

# Analysis of Factors Contributing to Maritime Safety Mediated by Ship Crew Competency in Indonesia

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**Abstract**—The problem of maritime safety is a strategic issue that becomes the main focus in the management of sea transportation in Indonesia. maritime safety and security do not only become the main performance indicators in the transportation sector, but also the priority target of national maritime development, especially in reducing the rate of shipping accidents and disruption. This research aims to analyze the influence of ship crew quality and supervision on maritime safety mediated by ship crew competency. The method used was Structural Equation Modeling with Partial Least Square. Data collection was done through questionnaire distribution to respondents consisting of the State Navigation Ship crew under the authority of Class I Navigation District of Tanjung Priok, with the sample as many as 90 people including captains, deck officers, engineers, and ship crew. The research result showed that crew quality and supervision positively and significantly influenced the ship crew competency. In addition, both crew quality and supervision proved to have a direct influence on maritime safety. Ship crew competency also significantly influenced maritime safety and became the mediating variable that strengthened the influence of crew quality and supervision on maritime safety. This finding asserted the importance of improving the Human Resources quality of navigation seafarers as well as supervision of the operation to maintain the maritime safety of state ships.

**Keywords**—Navigation district, maritime safety, ship crew competency, crew quality, supervision.

## I. INTRODUCTION

Various efforts have been done by the government, especially by the Coordinating Ministry for Political, Legal and Security Affairs, related to the overlapping maritime law enforcement policies in recent years with the authority model. Failure to meet the crew standard does not only impact on the low operational efficiency but also undermines the professional image of state officials at sea. The limited number of state ship fleets—if not supported by the standardized and competent human resources of ship crew, will find difficulties in reaching Indonesia's large maritime jurisdiction, significantly increasing the potential of sea accidents or maritime law violations.

To realize a good maritime governance, strategic policy and institutional commitment are required for developing state ship crewing system based on the national and international standards. Navigation ships that operate under the Navigation District of Tanjung Priok should have ship crew with appropriate educational background, adequate field practical experience, and understanding of maritime laws and regulations. Without excellent crew quality, it will be difficult to reach the synergy between institutions, the effectiveness of maritime safety supervision, as well as compliance with the international conventions.

One of the factors that influence maritime safety related to state ship crew is competency. In the context of state navigating ship crew, competency relates directly to their ability to perform important tasks such as maintaining maritime safety, conducting supervision, and conducting law enforcement at sea. Such competencies are evidenced by the

competency certifications received by ship crew which include knowledge, skills, and work attitude.

Additionally, improvements in competency certification like ANT, GMDSS, and simulated radar ought to be mandated in order for all ship personnel to possess legitimate and verified competency proofs. Thus, ship crew competency will improve, which, in turn, will enhance the effectiveness of state ship operation, especially in maintaining maritime safety and performing maritime law enforcement.

This research focuses on the factors that contribute to maritime safety, particularly in the aspects of crew quality, supervision, and state ship crew competency. The research object is limited to State Navigation Ships that operate in Class I Navigation District area of Tanjung Priok, as one of the strategic nodes in the Indonesia's national shipping system. In this context, maritime safety is not only influenced by technical factors but also determined by the quality of human resources and the implemented supervision system.

Type B Navigation District of Tanjung Priok, which lies in the area of Kali Japat waters, North Jakarta, has an important mandate from the Directorate General of Sea Transportation to perform the navigation duties, covering seven provinces, namely DKI Jakarta, Banten, Lampung, Bengkulu, Bangka Belitung, West Kalimantan, and West Jawa.

Some previous researches, [1], explain that the main factors improving the quality of crew include individual competency, work productivity, and compliance with the safety standards. The implementation of competency management system can particularly be seen in the shipping companies, both for ground staff and ship crew [2]. The research results [3] show the positive and significant influence

of employee's competency and safety equipment usage on the safety climate in Indonesia's shipping companies.

The results of the researches [4] state that as long as seafarers are not the main subject in the shipping industry, and as long as the crew of a ship are not respected as they deserve, tension will always exist. It is said that organizational supports in the study [5] will be able to become the point of main intervention to alleviate perceived fatigue and enhance self-efficacy, thus improving the quality of work life. During the voyage, there is an interaction among the threat of piracy on navigation safety, maritime security, and seafarer safety [6]. The research results [7] explain that the aspects of safety and security as well as protection must match the transportation management system policies. Other studies, [8] particularly suggest the captain and shipping company to strengthen the safety climate in order to improve safety performance.

