SAFETY POLICY STRATEGY: A KEY SUCCESS OF BUSINESS TRANSPORTATION

Andjar Budi Wibawanti
Direktorat Jenderal Perhubungan Laut, Kementerian Perhubungan, Jakarta Indonesia
Email: wibawanti_andjar@yahoo.com

Abstract: This paper aims to find alternative policy strategies to improve seafarer safety behavior to reduce the potential for ship accidents. The activity uses literature studies supported by quantitative methods. Data is collected through relevant literature and key persons and analyzed using a logic model approach. The results show that one of the alternative strategic policies that can be considered to reduce seafarer accidents through improving seafarer safety behavior is a policy of improving the quality of resources through a special certification program for seafarers and supervisors. The safety certification program is designed for seafarers and supervisors with different materials, methods and instructors according to their respective job descriptions and lasts for 20 to 30 hours in five working days. These findings not only provide theoretical contributions to the development of transportation and public policy, but also have practical implications for shipping companies and the government.

Keywords: *policy, safety behavior, accidents, seafarers.*

1. Introduction

Safety issues are very important because they are related to the fact that ship accidents still often occur. The total number of shipping accidents investigated by the Directorate General of Sea Transportation of the Indonesian Ministry of Transportation during the period 2021-2024 was 400 accidents, including types of accidents such as burning, sinking, collisions, grounding, and ships that endanger human lives and loss of goods or property. In the period 2021-2024, the Directorate General of Sea Transportation of the Indonesian Ministry of Transportation recorded that the highest number of fatalities due to shipping accidents occurred in 2021, namely 82 people died.

The investigation report of the Directorate General of Sea Transportation of the Ministry of Transportation of the Republic of Indonesia on several ship accidents, such as ship sinking, ship fire, ship collisions, ship grounding, and ships that caused the threat of human life and loss of goods or property that occurred in Indonesia stated that overloading, weather conditions/weather factors, track terrain other than weather, ship conditions, and the skill of the ship's captain were the sources/causes of ship accidents. The Indonesian Maritime Council also released that 72% of ship accident cases were caused by human error. The National Transportation Safety Committee also noted that human error was the main cause of ship accidents (Hasugian, 2017).

These errors are related to inadequate safety behavior (Liu, 2020) due to minimal safety evaluation (Datu et al., 2024), navigation errors (Suryani, 2024) due to lack of training (Thamrin, 2015), and violations of shipping rules (Subramaniam et al., 2023), mainly due to fatigue (Mohammadfam et al., 2021). The next causal factor is extreme weather conditions (Rahman, 2017). This is related to Indonesia's existence in a tropical region with high rainfall and often experiencing tropical storms. Bad weather, such as high waves, strong winds, and storms, can cause ships to be damaged or even sink (Tjahyono et al., 2020). Other causes are the condition of the ship that is not seaworthy (Hanum, 2023) due to the old age of the ship (Adiputra et al., 2022), lack of maintenance (Haryanto et al., 2018), and overloading (Liolita et al., 2019). Complicated water conditions (Kompas, 2018) are also one of the triggers for ship accidents. Indonesian waters, which have such complex characteristics with many islands, corals, and strong currents, require an extra careful navigation system (Kadarisman, 2017). Inadequate navigation equipment (Sutryani, 2021) is also a cause of ship accidents. This is clearly seen in small ship sinking and capsizing cases, which occur almost yearly (Basarnas, 2016). These ships are not equipped with navigation equipment that is sophisticated enough to deal with the difficult conditions of Indonesian waters (Fan et al., 2023). This condition is also exacerbated by the lack of law enforcement (Kompas, 2023). So far, supervision of shipping safety in several regions has been less effective, so violations of the rules often occur (Hasugian et al., 2017). Of all the causes of ship accidents, the most dominant factor is human error, especially inadequate safety behavior. Safety behavior is an individual action taken for self-protection, such as complying with safety regulations to avoid danger (Seo et al., 2015).

According to Winarsunu (2018), safety behavior is the behavior of individuals interacting with the work environment that is specifically related to the formation of safe behavior that can improve occupational safety and health and the formation of safe behavior at work that can reduce the occurrence of work accidents. Safety behavior is also worker behavior, which is shown by obeying company regulations when carrying out work (Agiviana, 2015). Saleem et al. (2022) explain that safety behavior results from actions initiated by employees when they face safety-related situations in an organization. Factors influencing safety behavior include subjective norms, safety awareness, safety knowledge, attitudes, and perceived behavioral control (Nabi et al., 2020). Li et al. (2020) also identified several factors that can influence safety behavior: tasks, situational behavior, safety participation, safety compliance, people's perspectives and opinions about safety, safety culture, safety psychology, and employee satisfaction with work safety in their jobs.

