
THE SHIP'S CREW PERFORMANCE OF INDONESIAN NATIONAL SHIPPING COMPANIES

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ABSTRACT

The purpose of this study was to determine and analyze the influences of occupational health and safety, work motivation on the ship's crew performance at Pertamina Perkapalan, as a national shipping company in Jakarta, Indonesia in 2019. Some of the problems found were; The occupational safety and health was not maximized, the crew occupational motivation was still low during the voyage, the performance of the crew during sailing was not optimal. The study was conducted at Pertamina Perkapalan, Jakarta using quantitative methods, with the respondents were taken based on census method of 94 people. Data is collected through instruments in the form of a statement sheet with a Likert scale model that has been tested. Methods of data analysis use linear regression analysis, simple correlation, partial or simultaneous and path analysis. Based on the results of the study show that there is a significant influence on occupational safety and health on the performance of ship's crew with work motivation as a mediating variable. Occupational safety and health programs need to be implemented as part of resource management in the company in a sustainable manner as an effort to increase the work motivation of the crew so that the crew feel safe and comfortable at work.

KEYWORDS: occupational safety and health, work motivation, ship's crew, performance, national shipping

1. INTRODUCTION

In improving occupational safety and transportation safety, the United Nations at the 1948 meeting agreed to form an international organization dedicated to maritime issues. This agency was originally founded under the name Intergovernmental Maritime Advisory Organization (IMCO). Ten years later, in 1958, the organization received only international recognition. Since 22 May 1982, the name was changed to the International Maritime Organization (IMO). On 25 June 2010, the International Maritime Organization (IMO) and other key stakeholders in the global shipping industry have formally approved the so-called "Manila Amendment" of the Convention on Training, Certification and Guarantee Standards (STCW). These revisions aimed to keep the STCW up to date since its

creation and first adoption in 1978, and subsequent revisions were made in 1995.

In addition, Law Number 17 of 2008 on Shipping, approves and implements the IMO Convention. According to Article 5 (paragraph 1) Government Regulation Number 51 of 2002, every ship must meet its maritime requirements, including ship safety, manning, management of ship operation safety, and prevention of ship pollution, loading and transportation. Along with the development of the company, in order to carry out activities in the field of human resources, it is very important to know and have skills related to occupational safety and health when they are on board Pertamina's ship. Occupational health safety are two things that are interrelated with the world of occupational and are a top priority for a sailor when working on a ship. The importance of occupational health safety is inseparable for the safety of the officers or workers on the ship, including the crew and in the end it will affect the smoothness of the voyage. In addition, company tankers, for oil tankers with GT 150 or more and ships other than tankers, are required to carry an IOPP (International Oil Pollution Prevention) certificate from 2 October 1983, the certificate will be valid for 5 years and after that it will be carried out. several surveys.

Pertamina Perkapalan strives for all employees by providing the best insurance and health insurance services. This safety aspect is included in the company safety management (ISM code) of Pertamina Perkapalan which covers policies on safety and environmental protection. Pertamina Perkapalan provides a reference for company safety policies and formulates regulations called Standard Safety Management Code, and these regulations apply to every ship and become a safety benchmark for each ship. If Pertamina does not use an occupational safety and health management system as a commitment to carry out a safety and health plan, and as a form of action it will bear certain risks. Risk management is aimed at increasing productivity and efficiency.

Some of the problems found were: (1) The occupational safety and health was not maximized, (2) the crew occupational motivation was still low during the voyage, (3) the performance of the crew during sailing was not optimal, (4) the skills of the crew and officers maintenance is still limited, (5) the quality of the crew's work is not optimal, (6) the role of occupational safety and health has not been implemented optimally, (7) the operation of the Free on Board is not yet smooth, (8) the infrastructure owned by ships is still limited, (9) safety equipment for shipping which have not been fulfilled as a whole, and (10) the smooth operation of the ship there are still obstacles that need to be overcome.

Occupational health safety is the first aspect of the terms of the "collective occupational agreement" that both parties signed, and the agreement will be introduced to Pertamina staff. In every activity carried out, staff must prioritize safety in production (safety first). In fact, the activities carried out are related to high-risk fuels, such as fire, environmental pollution, occupational accidents and health problems. Therefore, considering that employees are an important asset of the company, occupational

safety and health is very important. This study aims to explain and analyze the impact of occupational safety on work motivation, explain and analyze the impact of occupational health on work motivation, explain and analyze the impact of occupational safety on crew performance, and explain and analyze the impact of occupational health on crew members. Performance, as well as explaining and analyzing the influences of work motivation on the performance of employees of Pertamina Perkapalan.

2. LITERATURE REVIEW AND THE HYPOTHESIS

Ship's Crew Performance

Performance as the value of a series of employee behaviors that provide contribution, either positive or negative to the achievement of organizational goals (Colquit et al., 2015). Based on (Gibson et al., 2012) that performance is a measure and a quantity and the quality of tasks accomplished by individuals or groups. The ship safety management process is highly repetitive and depends on the situation on board as well as conditions beyond the control of the ship operator (Liwång et al., 2015). Other studies suggest that monitoring and modification of human factors can contribute to maritime safety performance (Hetherington et al., 2006). (Yang et al., 2013) showed how risk quantification analysis facilitates the transformation of maritime safety culture from a reactive prescriptive scheme to a proactive goal-setting regime. In several studies, crew members have received less attention as seafarers, especially regarding occupational safety and health as the main maritime aspect (Österman et al., 2019). The human factor is the cause of ship accidents (Gusti & Zaman, 2017).

In addition, (Rudianto et al., 2014) shows that the ability and discipline will affect the performance of the crew during the voyage, and (Thamrin, 2018) shows that if trained properly, the skills and quality of the crew can be improved. (Fenstad et al., 2016) stated that climate safety, ship owner efficiency requirements and regulatory activities were investigated as influencing factors. The results showed that simultaneous intervention from all levels of the offshore system (crew, ship owner, supervisor) can influencesively increase safety. Another study that discusses the significant influences on performance, especially the occupational influencesiveness of the crew (Ricardianto et al., 2020). There are four main dimensions related to seafarers' management, namely work attitude, loyalty, payment and welfare as well as opportunities, and these four dimensions also find a positive influence on work performance (Tsai & Liou, 2017).

Occupational Safety and Health

Ship safety management is safety management in the safe operation of ships as well as efforts to prevent environmental pollution that are implemented in companies and on ships. The International Maritime Organization in 2012 stated that The International Ship and Port Facility Security Code (ISPS Code) is a comprehensive set of measures to improve the security of ships and port facilities, developed in response to perceived threats to ships and port facilities in the wake of attacks 9 November in the United States (Guritno, 2017; IMO, 2012). ISM Code is a safety management system

standard for safe operation of ships and for prevention of pollution at sea. In essence, this code aims to ensure safety at sea, prevent accidents or deaths, and also prevent damage to the environment and ships (IMO, 2012). According to (Rowley & Jackson, 2012) occupational health is a condition that refers to physical, mental and emotional stability in general.

In previous studies, shipyard workers are quite vulnerable to occupational health problems (Koral Turk, 2020; Ramdan et al., 2018). The Behavior Based Safety (BBS) study at a shipyard is a process that creates a sustainable safety partnership between management and employees regarding daily safety behaviors (Mohan & Gerald, 2017). In addition, Yilmaz et al., (2015) stated that in Turkey all major and minor accidents that occur in shipyards must be noted, the causes. Other studies on the occupational safety and health related to awareness towards safety culture have also been carried out by (Bhattacharya, 2015; Jung, 2017) Thus, based on some of the theories of the experts mentioned above, the synthesis of occupational safety and health is a form of effort that aims to create a balance between workers' rights and their personal obligations which are implemented in comfortable, safe, conducive, measurable and pleasant working conditions.

