

# Stakeholders' Perception of Safety Prioritization at Ship Services in the Sunda Strait

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## Abstract

The role of shipping safety in the sea transportation system is absolutely calculated. Shipping safety concerns the transportation of goods and people crossing the ocean in full danger and the threat of storms, fog and movements and seas such as waves, currents, sea corals, siltation and fixed and changing shipping lanes, making sea transportation in shipping at high risk. This study aims to <sup>1)</sup> Know the variables that affect the level of safety of the Roak Ro-Roakeuni Ro-Ro Crossing Ship; <sup>2)</sup> Analyzing the level of safety of transportation safety from the Sunda Strait. Methods of collecting data directly in the field and collecting secondary data. The results of the study show that the variables that affect ship safety include infrastructure, facilities and culture. The most influential factor on ship safety in the Sunda Strait is a cultural factor. Based on the results of the safety safety analysis, the Sunda Strait has a high level of vulnerability due to the density of ship traffic and the lack of Aids to Navigation in the Sunda Strait.

**Keyword:** *Shipping Safety, Sea Transportation, Sunda Strait*

## INTRODUCTION

Several cruise accidents have occurred in this country and made hot news in the television and in the newspapers. Safety issues are one of the most discussed maritime topics (Mockel et al, 2014). The role of maritime safety in the sea transportation system is absolutely taken into account, because it involves the transportation of goods and sea crossings that are full of hazards such as: the threat of storms, fog, and movements and the sea such as waves, currents, coral reefs, silting and shipping lines constant and changing, making sea transportation in shipping at high risk (Stipe et al, 2014). Vidmar and Perkovic (2015) added that sea transportation carries a high risk because it carries the logistics and lives of tens, hundreds, to thousands of passengers. Therefore, safety must be guaranteed.

The Sunda Strait is located between the islands of Sumatra and Java, connecting the Indian Ocean with the Java Sea. As a means of transportation that connects Java with Sumatra through the Port of Merak in Banten with the Bakauheni Port in Lampung, aspects of shipping traffic in the Sunda Strait have become increasingly complex, in this narrow strait it also crosses the ferry and other fast passenger boats along with other vessels crossing the Sunda Strait, which is the Indonesia Archipelagic Sea Lanes (IASL). Especially for inter-island crossings, the ro-ro ferry is the best means of transportation, where its role as a crossing bridge facility must be maximized. Along with the pace of development on these two islands, shipping traffic from Merak to Bakauheni or vice versa is increasingly congested and increasingly chaotic. The suboptimal pattern of traffic control applied in the Merak-Bakauheni traffic often causes the buildup of ferries at one point. This increases the potential for collisions between ships crossing these waters (Primana et al, 2017).

Bad weather, crossing traffic is very congested, very poor visibility at night, and the age of very old ships contribute to ship accidents. In addition there are also human factors that can cause accidents such as carelessness in running the ship, the inability of the crew in mastering various

problems that may arise in the operation of the ship, consciously overloading the ship. The types of accidents that occur on average are sinking, aground, collision, fire and other types of accidents. For this reason, it is necessary to guarantee that transportation services, which are complemented by safety guarantees, will provide a sense of certainty and calm for travelers, so that the socio-economic activities of the community can be protected when traveling. There is no guarantee of a sense of security, always feeling anxious either on the journey, as well as connecting trips, or the whole process of the trip. Risk management (Risk assessment) is part of the SMS (Safety Management system) that must be considered, because it greatly contributes to the occurrence of Human Error, then from it must always be improved and developed in order to minimize unexpected events.

The high number of marine transportation accident cases in Indonesia that have occurred so far must be a concern of all parties concerned, both shipowners, the government, relevant agencies and the public who play an active role in tackling this matter. In general the safety safety of crossing vessels is influenced by stakeholders (Wolejsza et al, 2015). Meanwhile, in Indonesia the most influential stakeholders are Syahbandar, Shipowners, Port Managers and Passengers.