The aim of this research in the Class I Navigation District area of Tanjung Priok is to analyze and know directly the contribution of mannaing quality and supervision to ship crew competency as well as the contribution of ship crew competency to maritime safety. Meanwhile, indirectly, it aims to analyze and know the contribution of crew quality and supervision to maritime safety mediated by ship crew competency. Therefore, based on the aims of the research, the conceptual model and research hypotheses can be illustrated in Figure 1.

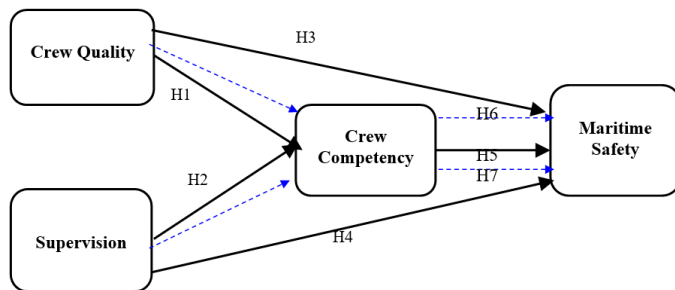


Fig. 1. Conceptual Model

### Hypotheses

- H1: Ship Crew Quality contributes directly to Ship Crew Competency
- H2: Ship Crew Supervision contributes directly to Ship Crew Competency
- H3: Ship Crew Quality contributes directly to Maritime Safety
- H4: Ship Crew Supervision contributes directly to Maritime Safety
- H5: Ship Crew Competency contributes directly to Maritime Safety
- H6: Ship Crew Quality mediated by Ship Crew Competency contributes indirectly to Maritime Safety
- H7: Ship Crew Supervision mediated by Ship Crew Competency contributes indirectly to Maritime Safety

## II. LITERATURE REVIEW

Ship crew quality is measured by the operational efficiency and legal compliance [9]. High-quality crewing requires the balance between the scale of ship crew number and advanced technical competency. Qualified ship crew must

be able to understand the global maritime commercial law to prevent ship detention at a foreign port by Port State Control (PSC). Whereas according to [10], high-quality ship crew is achieved when standardized functional training goes hand in hand with rigorous fatigue management. If ship crew work beyond the limit of working hours, the crew quality will deteriorate drastically and legally compromise the ship's seaworthiness.

Ship crewing according to [11] is a structured process of monitoring and controlling the fulfilment of ship crew certification, working hours, and evaluating the performance on board the ship. This supervision aims to neutralize the operational threats and optimize the cost efficiency without violating the international maritime safety standards. [12], also explain that ship crew supervision is the implementation of human resources supervision function at sea focusing on human elements.

Supervision entails strict control over the crew compliance with the International Safety Management (ISM) Code on board the ship to develop a reliable occupational safety management system in order to minimize the risk of accident due to the negligence of ship crew. In general, human oversight is expected to be necessary to ensure safe performance, but supports are also needed [13]. Theoretically, [14] shows that the pattern of optimum supervision is a combination where port authority implements strict supervision, ship owners implement standard management, and communities take participation in ship supervision, to improve the overall ship quality, as well as to ensure maritime safety.

Ship crew competency, according to [15] is the dynamic integrative ability to perform operational duties at sea in accordance with the specified function, which is not only validated by the ownership of formal STCW certification, but also by the seafarers' cognitive capacity in processing the complex navigation information and making safe critical decisions. [16] argues that competency is the real ability of ship crew to execute work procedures on board the ship efficiently and safely. Such a competency distinguishes between the aspect of compliance with legal documents and the actual capacity of ship crew performance when operating steering bridge system, cargo management, and handling maritime emergency situations. Another sourceperson, [17] states that ship crew competency in the modern era is the seafarers' socio-technical capability, which combines conventional mechanical expertise and digital literacy like smart navigation and system automation. In addition, such a competency focuses on the ship's interface to minimize human error.

Whereas seafarer's maritime safety according to [18] is the level of operational condition where the risks of injury, loss of life, or health impairment for ship crew are decreasing and maintained at the acceptable level, through human-centered system design and integrated risk management. Another author, [19], defines it as an integrated protection over ship crew from operational, physical and environmental dangers, which does not only depend on the compliance with ship's technical regulations, but also on the human factor

management, safety culture on board the ship, as well as the prevention of fatigue.

Another opinion, [20] adds that seafarer's maritime safety is a mental attitude and systematic practice to identify the danger, evaluate the risk, and take active steps to ensure the safety of crew's life, ship intactness, and sustainable marine environment protection. The research result [21] suggests the ship crew to understand the effectiveness of safety measures while working on board the ship so that they can master the prevailing standards. It is necessary to implement sustainable safety programs as part of corporate human resource management, so that they feel safe and comfortable while working [22].

### III. RESEARCH METHOD

This research was conducted in the area of Class I Navigation District of Tanjung Priok, one of technical implementation unit under the Directorate General of Sea Transportation, the Ministry of Transportation. The research object was focused on the crew of State Navigation Ship operating under the coordination of Class I Navigation District of Tanjung Priok, North Jakarta. This district covers strategic working areas to support the maritime safety in the western part of Indonesian waters and becomes an important representation in performing the function of national navigation.

This research used the SEM-PLS software, namely SmartPLS 3 through three stages, namely outer model testing stage, Goodness of fit model testing stage, and inner model testing stage. Whereas the measurement model testing was done through loading factor, AVE calculation, Goodness of Fit, outer and inner model measurement, and hypothesis testing.

The research sample was as many as 90 crew of State Navigation Ships on duties under the coordination of Class I Navigation District of Tanjung Priok, in the four units of active operational ships. The ship crew included various seafarer positions and technical positions that had shipping certifications in accordance with the international standards, such as BST, GMDSS, PSCRB, RADAR, SAT, and others, which supported the functions of crewing, supervision, and maritime safety. The names of State Ships that became the sample are Edam, Karakata, Enggano, and Miaplacidus.

In this research, the statements in the questionnaire were designed in accordance with the order of variables and their indicators to ensure that the questions did not deviate from the research objectives. Likert Scale was used to provide the answer choices of strongly agree, agree, neutral, disagree, dan strongly disagree. The first exogenous variable studied was crew quality by using six operational dimensions, and the second was supervision with five dimensions. Ship crew competency as the mediating variable used five operational dimensions and the endogenous variable was maritime safety using seven operational dimensions, so that there were 23 indicators. Trial was done to 30 respondents, resulting that all the statements were valid and reliable.

## IV. RESULTS AND DISCUSSION

### C.1. Result of Statistical Analysis

This study assessed maritime safety using 14 statements, crew quality using 12, supervision using 10, and ship crew competence using 10. The use of a tool aid with Smart PLS program Version 3 and structural model in this research was shown in Figure 2.

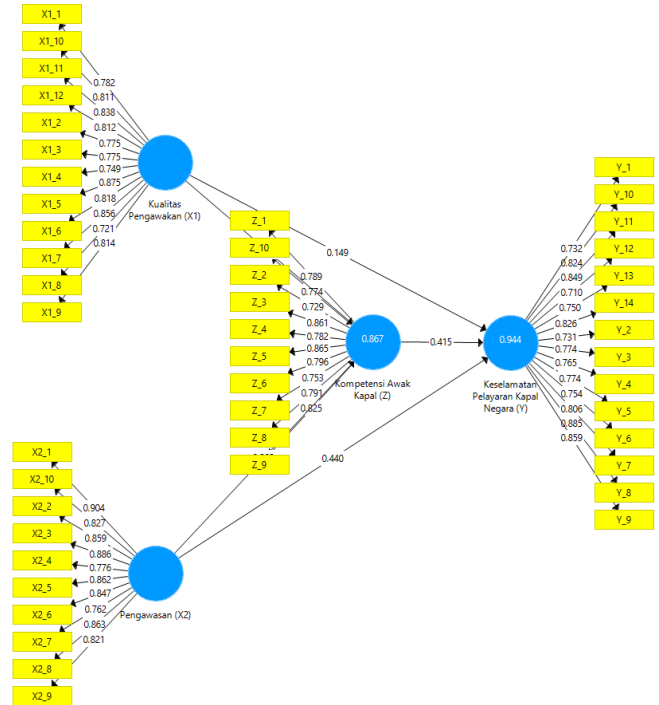


Fig. 2. Structural Model

External model testing included convergency validity, discriminant validity, and reliability. The output of Smart PLS for loading factor showed that all the indicators had a loading factor  $> 0.70$ , meaning that all the indicators are valid to measure their constructs. Whereas the value of cross loading for each indicator in the Discriminant Validity is that some research variable dimensions had lower value of cross loading than the value of cross loading in the other variable dimensions.