Work Motivation

Theoretically, according to (Robbins, 2015), motivation refers to the process of someone who is passionate, directed, and sustainable towards achieving goals. Occupational motivation, that providing rewards consistent with the concept of motivation has a positive impact on recruitment and retention, corporate culture, and labor costs (Lawler, 2000). The results of the study by (Kundi, 2014; Manzoor, 2012; Robescu & Iancu, 2016) prove that the motivation of a leader is simply important for the achievement of organizational goals. Another labor factor found in research on employee motivation is the effect of a performance control system on motivational techniques (Miao et al., 2007). Based on (Mitroussi & Notteboom, 2015) that the point is that port workers and seafarers' arrangements seek motivation and morale. Motivation is related to job satisfaction and has an impact on workforce performance and productivity. Study by (Sehkaran & Sevcikova, 2011) found that the work environment, especially cruise ships, is very important and noteworthy because of its influence on employee motivation.

The objectives of this study are; to find out and analyze the direct influences of occupational safety and health on the performance of the crew and the indirect influences of occupational safety and health on the performance of the crew through work motivation at Pertamina Perkapalan in Jakarta. The research model is presented in Figure 1.

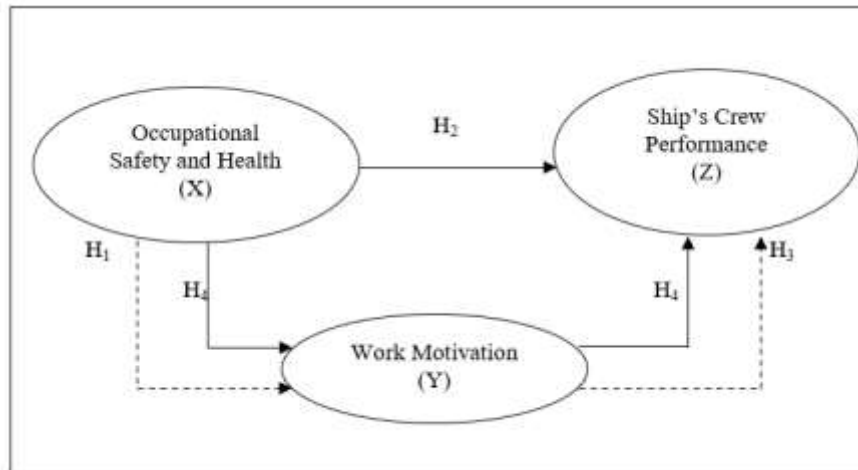


Fig.1 Conceptual Framework Research Model

Hypothesis

H₁: Occupational Safety and Health (X) has influences on Work Motivation (Y)

H₂: Occupational Safety and Health (X) has influences on Ship's Crew Performance (Z)

H₃: Work Motivation (Y) has influences on Ship's Crew Performance (Z)

H₄: Occupational Safety and Health (X) has indirect influences on Ship's Crew Performance (Z) through Work Motivation (Y)

3. RESEARCH METHODS

The target population of the study is the crew on board during 2019 at Pertamina Perkapalan, Jakarta, i.e. the crew of the MT. Sepinggan, MT. Cendrawasih and MT. Senipah with a total of 94 crew members including the skipper. The sample is part of the population. The sample used in this study was obtained by using a non-probability sampling technique with saturated sampling. Saturated sampling is a sampling technique when all populations are used as samples and it is also known as a census. So saturated sampling was carried out with a sample of 94 crew members including the skipper. The statistical analysis used in this research is path analysis. In the path analysis, the influence of the independent variables on the dependent variable can be in the form of a direct influences, in other words, multiple regression analysis considers the direct influences. Hypothetical testing can be performed using the procedures developed by Sobel which is known as Sobel Test. One of the methods which is more famous to test the mediation is generally called as Sobel test (Sobel, 1982). Sobel test is done to test the significance of indirect effect. The value of Z or P must be less than 0.05 which is representing 5% of significance level (Kline, 2011).

4. RESULTS AND DISCUSSION

Results

The first step of path analysis is testing substructure 1 and substructure 2.