For this reason, awareness is needed to implement safety standards for both passengers and crew. If both the crew and passengers have the awareness to implement safety standards properly, the safety and security of all passengers on board will be guaranteed.

This study aims to <sup>1)</sup>Know the variables that affect the level of safety of the Roak Ro-Roakeuni Ro-Ro Crossing Ship; <sup>2)</sup>Analyzing the level of safety of transportation safety from the Sunda Strait.

## RESEARCH METHOD

Data collection uses primary and secondary data. Primary data collection is conducting in-depth interviews with several related stakeholders, namely: *syahbandar*, ship crew, ship owner, and truck driver. The number of respondents is *syahbandar* 5 respondents, ship crew 10 respondents, ship owners 3 respondents, and truck drivers 12 respondents. Data analysis method use qualitative descriptive analysis. Secondary data from this research is to conduct a literature study and reference study. Literature study is carried out by examining books, literature, notes, and various reports relating to issues related to shipping safety, especially at the Sunda Strait.

## RESULT AND DISCUSSION

Ship safety is related to ship accident. Ship accidents are regulated in Articles 245 - 249 of Law Number 17 in 2008, concerning Shipping. Constitution Law by No. 17 in 2008 on Shipping Article 245 provides a definition of a ship accidents that is an event experienced by a ship that can threaten the safety of the ship and / or human life in the form of a sinking ship, a burning ship, a collision ship and a wreck. In Government Regulation No. 1 of 1998 concerning Vessel Inspection, also provides a definition of a ship accident regulated in Article 2 paragraph (2) that a ship accident includes a sinking ship, a burning ship, a collision ship, a ship accident causing human lives and loss of property and ground ship.

### Variables that affect Ship Safety

Transportation safety issues, especially shipping, are always hotly discussed. This is influenced by the role of shipping safety in the sea transportation system which is something that must be considered. Based on the results of an analysis of ship safety that have been carried out, there are several variables that affect the safety of shipping ships including infrastructure, facilities, culture, and operations.

### **Infrastructure**

One of the shipping infrastructure is a port. Port according to Law No. 17/2008 is a place consisting of land and / or waters with certain limits as a place of government activities and commercial activities that are used as a place for ships to lean on, up and down passengers, and / or loading and unloading goods, in the form of terminals and berths which are equipped with shipping safety and security facilities and port support activities as well as intra-and intermodal transportation places. The port as a sea transportation infrastructure has a very important and strategic role for industrial and trade growth and is a business segment that can contribute to the economy and national development because it is part of the chain of transportation and logistics systems. Therefore, port management is needed to be carried out effectively, efficiently and professionally so that port services become smooth, safe, and fast (Putra and Djalante, 2016).

The next maritime transportation safety infrastructure is aids to navigation. Aids to navigation is a Sailing Navigation Support Facilities (SNSF) that serves to tackle danger, as determining the position of the ship and to mark the shipping lane. SBNP under Law No. 17 of 2008 is equipment or systems that are outside the ship that are designed and operated to improve the safety and efficiency of navigating ships and / or ship traffic. SBNP is equipment or system that is outside the ship that is designed and operated to improve the safety and efficiency of navigating ships and / or ship traffic (Government Regulation Number 5 of 2010).

SBNP has several functions. The functions of SBNP as stipulated in PP Number 5 of 2010 are as follows:

1. determine the position and / or bow of the ship
2. notifying the dangers / voyages of shipping
3. shows safe shipping-channel boundaries
4. mark the dividing line of ship traffic
5. indicate areas and / or special activities in the waters
6. national borders

Regards to the safety of sea transportation, aids to navigation is used to determine the position and direction of ships, provide information on hazards / obstacles, indicate the existence of safe shipping lane boundaries, mark the dividing lines of ship traffic. Without aids to navigation, the safety of shipping will be disrupted, because the captain is difficult to determine where the dangers and shipping lines are so prone to ship accidents.