Therefore, it is necessary to conduct further observation on this finding. Another method to measure discriminant validity is by seeing the value of square root of the Average Variance Extracted (AVE). It is suggested that the value of AVE is above 0.5 to ensure the good model quality. In Table 1, there is a loading value for the research variable construct resulted from the process of Smart PLS program execution.

TABLE 1. Constructing Reliability and Validity

|                      | Cronbach's Alpha | Composite Reliability | AVE   |
|----------------------|------------------|-----------------------|-------|
| Crew Quality         | 0.950            | 0.956                 | 0.645 |
| Supervision          | 0.954            | 0.960                 | 0.709 |
| Ship Crew Competency | 0.936            | 0.946                 | 0.636 |
| Maritime Safety      | 0.953            | 0.959                 | 0.624 |

From Table 1, it can be seen that the Average Variance Extracted (AVE) of each variable, namely crew quality and supervision, ship crew competency, as well as state ship's maritime safety and security, has a construct value  $> 0.50$ . This indicates that all the constructs have a good reliability. Therefore, it can be concluded that each variable has a high level of discriminant validity. Furthermore, in Table 1, the value of composite reliability of each variable shows a construct value  $> 0.60$ . This result indicates that each variable has fulfilled the requirements of composite reliability, confirming a good level of reliability for each variable.

Then in Table 1, the cronbach's alpha for each variable also shows a construct value  $> 0.70$ . This result indicates that all the research variables have fulfilled the requirements of cronbach's alpha value, confirming a high level of reliability for each variable. Therefore, it can be concluded that the dimensions used in this research have a high level of discriminant validity in establishing their own variable, and a high level of reliability for all the variables studied.

### C.2. Analysis of Inner Model

#### Coefficient of Determination ( $R^2$ )

The inner model testing was done to observe the relation among the construct, significance value, and R-square of research model. Structural model was evaluated using  $R_{\text{square}}$  for endogenous construct, t test, and the significance of parameter coefficient of structural path. Based on the data processing carried out using SmartPLS 3.0 program, the value of  $R_{\text{Square}}$  was obtained (Figure 2).

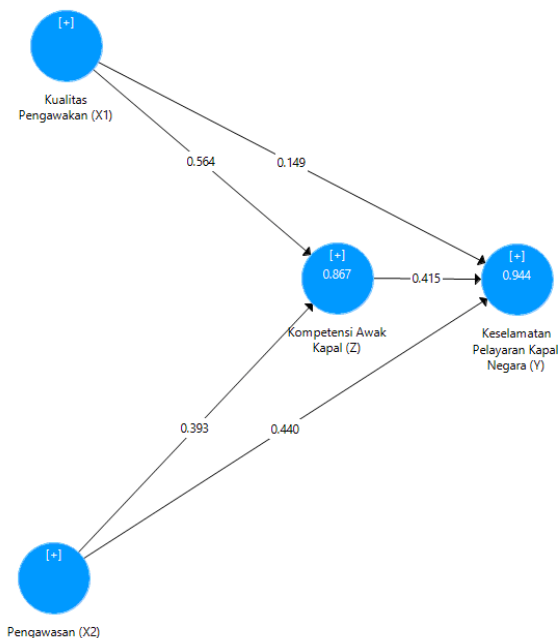


Fig. 3. Inner Model

TABLE 2. Result of  $R_{\text{Square}}$

|                     | $R_{\text{Square}}$ | $R_{\text{Square Adjusted}}$ |
|---------------------|---------------------|------------------------------|
| Maritime Safety     | 0.944               | 0.942                        |
| Shp Crew Competency | 0.867               | 0.864                        |

Table 2 shows that the value of  $R_{\text{Square}}$  for the variable of ship crew competency is 0.867. It means the variables of crew quality and supervision influence the ship crew competency as big as 86.7%. Whereas the value of  $R_{\text{Square}}$  for the variable of maritime safety is 0.944. It means the variables of crew quality, suprvision, and ship crew competency contribute to maritime safety as big as 94.4%.

### C.3. Goodness of Fit (GoF) Assessment

Goodness of fit model testing can be assessed from the value of NFI  $\geq 0.802$ , which if stated fulfilling the requirements, it shows fitness. Then, from the result of data processing the value of Model Fit is obtained (Table 3).

TABLE 3. Model Fit

|            | Saturated Model | Estimated Model |
|------------|-----------------|-----------------|
| SRMR       | 0.088           | 0.088           |
| d ULS      | 8.340           | 8.340           |
| d G        | 1.460           | 1.460           |
| Chi-Square | 680.456         | 680.456         |
| NFI        | 0.802           | 0.802           |

The result of goodness of fit test of the PLS model as in Table 3 shows that the value of NFI 0.802 means FIT. Thus, from this result it can be concluded that the model in this research has got a high goodness of fit and deserves to be used for examining the research hypotheses.

### C.4. Hypothesis Testing

TABLE 4. Path Coefficients (Direct Contribution)

|                | Direct Contribution (Direct Effect)                      | Coefficient of Parameter | T. Statistics | P Values | Results                             |
|----------------|----------------------------------------------------------|--------------------------|---------------|----------|-------------------------------------|
| H <sub>1</sub> | Crew Quality -> Ship Crew Competency                     | 0.564                    | 6.352         | 0.000    | Significant and Influences directly |
| H <sub>2</sub> | Supervision -> Ship Crew Competency                      | 0.393                    | 4.453         | 0.000    | Significant and Influences directly |
| H <sub>3</sub> | Crew Quality -> Maritime Safety                          | 0.149                    | 2.479         | 0.014    | Significant and Influences directly |
| H <sub>4</sub> | Supervision -> State Ship's Maritime Safety and Security | 0.440                    | 11.838        | 0.000    | Significant and Influences directly |
| H <sub>5</sub> | Ship Crew Competency -> Maritime Safety                  | 0.415                    | 7.010         | 0.000    | Significant and Influences directly |

Table 4 shows that out of the five hypotheses having direct influence, five hypotheses are accepted because their value of T-Statistics  $> 1.96$  and P-Values  $< 0.05$  meaning that there is a significant positive direct contribution.

### C.5. Discussion

#### Ship Crew Quality Directly Contributes to Ship Crew Competency

Table 5 shows that crew quality contributes positively to ship crew competency with the coefficient of parameter as big

as 0.564, with T-Statistics  $H_1$  6.352 > 1.96, and P-values 0.000 < 0.05. Thus,  $H_0$  is rejected and  $H_a$  is accepted, so there is a significant positive direct contribution of crew quality to ship crew competency.

TABLE 5. Path Coefficients (Indirect Contribution)

|       | Indirect Contribution (Indirect Effect)               | Coefficient of Parameter | T-Statistics | P Values | Result                              |
|-------|-------------------------------------------------------|--------------------------|--------------|----------|-------------------------------------|
| $H_6$ | Crew Quality → Ship Crew Competency → Maritime Safety | 0.234                    | 4.724        | 0.000    | Significant and Influences directly |
| $H_7$ | Supervision → Ship Crew Competency → Maritime Safety  | 0.163                    | 3.718        | 0.000    | Significant and Influences directly |

TABLE 6. Result Summary of Research Hypotheses

| Independent-Dependent Variables                          | Result      | Significance |
|----------------------------------------------------------|-------------|--------------|
| 1. Crew Quality - Ship Crew Competency                   | Significant | 0.000 < 0.05 |
| 2. Supervision - Ship Crew Competency                    | Significant | 0.000 < 0.05 |
| 3. Crew Quality - Maritime Safety                        | Significant | 0.014 < 0.05 |
| 4. Supervision - Maritime Safety                         | Significant | 0.000 < 0.05 |
| 5. Ship Crew Competency - Maritime Safety                | Significant | 0.000 < 0.05 |
| Independent-Mediation-Dependent Variables                | Result      | Significance |
| 1. Crew Quality - Ship Crew Competency - Maritime Safety | Significant | 0.000 < 0.05 |
| 2. Supervision - Ship Crew Competency - Maritime Safety  | Significant | 0.000 < 0.05 |

This finding indicates that high crew quality gives big contribution to ship crew competency in understanding safety procedures, performing duties according to standard operation, and making decisions in emergency situations. The ship crew who are assigned in accordance with standard STCW and involved in routine training have proven to be more skilled in operating navigation system, understanding international rules, and working in team. The results of this research in general, [23], [24] state that education and maritime training, manpower development, and policy formulation will be able to balance traditional shipping skills and new growing competencies. So, based on this explanation it can be concluded that crew quality positively and significantly contributes to ship crew competency.

#### Supervision Directly Contributes to Ship Crew Competency

Table 4 shows that supervision positively contributes to ship crew competency with the coefficient of parameter as big as 0.393. Furthermore, since the T-Statistics value of  $H_2$  4.453 > 1.96 and the P-values is 0.000 < 0.05, then  $H_0$  is rejected and  $H_a$  is accepted. Thus, there is a significant positive direct contribution of supervision to ship crew competency.

Structured and periodic supervision can monitor and fix the aspects of ship crew's weaknesses, both from technical skill and work attitude. The ship crew under an active supervision tend to show increasing performance and professionalism while on duty. In the study [25], supervision is closely related to competency, especially of ship cadet. According to [26], Competency-based training and

supervision, is very relevant and needed. Therefore, based on the explanation it can be concluded that supervision positively and significantly contributes to ship crew competency.

#### Ship Crew Quality Directly Contributes to Maritime Safety

Table 4 shows that crew quality contributes to maritime safety with the coefficient of parameter as big as 0.419. Furthermore, since the T-Statistics value of  $H_3$  is 2.479 > 1.96 and P-values of  $H_3$  is 0.014 < 0.05, thus  $H_0$  is rejected and  $H_a$  is accepted. So, there is a positive and significant direct contribution of crew quality to maritime safety.

State ships managed with a good crewing system less frequently experience sea accidents or incidents that endanger the ship and crew. This is because qualified crew are able to operate a ship efficiently, avoid procedural mistakes, and take quick actions in emergency. The safety of maritime crew member is very closely to work engagement, and quality of life, during the voyage [27]. Basically, according to [28] inadequate or rushed crewing quality will increase work load, trigger fatigue, and decrease the effectiveness of safety procedure implementation. Thus, based on the explanation it can be concluded that crew quality positively and significantly contributes to maritime safety.

#### Supervision Directly Contributes to Maritime Safety

Table 4 shows that supervision positively influences maritime safety with the coefficient of parameter as big as 0.440, T-Statistics of  $H_4$  as big as 11.838 > 1.96 and P-values of  $H_4$  as big as 0.000 < 0.05. Thus,  $H_0$  is rejected and  $H_a$  is accepted, so there is a significant and positive direct contribution of supervision to s maritime safety. The state ships under a good supervision system—both from the internal side of organization and external supervisory institution—tend to have a higher record of safety and a lower risk of accident.

In general, according to European Maritime Safety Agency (EMSA), almost one-fifth of 70% accidents on board the ship is very closely related to inadequate supervision [29]. The result of another research, [30] states that Supervision is very closely related to safety. So, from the explanation it can be concluded that supervision contributes positively and significantly to maritime safety.

#### Ship Crew Competency Directly Contributes to Maritime Safety

Table 4 shows that ship crew competency positively contributes to maritime safety with the coefficient of parameter as big as 0.415, T-Statistics of  $H_5$  as big as 7.010 > 1.96 and P-values of  $H_5$  as big as 0.000 < 0.05. Thus,  $H_0$  is rejected and  $H_a$  is accepted, so there is a significant and positive direct contribution of ship crew competency to maritime safety.

Strengthening ship crew competency does not only function as a technical factor, but also as the main shield against the potential risk of operation at sea. In the perspective of national sea transportation system, improving ship personnel's capacity will create a safe and reliable shipping climate. Therefore, the variable of ship crew competency deserves to be empirically tested against maritime safety to bring about an evidence-based policy. The research results [30], [31] assert in general that competency is very closely related to safety. Another study, [32] concludes that seafarers'

poor competency is a structural challenge in the maritime safety system. So, based on the explanation it can be concluded that ship crew competency contributes positively and significantly to maritime safety.

#### *Ship Crew Competency Indirectly Contributes to and Mediates the Influence of Ship Crew Quality on Maritime Safety*

Table 5 shows that ship crew competency does not mediate crew quality to maritime safety or positively with the coefficient of parameter as big as 0.234, T-Statistics of  $H_6$  as big as  $4.724 > 1.96$  and P-values of  $H_6$  as big as  $0.001 < 0.05$ . Thus,  $H_0$  is rejected or  $H_a$  is accepted, so that ship crew competency can mediate crew quality to maritime safety.

The findings, [24] show that crew quality does not automatically result in safety, but it must be transformed first to become technical competency and adapt the seafarers' situation as the effect of mediation before giving an impact to the decreasing risk of accidents. In addition, [28] confirms that crewing policy will indirectly influence the *safety outcomes* through the level of applied competency and the compliance of ship crew on board with the procedures. Therefore, it can be said from the explanation that the competence of the ship crew mediates and contributes positively and indirectly to the maritime safety of the ship crew.

#### *Ship Crew Competency Indirectly Contributes to and Mediates Supervision to Maritime Safety*

Table 5 shows that ship crew competency does not mediate supervision to maritime safety or positively with the coefficient of parameter as big as 0.163, T-Statistics of  $H_7$  as big as  $3.718 > 1.96$  and P-values of  $H_7$  as big as  $0.002 < 0.05$ . Thus,  $H_0$  is rejected or  $H_a$  is accepted, so that ship crew competency can mediate supervision to maritime safety.

Supervision will only be effective if ship crew have ability to understand and implement safety procedures technically and administratively. So, ship crew competency becomes a mediating node that bridges the intensity of supervision and the increasing maritime safety.

This finding strengthens the necessity of an integrative approach in the management of sea safety which combines the control function (supervision) and the capability of competency into a single frame of integrated policy. According to prior research, [29] asserts that management's safety supervision does not directly affect the incident level reduction. Instead, it is mediated by the ship crew's understanding, competence, and perception of safety in carrying out daily supervision on board the vessel. Another explanation, [24] states that technical supervision has an indirect impact on the decreasing maritime accidents with the ship crew problem-solving competence. So, based on the explanation it can be concluded that ship crew competency indirectly contributes to and positively mediates the supervision to maritime safety.

## V. CONCLUSION

Crew quality directly, positively and significantly influences the competency of the crew of state navigation ship. In the context of State Navigation Ship in Class I Navigation District of Tanjung Priok, this indicates that the

crew assignment fulfilling the standard profession is an initial step to build capable crew who are ready to face operational challenges at sea.

Supervision directly, positively and significantly influences the competency of the crew of state navigational ship. With consistent, measurable, and a standard operation procedure-based supervision, the ship crew become more disciplined, directed, and responsive to changes and complex situations at sea. Crew quality directly, positively and significantly influences maritime safety. In the context of Class I Navigation District of Tanjung Priok, where the flow of ship traffic is very crowded, high-qualified crew prove to support the shipping smoothness and safety.

Supervision directly, positively and significantly influences maritime safety. Maritime safety in strategic areas such as Tanjung Priok is much influenced by how strong and consistent the supervision is implemented. Effective supervision over the execution of duties, the use of navigation tools, and the compliance with marine safety regulations can minimize the risk of operational errors and enhance the ship crew preparedness in critical situations.

Ship crew competency directly, positively and significantly influences maritime safety. Competency becomes the principal key to prevent accidents and optimally support the continuity of ship operation. Crew quality positively and significantly influences maritime safety through the mediation by ship crew competency. The higher the quality of the crewing implementation, the higher the ship crew competency, which finally increases the maritime safety in the working area of Tanjung Priok Navigation District.

Supervision positively and significantly influences maritime safety through the mediation by ship crew competency. When supervision is conducted systematically and sustainably, learning process and increasing skill will happen, which finally enhances the ability of ship crew in executing duties in safe, quick, and accurate ways.

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