Safety behavior is critical to reduce accidents (Guo et al., 2019). Therefore, when ship accidents occur frequently, an appropriate policy strategy is needed to improve the safety

behavior of sailors and supervisors. In this context, strategy is an art or science that influences others to achieve the goals set effectively and efficiently (Kuncoro, 2007). Strategy reflects every step taken to achieve the main goals and objectives (Ahmadi, 2009). At the same time, the policy is a statement from the government about what it intends to do, such as in the form of laws, regulations, decisions, orders, or a combination of these aspects (Birkland, 2011). For Gerston (2010), policy is a combination of basic decisions, commitments, and actions made by those who hold or influence government positions or authorities. It is related to a series of actions by the government that include, but are not limited to, making laws that are defined in terms of common goals or intentions (Cochran & Malone, 2010). Wheelan (2011) also said that policy is a process that shows that society creates and implements what behavior is acceptable and what is not. The policies issued by the government are known as public policies, which are the study of government decisions and actions related to public issues (Cochran & Malone, 2010), including maritime transportation and seafarer safety behavior. According to Subarsono (2010), the public policy process reflects a series of intellectual activities carried out in political activities. These intellectual activities are identifying social goals, diagnosing problems, identifying appropriate institutions to act, evaluating the substance and politics of competing policy options, and implementing, strengthening, and monitoring policy changes.

The description above shows that the root cause of ship accidents is human error due to inadequate safety behavior and minimal safety evaluation, so the main problem (problem statement) is the high number of sailor and supervisory officer errors due to inadequate safety behavior and minimal safety evaluation as the cause of ship accidents. Therefore, this analysis aims to find alternative policy strategies to improve the safety behavior of sailors and supervisory officers to reduce the potential for ship accidents.

2. Research Method

This activity is carried out mainly by relying on literature review supported by quantitative studies whose data is obtained from key persons, namely people who understand and have competence in the field of safety. In line with that, the data collection method is carried out through an inventory sourced from relevant reference materials, including theories and laws and regulations (Laws, Government Regulations, Presidential Regulations, Regulations of the Minister of Transportation, and regulations from other related ministries or institutions). The data processing process begins with coding, tabulating and combining data, and then analyzing. After that, alternative policies are formulated using a theoretical approach and evaluated based on criteria. The selection of priorities for each alternative policy uses a scoring assessment by key persons based on considerations of effectiveness, efficiency, and long-term impact (Dunn, 1999). Finally, a logic model approach is used to evaluate programs and activity targets that support the policies above it so as to assist in program planning, implementation, and evaluation (Knowlton & Philips, 2013). This is necessary for the preparation of the implementation framework of the programs/activities that have been produced by preparing the activity timeline, stages, division of authority and monitoring evaluation mechanisms.

3. Results and Discussion

Safety issues have been regulated adequately and in detail in various national and international regulations. Law Number 17 of 2008 concerning Shipping, for example, regulates ship safety and guarantees ship accidents, inspections, and investigations of ship accidents. Regarding safety, Article 126 states: (1) ships that are declared to meet ship safety requirements are given a safety certificate by the Minister; (2) The safety certificates, as referred to in paragraph (1)

consist of passenger ship safety certificates; cargo ship safety certificates; and certificates of seaworthiness and manning of fishing vessels; and (3) Ship safety is determined through inspection and testing. Then, Article 169 states: (1) Ship owners or operators who operate ships of certain types and sizes must meet the requirements for ship safety management and pollution prevention; (2) Ships that have met the requirements for ship safety management and pollution prevention are given certificates; (3) Ship safety management and pollution prevention certificates are in the form of a Document of Compliance for companies and a Safety Management Certificate for ships; (4) Certificates are issued after an external audit has been conducted by a competent government official or an institution authorized by the Government; (5) an official appointed by the Minister issues Safety Management and Pollution Prevention Certificates; (6) Further provisions regarding the procedures for audits and issuance of ship safety management and pollution prevention certificates are regulated by the Regulation of the Minister of Transportation.

Safety issues are also regulated in Presidential Decree Number 65 of 1980 concerning Ratification of the "International Convention for The Safety of Life at Sea, 1974". This convention regulates, among other things, navigation safety (Chapter V), safe ship operation management (Chapter IX), safety measurements for high-speed ships (Chapter X), special measures to improve maritime safety (Chapter XI-1), additional safety measures for bulk carriers (Chapter XII), safety measures for ships operating in polar waters (Chapter XIV), and safety measures for ships carrying industrial personnel (Chapter XV). Not only that, safety issues are also regulated in Government Regulation Number 7 of 2000 concerning Maritime Affairs, especially provisions on safety certificates and safety curricula and guarantees for work accidents for seafarers. Presidential Decree Number 50 of 1979 concerning the Ratification of the "Convention on The International Regulations for Preventing Collisions at Sea, 1972" also regulates Safety Navigation. Then, Law Number 15 of 2016 concerning the Ratification of the Maritime Labor Convention, 2006 (Maritime Labor Convention, 2006) also regulates work safety.