In general, Sailing Navigation Supporting Facilities are divided into three types: visual, electronic, and audible. A visual aids to navigation consists of a beacon tower, beacon beacon, a beacon float, and a cross. Electronic aids to navigation consists of GPS, Differential GPS (DGPS), radar beacons, radio beacons, radar surveillance, and medium wave radio beacons. While audible SBNPs are placed in foggy or limited views.

### **Facilities**

The word facility is anything that can be used as a tool in achieving goals. Transportation facilities are devices used to transport people or objects from one place to another. One of the cruise facilities is a ship. Ships are a major factor in sea transportation, because ships are one of the sea transportation facilities in the Sunda Strait.

Vessels according to Law Number 17 of 2008 are water vehicles of certain shapes and types, which are driven by wind power, mechanical power, other energy, drawn or suspended, including vehicles that are powered dynamically, vehicles under water, as well as buoyancy tools and buildings floating floating. Ships can connect and reach one area with another through the waters. Safety and

security of the cruise is an important factor that must be considered and as a basis and benchmark for decision making in determining the feasibility of shipping. Sailing safety related to ship facilities is the condition of the ship. Ships must sail in good condition with good care. There are several things that must be considered in the maintenance of the ship.

1. The water pump must function properly in order to function when water enters the ship. This water pump can minimize water if there is a leak.
2. The engine must be considered because the main driving motor of the ship is the engine motor.
3. The condition of the ship's body must always be checked and treated because it is prone to leakage.

Other supporting facilities inside the ship are safety equipment. This safety equipment is absolutely owned by a ship because it is a tool used if at any time a ship accident occurs. These safety equipment include lifeboats, life vests, fire extinguishers, and vessel leak prevention tools.

The next facility that becomes a support in supporting shipping is sea maps or ECDIS (Electronic Navigation Maps). a computer-based information navigation system that complies with International Maritime Organization (IMO) regulations and can be used as an alternative to nautical graph paper. IMO refers to a similar system that does not meet the regulations as an Electronic Chart System (ECS). An ECDIS system displays information from electronic navigation charts (ENC) or Digital Nautical Charts (DNC) and integrates position information from position, heading and speed through a water reference system and other optional navigation sensors.

The safety of the ship and the cruise serves various aspects. Aspects that affect the safety of shipping and ships according to Umar (2001) include the following:

1. Vessel safety concerns the construction, equipment and maintenance of ships, including the aspect of container safety.
2. Measurement of ship tonnage
3. Manning the ship
4. Prevention of marine pollution from ships

### **Culture**

Based on in-depth interviews results of several stakeholders, it is known that the most frequent cause of ship accidents is cultural factors, in this case humans. Cultural factors are factors that are related to human behavior. This factor is influenced by several factors that influence the safety of existing shipping. These factors include:

1. The ability of a captain, preacher, and crew in navigating loads
2. Negligence in carrying out the task (closing the door impermeable)
3. Lack of observations by officers in conducting eligibility checks
4. Shortage of personnel in the inspection of ship worthiness

Based on the results of the analysis using interviews and literature review, it is known that the most influencing factor in shipping safety is cultural factors. This is because many ship accident incidents occur due to human error caused by poor management systems. This is supported by Nurhasanah, et al (2012) where 80% of ship accidents occur due to human error. As many as 75% of human errors are caused by poor management systems. As in any risky industry, human and organizational factors are the main stakes for maritime safety (Berg, 2013). Many maritime accidents have been reported in the last few decades, due to the lack of seafarers' skills to oversee resources and crises (Yousefi and Seyedjavadin, 2012). Mistakes are a part of humans, although organizations try to reduce errors to zero levels, this goal cannot be achieved. To the extent that

human operations take place in complex environments, mistakes will occur, and are likely to increase under conditions of stress, extra loading work, and fatigue (Mochtari and Didani, 2013). There have been increasing efforts to gain awareness about the problems of the human element. The traditional view that human error is the main cause of all accidents is being opposed by some people who regard human error as a symptom of a deeper problem with the system (Barsan et al, 2012).

Some components of shipping accidents in Indonesia that cause high levels of accidents at sea are related to the lack of teaching staff who meet the requirements, especially in private maritime training. