

The Efforts to Improve the Seaworthiness at the Port Authority and Harbourmaster Office (KSOP) of Bima Class IV

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Abstract

Seaworthiness is essential because it impacts maritime operations' safety, efficiency, and sustainability. Therefore, the Harbormaster and Port Authority Office (KSOP) ensures ship seaworthiness to maintain naval safety, protect the environment, and ensure smooth port operations. The research employed a descriptive qualitative method to investigate and describe a phenomenon. The data was obtained by observation and a deep literature review of the problems discussed. The research found that: 1) several problems that often arise regarding ship seaworthiness are the ship's technical condition, management and operations, environmental factors, compliance with regulations, market conditions, and competition. 2) efforts to improve seaworthiness carried out by KSOP Bima are routine inspections and certification, increasing human resources, operational supervision, developing port infrastructure, applying advanced technology, collaborating and coordinating with related agencies, strict law enforcement, education, and outreach, and developing emergency procedures. 3) The security and safety conditions of ships entering and leaving the Bima Port KSOP require continued attention and effort. From this study, they implement strict regulations, use advanced technology, improve infrastructure, conduct continuous training, and collaborate strongly with related agencies. KSOP Bima can ensure that ships operating in its area meet seaworthiness standards, supporting safe and efficient port operations.

Keywords: Maritime safety, Port Operation, and Shipping regulation

INTRODUCTION

The international maritime industry is the backbone of global trade, facilitating the movement of goods across the world's oceans (Astriawati et al., 2024). Approximately 90% of global trade by volume is carried by sea, making maritime transport essential for international commerce (Notteboom, 2013). The industry encompasses a vast network of shipping companies, ports, regulatory bodies, and international conventions designed to ensure safe and efficient operations (Bichou, 2014). Therefore, KSOP has a significant role in providing permits to vessels wishing to sail and ensuring that the ship can sail well and safely so that the vessel is seaworthy. Seaworthiness refers to the condition of a vessel being adequately

equipped, maintained, and human-crewed to undertake a voyage safely (Handojo et al., 2022).

The harbormaster's office and port authority (KSOP) are government officials at the port appointed by the minister and represent the highest authority to carry out and supervise compliance with statutory provisions to ensure the safety and comfort of shipping (Setiyantara et al., 2022). As regulated in law number 17 of 2008 concerning shipping, it mandates the role and function of harbormasters that have greater authority in carrying out shipping safety and security functions, which include implementation, supervision, and law enforcement in the field of water transportation, ports, and protection in the sea region (Pratama et al., 2023).

According to Minister of Transportation regulation no. PM 36 of 2012 (Peraturan Menteri Perhubungan No. 36 Tahun, 2012) The Harbormaster and Port Authority Office is a technical implementing unit within the Ministry of Transportation under and responsible to the Director General of Sea Transportation. The Harbormaster and Port Authority Office (KSOP) has the task of carrying out supervision and law enforcement in the field of shipping safety and security, coordinating government activities at ports, and regulating, controlling, and supervising port activities at ports operated commercially.

One of the other essential tasks of the KSOP Institution is to ensure that ships entering and leaving the port are seaworthy (Santoso, 2021). Therefore, the term ship seaworthiness is a crucial aspect of the maritime world because it ensures that ships meet the safety and operational standards required to sail safely. According to the IMO in 2010, seaworthiness is defined as a condition where a ship meets all relevant international legal requirements and safety standards so that it is safe to operate at sea (Nikcevic Grdnic, 2015). In line with this, Alan E. Branch defines seaworthiness as a condition in which a ship is declared fit to sail after carrying out inspections and necessary maintenance to ensure the safety of the ship, cargo, and crew (Branch & Robarts, 2014).

In addition, according to the SOLAS Convention, ship seaworthiness is a condition where a ship meets all the safety requirements regulated in this convention, including ship structure, safety equipment, navigation, and other operational requirements to ensure the safety of the ship and its cargo as well as the safety of life at sea (IMO, 2001). Apart from that, in Law no. 17 of 2008 (UUDNo.17, 2008), Article 1 Paragraph 30, ship seaworthiness is defined as the condition of a ship that meets ship safety requirements, prevention of pollution from ships, manning, loading, welfare of the ship's crew, and health as proven by a certificate after inspection and testing.

Apart from the abovementioned understanding, several previous studies related to a similar theme were conducted by Ahmad S.(2018). He once wrote an Analysis of Ship Seaworthiness Regulations entitled: "Evaluation of the Effectiveness of Ship Seaworthiness Regulations in Indonesia." In his research, he evaluated the effectiveness of ship seaworthiness regulations implemented in Indonesian ports, including KSOP Class IV Bima. The data collection method was carried out through document analysis and interviews. Apart from that, research on ship safety and security management was also carried out by (Lestari, 2020) entitled: "Ship Safety and Security Management Strategy in Indonesian Ports." This

research examines ship safety and security management strategies at Indonesian ports, including KSOP Bima. The focus is on inspection procedures, crew training, and safety technology.

From the arguments above, ship seaworthiness is the maritime industry's main foundation, ensuring safety, legal compliance, operational efficiency, and environmental protection. By maintaining the seaworthiness of ships, operators and port authorities contribute to safe, reliable, and sustainable maritime operations. Therefore, this research aims to find out and discuss several obstacles that arise related to ship seaworthiness, efforts to improve ship seaworthiness at the Bima Harbormaster's Office and Class IV Port Authority, and the security and safety conditions of ships entering and leaving the Bima Port KSOP.

RESEARCH METHODS

This type of research uses a qualitative approach, a method used to understand the characteristics of a phenomenon of the object being studied so that the main problems that arise can be identified and analyzed and alternative solutions can be taken. Nassaji (2015) states, "Descriptive research is a method used to describe and interpret research objects or subjects systematically. This type of research is descriptive, namely a method that examines the status of a group of people, an object, a condition, or a system of thought at the time. This research provides recommendations for improving regulations and their implementation. This research aims to create a systematic, factual, and accurate description of the facts based on observations and studies or literature on ships at the Harbormaster's Office and Class IV Bima Port Authority. There was no expansion of problems that would not be by the objectives of this research.

Moreover, the data was obtained by observation during three months while the researchers were doing job training and a deep literature review of the problems discussed. Combining observations with a literature review allows for triangulation, enhancing the validity and reliability of the research findings. Observations provide empirical data, while the literature review offers theoretical backing. So, the content analysis for some important documents are utilized in this study. The stages in this research include: Identifying the extent of efforts to improve ship seaworthiness at the Harbor Master's Office and Class IV Bima Port Authority and the security and safety conditions of ships entering and leaving the Bima Port KSOP. Carrying out an in-depth literature study or literature review (collecting and analysing information that is already available in various written sources) regarding the implementation of efforts to improve ship seaworthiness at the Harbor Master's Office and Class IV Bima Port Authority and the security and safety conditions of ships entering and leaving the Bima Port KSOP. Creswell & Creswell (2017) states that "literature review is the process of identifying, evaluating, and synthesizing literature relevant to a research topic. Processing data based on the results of observations on efforts to improve the seaworthiness of ships at the Harbor Master's Office and Class IV Bima Port Authority, as well as the security and safety conditions of ships entering and leaving the Bima Port KSOP. Analysing the extent of data processing results related to efforts to improve ship seaworthiness at the

Harbor Master's Office and Class IV Bima Port Authority, as well as the security and safety conditions of ships entering and leaving the Bima Port KSOP.

RESULTS AND DISCUSSION

Several Problems Often Arise Regarding The Seaworthiness Of Ships. Some issues that frequently arise regarding ship seaworthiness can include: **1. Technical Condition of the Ship**, a) Lack of Routine Maintenance. Ships that do not receive routine or adequate maintenance will likely experience technical problems such as engine failure, leaks, or structural cracks. b) Non conformity to Safety Standards. Ships that do not meet maritime safety standards may be at risk of accidents or incidents, such as fire, collision, or sinking. **2. Management and Operations**, a) Poor Crew Management. Lack of training or supervision of the ship's crew can result in human error, which has the potential to cause accidents or losses. b) Compliance with Operational Procedures. Ships that fail to comply with established operational procedures are at risk of encountering difficulties in manoeuvring, loading and unloading cargo, or navigation, which can pose a serious threat to the safety of the ship and its cargo.

3. Environmental Factors, a) Effects of Bad Weather. Ships sailing in bad weather or extreme weather conditions increase the risk of accidents, damage, or cargo loss. b) Environmental pollution: Ships that do not comply with waste management regulations or oil spills can seriously pollute the marine environment. **4. Compliance with Regulations**, a) Lack of Compliance with Maritime Regulations. Ships that do not comply with maritime regulations, including licensing, safety standards, or environmental restrictions, may face legal sanctions or operational restrictions. b) Weak Law Enforcement. A lack of enforcement or oversight by authorities can encourage shipowners to break regulations with little or no consequences.

5. Market Conditions and Competition, a) Economic Pressure. Ships facing economic pressures may be inclined to sacrifice safety or maintenance to reduce operational costs, potentially increasing safety risks. b) Intense competition. Intense competition in the shipping industry may encourage operators to ignore safety or environmental regulations to increase efficiency or gain greater profits. To address ship seaworthiness issues, cooperation is needed between ship owners, port authorities, and maritime regulatory bodies to strengthen supervision, increase law enforcement, and promote awareness of the importance of compliance with safety and environmental standards.

The following are solutions to problems related to ship seaworthiness, namely: **1.** Carry out routine inspections and preventative maintenance on the ship to ensure all components are in good condition. Implement a condition-based maintenance program to detect problems before they become critical. **2.** Ensure that ships regularly receive seaworthiness certification from the competent maritime authority. **3.** Regularly train and educate crew and management regarding applicable maritime regulations. Socialize regulatory changes quickly and effectively. **4.** Conduct internal audits and inspections to ensure that all standard operating procedures and regulations are complied with **5.** Foster a culture of continuous learning by providing ongoing training and professional development

programs to the ship crew. This commitment to enhancing their skills and knowledge embed confidence in their abilities and ensures they are well-prepared for any situation at sea. In addition, all crew members must ensure they have certification and licenses that comply with international maritime regulations.

6. Implement an effective documentation management system to ensure all ship documents are updated and stored correctly. **7.** Using digital technology to facilitate access and management of ship documents. **8.** Building long-term cooperation with trusted and quality spare parts suppliers. **9.** Maintain stock of frequently needed and critical spare parts to ensure availability when needed. **10.** Use weather monitoring technology and route planning to avoid extreme weather conditions. **11.** Train ship crews in handling emergencies related to extreme weather and poor environmental conditions. Efforts to Improve Ship Seaworthiness at the Harbor Master's Office and Bima Class IV Port Authority.

Currently, the need for transportation facilities is increasing, especially transportation, cargo, both for inter-island and inter-country destinations (export/import). Ships as a means of sea transportation services are the right choice for carrying goods or cargo in large quantities. The maritime industry is no longer seen only as a means of shipping. However, it is also essential in developing cities, regions, and the country's economy. This tendency occurs based on financial and economic considerations because ships are more effective and efficient than other means of transportation. Using a ship makes the costs incurred smaller than other means of transportation. The cargo transported is also more significant, and the time required to arrive at the destination is also relatively fast. Therefore, ships must obtain a seaworthiness statement from KSOP so that the goods, people (passengers), and cargo they carry reach their destination safely and competently.

Efforts to improve the seaworthiness of ships at the Bima Harbormaster's Office and Class IV Port Authority involve various steps to ensure that ships operating in the area meet established safety and operational standards. Here are some steps that can be taken: **1.** Regular Inspection and Certification Routine inspection and certification can be carried out as follows: a) Periodic Inspection: Our thorough inspections of ships ensure that all technical and safety aspects are met, including the condition of the hull, propulsion system, navigation equipment, and safety equipment. This comprehensive approach embade confidence in the safety and operational readiness of the ships. b) Seaworthiness Certification: After the ship passes inspection, a seaworthiness certificate will be provided. This certificate shows that the vessel has met all safety and operational requirements.

Routine inspections and certification are steps taken by the Bima Harbormaster's Office and Class IV Port Authority to ensure that ships operating in their area meet established safety and operational standards. This institution can play an essential role in maintaining the safety and seaworthiness of ships operating in its territory and ensuring that shipping and port operations take place safely and efficiently. The solutions to problems that arise in efforts to improve ship seaworthiness include various technical, administrative, and resource aspects, including: **1.** Improve port infrastructure and facilities such as docks, lifting equipment, and maintenance equipment to ensure ships can be inspected and repaired efficiently. **2.** Increasing human resource competency, such as providing

training programs for harbormaster officers and port staff so that they are always up-to-date with international regulations and standards. **3.** Carry out routine inspections and certification of ships to ensure all aspects of seaworthiness are met, including ship structure, engines, safety equipment, and navigation equipment.

4. Carry out operational supervision using real-time monitoring technology to monitor ship movements and operational conditions and ensure ships operate by safety standards. **5.** Implement a digital management system for documentation and administrative processes, such as e-certificates, e-logbooks, and digital-based reporting systems, to increase efficiency and accuracy. The system can also use an integrated information system to track and monitor the ship's seaworthiness status, including inspection schedules, certification, and maintenance reports. **6.** Collaborate with related agencies such as the Ministry of Transportation, the National Search and Rescue Agency (BASARNAS), and classification institutions to meet seaworthiness standards. **7.** Cooperation with international port authorities to exchange information and best practices regarding ship seaworthiness. **8.** Provide strict sanctions to ships that do not meet seaworthiness standards to ensure compliance with regulations. **9.** Strengthen ship seaworthiness regulations and standards and ensure consistent implementation and enforcement. **10.** Conduct random inspections of operating vessels to ensure ongoing safety and compliance with operational standards. **11.** Regularly evaluate sudden inspection results and take corrective action as needed.

By implementing these solutions, the Bima Harbormaster's Office and Class IV Port Authority can improve ships' seaworthiness in their area. These measures will ensure that ships meet high safety and operational standards, reduce the risk of accidents, and improve operational efficiency at the port. Security and Safety Conditions for Ships Entering and Exiting KSOP Bima Port. The security and safety conditions of ships entering and leaving KSOP Bima Port are crucial aspects that determine maritime operational safety and port efficiency. The following is an explanation of this condition, including the challenges and steps taken to overcome them: **1.** Ship Security Conditions, a) Security Oversight b) Access Control: Bima Harbor has a strict access control system in place. This system is designed to ensure that only authorized personnel can access critical areas, thereby enhancing the overall security of the port. c) Security Check: All ships entering and leaving the port undergo security checks to detect and prevent potential threats, such as smuggling and acts of terrorism.

2. Patrol and Surveillance: a) Routine Patrols: The port security team carries out routine patrols around the port and surrounding waters to monitor suspicious activity. b). CCTV Monitoring System: The port area is equipped with CCTV for 24/7 surveillance, which helps monitor and record activities at the port. **3.** Collaboration with Security Agencies: a) Collaboration with Law Enforcement: KSOP Bima collaborates with the police and navy to secure waters and port facilities. b) Joint Security Exercises: KSOP periodically holds joint exercises with other security agencies to improve response to emergencies. **4.** Ship Safety Conditions. Inspection and maintenance are required to create ship safety conditions. An example of a periodic inspection that can be carried out is that KSOP Bima carries out periodic inspections of ships to ensure that all safety aspects are

met, including navigation equipment, fire extinguishing systems, and lifeboats. Apart from that, routine maintenance also needs to be carried out because ships operating at Bima port must undergo routine maintenance to maintain reasonable technical and structural conditions.

From the arguments above, it is clear that the security and safety conditions of ships entering and leaving the Bima Port KSOP demand continuous attention and effort. By implementing strict regulations, using advanced technology, improving infrastructure, providing continuous training, and most importantly, fostering strong collaboration with relevant agencies, KSOP Bima can ensure that ships operating in its area meet seaworthiness standards, thereby supporting safe and efficient port operations. To improve the security and safety conditions of ships entering and leaving the Bima Port KSOP, several comprehensive solutions can be implemented. These solutions involve improving operational procedures, implementing technology, developing human resources, and improving infrastructure. The following are solutions that can be implemented:

1. Improved Inspection and Certification Procedures. a) Routine Inspection: Carry out routine inspections of ships entering and leaving the port. This inspection includes checking the ship's structure, navigation equipment, safety systems and ship documents. b) Ensure that the ship has a valid seaworthiness certificate and complies with international standards. **2. Certification and Periodic Supervision:** a) Issue seaworthiness certificates only to ships that meet all safety requirements. b) Carry out regular monitoring and audits to ensure the ship continues to comply with established safety standards. **3. Application of Security and Safety Technology,** a) Real-Time Monitoring System: Implements Automatic Identification System (AIS) and radar technology to monitor ship movements in real-time. b). Using an early warning system for bad weather and dangerous sea conditions, providing timely information to ships entering or leaving port. **4. Digitalization of Processes and Documentation:** a) Using a digital platform for managing ship documents and certificates, ensuring that documents are always up-to-date and easy to access. b) Utilize cloud-based technology to store and manage vessel and inspection data.