In addition, there are also supporting provisions that regulate ship accidents. For example, Government Regulation Number 51 of 2002 concerning Shipping which specifically regulates ship accidents, ship accident reports, and ship accident inspections. Then, Government Regulation Number 9 of 2019 concerning Ship Accident Inspection which reviews in detail the mechanism for ship accident inspections and ship accident reports. Presidential Decree Number 43 of 1979 concerning Ratification of the "Protocol on Space Requirements for Special Trade Passenger Ships, 1973", London, July 10, 1973" also regulates the safety of ships carrying passengers.

Thus, regarding regulations, the issue of shipping safety (including ships and their contents) has been regulated well and in detail. The problem lies in the human factor as the implementer of these safety regulations. This is related to safety behavior, especially among sailors, supervisors, and safety stakeholders. Safety behavior is an individual action taken for self-protection, such as complying with safety regulations to avoid danger (Seo et al., 2015). According to Neal and Griffin (2006), safety behavior includes two dimensions, namely, safety compliance and safety participation. Safety compliance refers to maintaining workplace safety by carrying out basic safety activities determined by the job. In contrast, safety participation facilitates the development of an environment that supports safety. Empirically, safety behavior can reduce accidents (Guo et al., 2019). Thus, ship accident cases are mainly triggered by the safety behavior of seafarers and safety stakeholders. In this context, accidents occur due to inadequate safety behavior of seafarers and safety stakeholders. For seafarers, the triggers

include knowledge, competence, awareness, motivation and safety attitudes as well as social capital (Nabi et al., 2020; Prasetiawan et al, 2024). This means that when ship accidents still occur, the knowledge, competence, awareness, motivation and safety attitudes as well as the social capital of seafarers are in inadequate conditions so they need to be improved. Meanwhile, for safety stakeholders, especially the safety monitoring or supervision teams. As stated by the National Transportation Safety Committee, supervision of shipping safety in several regions in Indonesia is still ineffective, thus opening up opportunities for violations of various safety regulations (Hasugian et al. (2017). Datu et al. (2024) also stated that accidents occur due to minimal safety evaluation.

This condition requires the right policy strategy. First, improving the quality of human resources through better training and certification activities for sailors and supervisors. Training materials include knowledge, competence, awareness, motivation and safety attitudes as well as social capital. The method is not only limited to lectures, but also includes simulations based on problem-based learning and case-based learning. Meanwhile, the instructors must be truly experts from practitioners, academics, and consultants.

Second, the use of information technology to share data by building an integrated information system to facilitate data exchange between various parties related to safety. This of course requires synergy from various safety stakeholders who require good coordination and collaboration by the Government through the Ministry of Transportation. This coordination is not only limited to the type of data, but also the technology and platform used so that data sharing can take place properly.

Third, the formation of an emergency response team, namely by forming an emergency response team that is ready to carry out rescue and evacuation actions in the event of a ship accident. This team should involve all elements related to ship safety, both from the Government and from other parties. Fourth, the implementation of a ship monitoring system using real-time ship tracking technology to monitor the condition of ships and shipping routes.

Policy Recommendations

In analyzing policy priorities (recommendations), a scoring assessment of 1-5 was used by key persons within the Directorate General of Sea Transportation of the Ministry of Transportation, based on the avoid, shift, and improve approach by considering the criteria of Effectiveness, Efficiency, and Long-Term Impact (DJP). The results are presented in Table 1 below:

Table 1. Scoring of Policy Alternatives

Polici Alternative	Alternative Selection Criteria			
	Effektiveness	Efficiency	Long Term Impact	Score Total
Designated Persons Ashore (DPA)	5	4	5	14
Implementation of ship monitoring system	4	3	4	11
Utilization of information technology to share data	4	3	3	10
Formation of an emergency response team.	3	3	3	9

Source: Analysis Results, 2025

Based on the scoring of alternative policies above, the DPA Certificate occupies the top priority and, therefore, deserves to be recommended as an alternative policy. Consequently, it

is necessary to create a specific policy regarding improving the quality of human resources through such certification, complete with educational standardization requirements, obligations, responsibilities, administrative sanctions, materials (curriculum), learning methods, and instructors.

To support the policy of improving the quality of human resources, a logic model analysis was conducted (Knowlton & Philips, 2013) to design a causal relationship between policies, programs, activities, and expected results. First, the Safety Certificate program is designed for sailors and supervisors, and it consists of different materials (curriculum), methods, and instructors according to their respective job descriptions. Second, the special Certificate program is conducted for 20-30 hours in five working days. Third, the expected results are increased knowledge, competence, awareness, motivation, safety attitudes, and social capital to reduce the potential for ship accidents.

4. Conclusion

This activity was conducted to find a policy strategy that regulates and is stated in the form of a Regulation of the Minister of Transportation to reduce the potential for ship accidents, namely the DPA Certificate containing the requirements for DPA education standards, DPA obligations, DPA responsibilities, DPA administrative sanctions, DPA materials (curriculum), DPA learning methods and instructors.

The results show that the strategic policy that can be considered is the policy of improving the quality of resources through a certification program for DPA. The safety training program designed for DPA is carried out for 20-30 hours in five working days. The expected results are increased knowledge, competence, awareness, motivation and safety attitudes as well as social capital.

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