014).

PT Mitra Setia Tanah Bumbu is a company engaged in mining, where in the mining activities carried out by the company, there are still reports of work accidents. The majority of accidents that occurred at PT Mitra Setia Tanah Bumbu were property damage, which occurred Collision between Dump Trucks used as a means of transporting Overburden material transported from the Pit (mining hole) to the Disposal area.

Table 1. List of Accidents at PT Mitra Setia Tanah Bumbu in 2022

NO	URAIAN	JAN	FEB	MRT	APR	MEI	JUNI	JULI	AGT	SEPT	OKT	NOVE	DES	TOTAL YTD
1	FATALITY	0	0	0	0	0	0	0	0	0	0	0	0	0
2	LOST TIME INJURY	0	0	0	0	0	0	0	0	0	0	0	0	0
3	MEDICAL TREATMENT INJURY	0	0	0	0	0	0	0	0	0	0	0	0	0
4	FIST AID INJURY	0	0	0	0	0	0	0	0	0	0	0	0	0
5	PROPERTY DAMAGE	0	0	0	0	2	0	0	0	2	1	0	0	5
6	ENVIROMENT DAMAGE	0	0	0	0	0	0	0	0	0	0	0	0	0
7	NEARMISS	3	1	1	3	4	2	0	2	2	2	5	1	26
JUMLAH MTD		3	1	1	3	6	2	0	2	4	3	5	1	

Source: PT Mitra Setia Tanah Bumbu Report, December 2022

To achieve the resilience point of a work safety maturity (Safety Mortality Level), requires performance and commitment from all employees starting from Top Management to the lower level of employees and partners working in the company area. Because the performance of the implementation of SMK3 and SMKP certainly has an impact on the safety performance of PT. Mitra Setia Tanah Bumbu. Where as the owner or owner of the Mining Business Permit acts as a mentor for his partners. So that the performance of the implementation of SMK3 and SMKP which is good and positive will certainly have a good impact on the company.

The purpose of this study was to determine the effect of the implementation of the occupational health and safety system (SMK3) and the mining safety management system (SMKP) on the safety culture level (Safety Maturity Level) of PT Mitra Setia Tanah Bumbu.

LITERATURE REVIEW

1. Occupational Health and Safety System (SMK3)

According to the laws and regulations of the Republic of Indonesia Government No. 50 of 2012, SMK3 is defined as part of a company management system, where overall in the framework of controlling risks related to work activities in order to create a safe, efficient and productive workplace. If we narrate, the definition of Occupational Safety and Health (K3) is all activities to guarantee and protect the safety and health of workers through efforts to prevent work accidents and work-related diseases. Therefore, companies in implementing SMK3 are expected to be able to increase the effectiveness of planned, measurable, structured and integrated occupational safety and health protection, so that they can reduce and prevent the potential for work accidents and work-related diseases by involving all workers, including management elements and workers themselves, where it is expected that the company can create a safe, comfortable and efficient workplace to increase company productivity. The components of an effective K3 management system can generally be seen from the following elements, namely:

- a. Leadership and management commitment;
- b. Safe work procedures and written instructions;
- c. Health and safety training and instruction;
- d. Identify hazards and manage risks;
- e. Inspection of premises, equipment, workplace & work practices;
- f. Incident investigation;
- g. Program administration;
- h. Joint health and safety committee & representatives;
- i. Occupational health and safety programs;
- j. Audit system.

2. Mining Safety Management System (SMKP)

According to the regulation issued by the Ministry of Energy and Mineral Resources (ESDM) of the Republic of Indonesia No. 38 of 2018, the Mining Safety Management System is part of the overall company management system in order to control mining safety risks consisting of mining occupational safety and health and mining operation safety. In the regulations of the Ministry of ESDM, the mining safety management system includes several aspects, namely as follows:

- a. Policy Elements
The Company prepares, establishes, maintains and documents occupational health and safety (K3) policies and Operational Heads, and communicates them to all parties working on behalf of the company, and always carries out periodic reviews;
- b. Planning Elements
The company conducted an initial review to determine the extent of compliance with occupational health and safety (K3) and operational safety regulations;

- c. Organizational elements and personnel
The Company establishes an organization, appoints operational supervisors, competent technical personnel, provides education, participation, consultation and motivation and awareness;
- d. Implementation Elements
The company prepares the implementation of operational management activities, work environment, occupational health and mining operational safety.
- e. Monitoring, evaluation and follow-up elements;
The company monitors and evaluates occupational health and safety (K3) performance and follows up on any non-conformities;
- f. Documentation Elements
The company establishes, maintains and carries out good control of the documentation system starting from policies, guidelines, procedures, standards and records;
- g. Elements of Management Review and Performance Improvement.
The company conducts management reviews, where the company's top management is required to conduct management reviews of the SMKPS implementation periodically and in a planned manner.

3. Safety Maturity Culture

The concept and model of maturity is an innovation in research in the field of occupational safety and has been applied in the development of occupational safety culture in high-risk companies such as petrochemical, oil and gas companies, even airlines to mining. This is due to regulatory pressure, workforce empowerment, the need to avoid legal legitimacy and develop a sustainable work environment. Therefore, the concept of occupational safety and health is developed in the overall business culture and philosophy of the organization. (Kilaparathi, 2014)

Safety culture maturity level serves to create a level of safety culture maturity, to know the form of safety culture, and how to develop it into a better form of safety culture (Fleming, 2007). The implementation of Safety Maturity Level according to the UK Coal Journey Model is a model for implementing K3 by combining the Hudson, Anglo American, and Mineral Industry Risk Management (MIRM) models. The level of maturity of the implementation of work safety with the UK Coal Journey Model explains the level of maturity of the implementation of K3 which is divided into 5 (five) stages, namely:

- a. Vulnerable (basic)
The existing system is merely a document, in fact the company does not have a system at all;
- b. Reactive
The system will run after a previous work problem or accident occurs. Focus on work problems or accidents;
- c. Compliant
System development has been carried out but the focus is limited to reducing the number of accidents;

- d. Proactive
Each section already has K3 targets and objectives and is the main point in compiling activity plans;
- e. Resilient
All workers can run the system without any turbulence or violations because they consider the system to be part of everyday life and K3 is a necessity, not an obligation. (Foster and Hoult, 2013)

Hypothesis

1. The Influence of Mining Safety Management System (SMKP) on Safety Maturity Level

Based on the research results of Sumarno, Winarso and Fardhan (2018) that the implementation of the mining safety management system has a significant effect on the safety maturity level. With the increasing implementation of the mining safety management system, it will increase the safety maturity level of coal mining workers in the Plant support equipment department. Therefore, the hypothesis that researchers use in this study is as follows:

- H1 : There is a significant influence between the implementation of the Mining Safety Management System (SMKP) on the Safety Maturity Level
- H0 : There is no significant influence between the implementation of the Mining Safety Management System (SMKP) on the Safety Maturity Level.

2. The Influence of Occupational Safety and Health System (SMK3) on Safety Maturity Level

Based on the research results of Pangkey et al. (2012) showed that the implementation of occupational safety and health systems (SMK3) has a significant effect on improving safety culture in construction projects. This shows that increasing the implementation of SMK3 will increase the safety maturity level of each worker. Therefore, the hypothesis used by researchers is as follows:

- H1 : There is a significant influence between the implementation of the Occupational Safety and Health Management System (SMK3) on the Safety Maturity Level.
- H0 : There is no significant influence between the implementation of the Occupational Safety and Health Management System (SMK3) on the Safety Maturity Level.

RESEARCH METHODOLOGY

The research method used in this study is quantitative analysis of multiple linear regression. The data obtained by the researcher came from a questionnaire with likert scale and given to all workers of PT. Mitra Setia Tanah Bumbu totaling. The sample in this study consisted of 58 workers. The dependent variable used in this study is safety maturity culture, while the independent variable used is the mining safety management system (SMKP) and Occupational Safety and Health Management System (SMK3).

RESULT AND DISCUSSION

1. Multiple Linear Regression Analysis Test Results

Table 2. Multiple Linear Regression Test Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
1 (Constant)	-6.699	14.314		-.468	.642
SMKP	.732	.097	.660	7.542	.000
SMK3	.451	.149	.265	3.032	.004

a. Dependent Variable: SML

Source: SPSS, processed data (2024)

Based on the results of the multiple linear regression test in table 2, the following equation can be seen:

$$Y = -6.699 + 0.732(\text{SMKP}) + 0.451(\text{SMK3}) + e$$

Based on the results of the equation, the following conclusions can be drawn:

1. It is known that the SMKP value is 0.732. This shows that, if the SMKP increases by 1 point, it will increase the safety maturity level by 0.732.
2. It is known that the SMK3 value is 0.451. This shows that, if SMK3 increases by 1 point, it will increase the safety maturity level by 0.451.

2. t-Test Results (Partial)

a. The Influence of Mining Safety Management System (SMKP) on Safety Maturity Level

It can be seen that the t-value of the SMKP variable in table 4.7 is 7.542 and is greater than the t-table, which is $7.542 > 1.67303$ with a significance value of $0.00 < 0.05$. This shows that the SMKP variable has a partial and significant influence on the safety maturity level variable. The results of this study are in accordance with the research conducted by Sianturi and Harahap (2020) which reviewed the safety maturity model specifically for the Indonesian mining industry and analyzed the factors that influence the Safety Maturity Level. And This research result also in accordance with the research results of Sumarno, Winarso and Fardhan (2018) that the implementation of a mining safety management system has a significant effect on the level of safety maturity. The results of their study showed that compliance with safety regulations, ongoing training, and the active role of management in safety have a significant effect on increasing the Safety Maturity Level in the mining industry. Based on these results, the results of the hypothesis of the influence of the mining safety management system (SMKP) on the Safety Maturity Level are H1 accepted, while H0 is rejected.

b. The Influence of SMK3 on Safety Maturity Level

It can be seen that the t-count value of the SMK3 variable in table 4.7 is 3.032 and is greater than the t-table, which is $3.032 > 1.67303$ with a significance value of $0.04 < 0.05$. This shows that the SMK3 variable has a partial and significant influence

on the Safety Maturity Level variable. The results of this study are in accordance with the results of research conducted by Maghsudlu et al. (2020) which states that effective and structured safety management through the implementation of K3 can help increase the Safety Maturity Level of companies engaged in industries with high work risks. Based on these results, the results of the hypothesis of the influence of the occupational safety and health system (SMK3) on the Safety Maturity Level are H1 accepted, while H0 is rejected.

3. Results of Determination Coefficient Test

Table 3. Results of the Determination Coefficient Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798 ^a	.636	.623	9.801

Source: SPSS, processed data (2024)

Based on the results of the determination coefficient test in table 3, the adjusted R Square value is 0.623. This shows the ability of the SMKP and SMK3 variables to explain the Safety Maturity Level variable together, which is 62.3%, the remaining 37.7% can be explained by other factors outside the study.

CONCLUSION

The conclusions that researchers have drawn are as follows:

1. It can be seen that the t-count value of the SMKP variable is 7.542 and is greater than the t-table, which is $7.542 > 1.67303$ with a significance value of $0.00 < 0.05$. This shows that the SMKP variable has a partial and significant influence on the safety maturity level variable.
2. It can be seen that the t-count value of the SMK3 variable is 3.032 and is greater than the t-table, which is $3.032 > 1.67303$ with a significance value of $0.004 < 0.05$. This shows that the SMKP variable has a partial and significant influence on the safety maturity level variable.
3. It can be seen that the adjusted R Square value is 0.623. This shows the ability of the mining safety management system (SMKP) and occupational safety and health system (SMK3) variables to explain the Safety Maturity Level variable together, which is 62.3%, the remaining 37.7% can be explained by other factors outside the study.

PT Mitra Setia Tanah Bumbu is an industry engaged in the mineral and coal sector, so there is a high risk of occupational safety and health (K3) in the place. In an effort to increase the Safety maturity level to a resilient level, all elements of the company, both workers and management, are expected to be committed to meeting all operational standards regarding SMKP and SMK3 that have been regulated in special laws and regulations governing SMKP minerba in Indonesia. By increasing the implementation of these regulations, a resilient level of safety culture maturity will be created for all workers of PT Mitra Setia Tanah Bumbu, which makes safety no longer a demand but a necessity.

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