Research Hypothesis Testing

Test on the influences of occupational safety and health on occupational motivation (Sub structure 1)
The influences of occupational safety and health on work motivation is based on a calculation of 0.742 or 74.2%. This shows that 74.2% of work motivation is determined by occupational safety & health. The magnitude of the R-square (R²) number is 0.551, which indicates that the influences of occupational safety & health on work motivation is 55.1%. Thus, a sub-structure path diagram 1 can be drawn up (Figure 2).

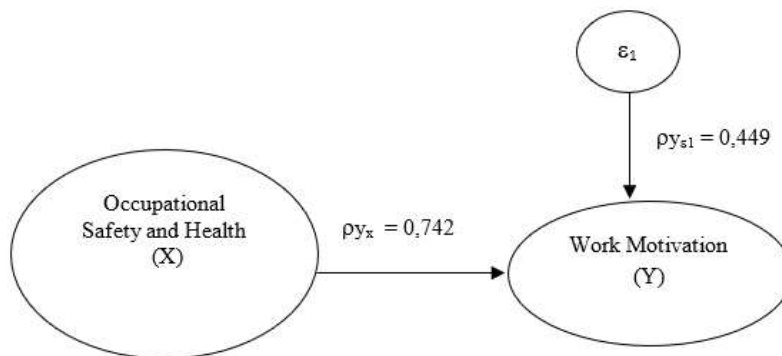


Fig 2. Influences of Sub Structure X on Y

Test on the influences of occupational safety & health and work motivation on crew performance (Sub structure 2).

Based on the structural equation in sub structure 2 it can be interpreted as follows; (1) The influences of occupational safety and health on the performance of the crew based on the calculation is 0.162 or 16.2%. This shows that 16.2% of crew performance is determined by occupational safety and health; and (2) The influences of work motivation on crew performance based on the table above is 0.784 or 78.4%. This shows that 78.4% of crew performance is determined by work motivation. The magnitude of the Rsquare (R²) number is 0.830. This figure shows that the influences of occupational safety and health and work motivation simultaneously on the performance of the crew is 83%. The path diagram of the influences of occupational safety & health and work motivation on crew performance can be seen in Figure 3.

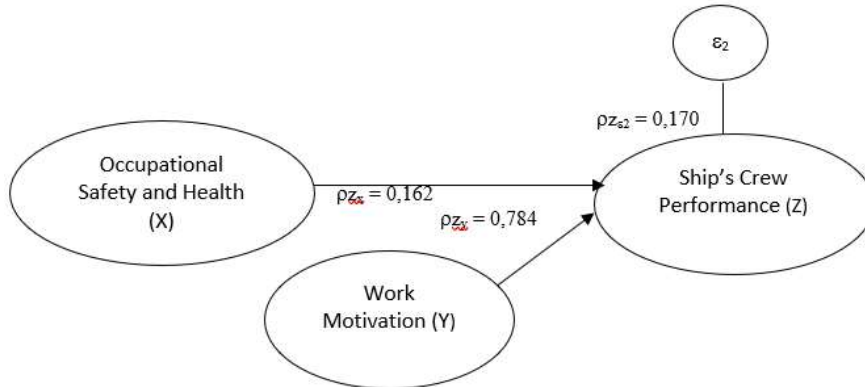


Fig.3 The Influences of X and Y Sub Structures on Z

Based on the results of the path coefficient on sub structure 1 and sub structure 2, it can be described as a whole which illustrates the path analysis diagram of the influences of occupational safety and health on work motivation and its impact on the performance of the crew can be seen in Figure 4.

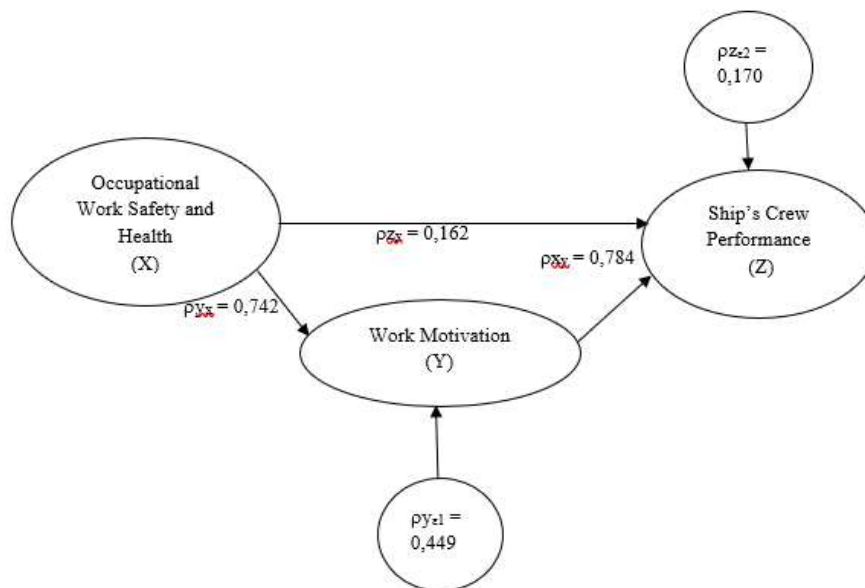


Fig.4 The influences of X and Y Sub Structure on Z

Based on the path diagram in Figure 4, the direct influences, indirect influences and total influences can be explained as follows; (1) Direct influences; (a) The influences of occupational safety and health on occupational motivation is 0.742, (b) The influences of occupational safety and health on crew performance is 0.162, and (c) The influences of work motivation on crew ship performance is 0.784;

(2) Indirect influences. The influences of occupational safety and health on crew performance through work motivation is 0.582; (3) Total influences. The total influences of occupational safety and health on work motivation is 0.742. The indirect influences of occupational safety and health on crew performance through work motivation is 0.582, so the total influences are 1.324.

Sobel Test

The Sobel test is intended to test the significance of the indirect influences, by calculating the t value of the coefficient of the exogenous and mediating variables, the value of significance is compared with the p-value. If the significance value <p-value, it can be concluded that there is a mediation influence. The sobel tests carried out in this study are as follows: The indirect influences of occupational safety and health on crew performance through (mediation) work motivation at Pertamina Perkapalan, Jakarta. The results of the path analysis show that occupational safety and health have a direct influence on work motivation and also have a direct influence on the performance of the crew. To determine the influences of occupational safety and health on crew performance through occupational motivation, it can be tested by means of a single test (Table 1).

Table 1. The output of the occupational safety and health test on the performance of the crew through work motivation

	Input:	Test statistic:	Std. Error:	p-value:
a	0.724	Sobel test: 8.01381534	0.07037796	0.000
b	0.779	Aroian test: 7.99853721	0.07051239	0.000
s _a	0.068	Goodman test: 8.02918137	0.07024328	0.000
s _b	0.064	<input type="button" value="Reset all"/>	<input type="button" value="Calculate"/>	

The calculation result shows that the p-value is 0.000 smaller than the real level or $0.000 < 0.05$. So it can be concluded that there is a mediating influences between occupational safety and health on the performance of the crew through work motivation. In accordance with the results of the analysis above, work motivation can be an intermediary for occupational safety and health on the performance of the crew.

Results

Referring to the results of the analysis of the influences of occupational safety and health and work motivation on the performance of ship crews at Pertamina Perkapalan, Jakarta in the attachment, it is then necessary to discuss the existence of each variable (Table 2).

Table 2. Research Results Matrix

Influence Hypothesis	Percentage of Influence	Hypothesis Results	Conclusion
1. Hypothesis 1: The influences of occupational safety and health on work motivation	74,2%	<i>Significance t =</i> 0,000 < 0,05	Positive and Significant
2. Hypothesis 2: The influences of occupational safety and health on the performance of ship's crew	16,2%	<i>Significance t =</i> 0,014 < 0,05	Positive and Significant
3. Hypothesis 3: The influences of work motivation on the performance of ship's crew	78,4%	<i>Significance t =</i> 0,000 < 0,05	Positive and Significant
4. Hypothesis 4: The indirect influences of occupational safety and health on the performance of ship's crew through work motivation	57,5%	p-value = 0,000 < 0,05	Positive and Significant

DISCUSSION

Hypothesis 1: The influence of Occupational Safety and Health (X) on Work Motivation (Y)

There is a positive and significant influence between occupational safety and health (X) on work motivation (Y) with a significance T of 0.000 less than the error rate of 5% or $0.000 < 0.05$. From the calculation of SPSS 24.0 for windows, the Tstatistic is 10.621 with the df 94-2 at α (0.05), the Ttable is 1.986, then the Tstatistic is $10.621 > Ttable 1.986$. A significance value less than 0.05 indicates that occupational safety and health has a significant influence on work motivation. Better occupational health and safety will increase work motivation. The influences of occupational safety and health on work motivation based on the table above is 0.162 or 16.2%. This shows that 16.2% of work motivation is determined by occupational safety and health. Occupational safety and health program this will bring safety to the crew at occupational.

To maintain work motivation, discipline and high employee commitment, the maintenance function needs to be the attention of the leadership, maintenance of human resources is intended as a management activity to maintain the physical and mental condition of human resources. start working. In this case, occupational safety and health. Demonstrating a sense of security at occupational can increase staff motivation. Regarding occupational motivation, consideration of the occupational components of seafarers and port workers in the realm of motivation can provide a useful tool for

practitioners who wish to initiate influencesive and specific motivational policies and processes (Mitroussi & Notteboom, 2015). (Hedianto, 2014) concluded that occupational safety and health variables partially affect the occupational motivation of the dependent variable. Occupational safety variables have a significant influence on employee motivation. Work motivation plays an important role in influencing the occupational of the crew. If employee enthusiasm is high, it will greatly affect employee performance and allow employees to achieve the desired company goals. This is in accordance with previous research conducted by (Dewi, 2014; Frans, 2015; Thamrin, 2018; Wijayanto et al., 2013) which states that there is an influence of occupational safety and health on work motivation.

Hyphotesis 2: The influence of Occupational Safety and Health (X) on Ship's Crew Performance (Z)
In the results of hypothesis testing in this study, the researcher found that there was a positive and significant influence between occupational safety and health (X) on the performance of the crew (Z) with a significance T of 0.014 less than the error level of 5% or $0.014 < 0,05$. From the calculation of SPSS 24.0 for windows, the Tstatistic is 2.515 with df 94-2 at $\alpha (0.05)$, the Ttable is 1.986, then the Tstatistic is $2.515 > Ttable$ is 1.986. Based on the table above, the influences of occupational safety and health on crew performance is 0.742 or 74.2%. This shows that 74.2% of crew performance is determined by occupational safety and health. Performance is the level of success of a person in completing a task within a certain period of time, compared to various possibilities (such as occupational standards, targets, indicators or standards) that have been determined previously and reach consensus.

If the company always pays attention to occupational safety and health factors, this can be achieved because it can improve employee performance. First, attention to occupational health emphasizes the issue of occupational safety, namely protecting occupational from loss or injury due to occupational accidents. Then with the development of the industry, companies began to pay more attention to the health of their occupational, namely occupational free from physical and mental illness. This is in accordance with previous research conducted by (Dewi, 2014; Elli et al., 2017; Frans, 2015; Hedianto, 2014; Thamrin, 2018; Wijayanto et al., 2013) who said there was an influences of occupational safety and health on the performance of the crew.

Hyphotesis 3: The Influence Work Motivation (Y) on Ship Crew's Performance (Z)
In the work motivation variable (Y) on the performance of the crew (Z) there is a significant influence, with a significance t of 0.000 less than the error level of 5% or $0.000 < 0.05$. From the calculation of SPSS 24.0 for windows, Tstatistic is 12.164 with df 94-2 at $\alpha (0.05)$, it is obtained Ttable of 1.986, then Tstatistic is $12.164 > Ttable$ 1.986. The results showed that there was a significant influence between work motivation, so that H_0 was rejected and H_a was accepted. Based on the table above, the influences of work motivation on occupant performance is 0.784 or 78.4%. This shows that the most

influential and problematic route is determined by the work motivation of the crew, and 78.4% of the crew performance is determined by work motivation. Motivation is the desire to make someone act. People usually act for one reason: to achieve goals.

Therefore, motivation is an impulse that is determined by a goal and rarely appears in a vacuum. The words need, want, wish and impulse are similar to motivation, which is the origin of the word motivation. Understanding motivation is very important, because performance, response to compensation, and other human resource issues will all be affected and affect motivation. Based on (Octaviannand et al., 2017) that the regression equation showed motivation influence on employee performance at shipping company. This is in accordance with previous research conducted by (Dewi, 2014; Frans, 2015; Hediando, 2014; Rudianto et al., 2014; Thamrin, 2018; Wijayanto et al., 2013) which states that there is an influences of work motivation on crew performance. Finally, ship owners and operators must consider environmental motivations and hygiene factors to build a seafarer recruitment management system that is appropriate for seafarers to maintain and lead to better seafarer performance (Yuen et al., 2018).

Hypothesis 4: The Indirect Influences of Occupational Safety and Health on The Performance of Ship's Crew Through Work Motivation

To know the influence of occupational safety and health on the performance of ship's crew through work motivation, it can be tested using Sobel test. The result of calculation obtains p-value 0.000 smaller than the real degree or $0.000 < 0.05$. This sobel test is used in some researches by (Caron, 2019; Preacher & Hayes, 2008). So it can be concluded that there is a mediating influence between occupational safety and health on the performance of ship's crew through work motivation. In line with the above analysis, work motivation can become the intermediary of occupational safety and health on the performance of ship's crew. In other studies, (Wijayanto et al., 2013), proved that the occupational safety variable has a significant influences on the occupational motivation variable, and employee performance. Several previous studies (Dewi, 2014; Elli et al., 2017; Frans, 2015), prove that the occupational safety and health program can increase employee motivation and can lead to an increase in employee performance.

So, it can be concluded that there is a mediating influence between occupational safety and health on the performance of the crew through work motivation. In accordance with the results of the analysis above, occupational motivation can be an intermediary for occupational safety and health on the performance of the crew. Good crew performance can have a positive impact on the company as a whole. One of them is the increase in the resolution of responsibilities given by companies to workers. Safety and protection factors at work are one of the factors that affect the performance of the crew. When the crew of the ship has a sense of security and comfort because they feel they have good protection from the company, the crew will also work with a calm feeling and will work well. It is

hoped that company crews like this will have maximum performance. One of the efforts in implementing protection for ship crews is by implementing an occupational safety and health program.

5. CONCLUSION AND IMPLICATION

The magnitude of the effect of occupational safety and health on work motivation at Pertamina Perkapalan, Jakarta is quite large, this shows that work motivation is determined by occupational safety and health and based on hypothesis testing the effect is significant. The effect of occupational safety and health on the performance of ship crews at Pertamina Perkapalan, Jakarta is not too big, although the performance of the crew is determined by occupational safety and health and this effect is significant.

The magnitude of the influence of work motivation on the performance of ship crews at Pertamina Perkapalan, Jakarta, based on the percentage of influence shows that work motivation has a major influence on the performance of the crew. The indirect effect of occupational safety and health on crew performance through work motivation is not too large, but work motivation can be an intermediary for occupational safety and health on crew performance.

Motivation is also greatly influenced by the implementation of the occupational health and safety program because the presence of the occupational health and safety program for the welfare of the crew is more attention and can make the crew more motivated to work for a company. With increased motivation, it will have a positive impact on improving the performance of the crew. Therefore, motivation is an important thing that must be considered because the high motivation of the crew will result in high enthusiasm in doing work. With work motivation, it can be seen the effect on the performance of the crew. Where the crew will take action based on the desire to excel and obtain a higher position in the company.

In the tabulation table, it is known that there are crew members who have low occupational health and safety but can produce high performance. Thus, there are factors other than occupational safety and health that cause crew performance to be high or low. n. So it is clear that it plays an important role in work safety and greatly influences the results or performance of the crew. And work safety is closely related to the performance of the crew, if a crew member is unable to work, he cannot produce output and support the company's success in achieving its goals.

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