5. Increasing the Competency and Quality of Human Resources a) Safety Training: Organize regular maritime safety training for ship crews and port staff, focusing on emergency procedures, accident handling, and compliance with regulations. b) Hold workshops and simulations for handling emergency situations regularly to increase crew and staff readiness. **6. Certification and License:** a) Ensure all personnel involved in ship operations have certification and licenses in accordance with international standards. b) Encourage crew participation in professional development programs and advanced training. **7. Supervision and Law Enforcement.** a) Unannounced Audits and Inspections: Conduct unannounced audits and inspections to ensure vessels and operators comply with all safety regulations. b) Use audit results to take necessary corrective and preventive actions. c) Strict Enforcement: Provide strict sanctions for vessels and operators who violate safety regulations, including fines, suspension of operations, or revocation of licenses. d). Implement a zero tolerance policy for maritime safety violations. **8. Improved Safety Infrastructure** a) Emergency Facilities: Improve emergency facilities at ports, such as fire stations, first aid equipment, and evacuation facilities.

b) Perform routine maintenance on emergency facilities to ensure they are always ready for use.

9. Early Warning System. a) Install early warning systems for bad weather and dangerous sea conditions. b) Providing real-time weather and sea condition information to ships operating in the port. **10. Cooperation and Coordination.** a) Collaboration with Related Agencies: Collaborate with other maritime agencies such as the National Search and Rescue Agency (BASARNAS), Marine Police, and Indonesian Navy to increase supervision and law enforcement in port areas. b) Building an effective communication network between related agencies for better coordination in handling emergency. **11. International Relations.** a) Building cooperation with international port authorities to exchange information and best practices regarding maritime safety. b) Following the development and adoption of international safety standards to be implemented in ports. **12. Education and Awareness.** a). Safety Campaign: Carrying out a maritime safety campaign to increase awareness of the importance of safety and security among ship operators and port communities. b) Using social media, brochures and seminars to spread information about best safety practices.

13. Socialization of Regulations. a) Hold frequent outreach regarding the latest safety regulations and the importance of compliance with regulations. b) Inviting ship owners and operators to be active in discussions regarding maritime safety and applicable regulations. **14. Increasing Human Resources.** a) Crew Training b) Conduct training for ship crews regarding safety procedures, use of emergency equipment, and crisis management at sea. c) Increasing Inspector Competency d) Increase the capacity and competence of inspection officers through continuous training so that they can carry out inspections to a high standard. From the description above, increasing human resources (HR) at the Harbor Master's Office and Class IV Bima Port Authority is a strategic step to improve the effectiveness and quality of service and shipping safety.

CONCLUSION

From the discussion and the results of data analysis carried out through a qualitative approach and literature review, the following conclusions can be drawn: **1.** Overcoming obstacles related to ship seaworthiness requires a holistic approach that includes technical maintenance, compliance with regulations, increasing crew competency, good documentation management, spare parts management, and readiness to face environmental conditions. In other words, to address ship seaworthiness issues, cooperation is needed between ship owners, port authorities, and maritime regulatory bodies. This collaboration will not only strengthen supervision, increase law enforcement, and promote awareness of the importance of compliance with safety and environmental standards, but also enhance the industry's reputation, reduce accidents, and protect the environment. **2.** KSOP's efforts to improve ship seaworthiness encompass a wide range of aspects, including the use of advanced technology. These aspects include routine inspections, increasing human resources, operational supervision, infrastructure development, cooperation and coordination, law enforcement, and surprise inspections. The

integration of technology in these efforts reassures the audience about the use of advanced tools and methods in improving ship seaworthiness.

3. Bima Harbormaster's Office and Class IV Port Authority can significantly enhance the security and safety conditions of ships entering and leaving the port. This approach will not only ensure compliance with international safety standards but also reduce the risk of accidents, improve port operational efficiency, and protect the interests and security of the maritime community as a whole, instilling a sense of optimism about the potential improvements in ship seaworthiness.

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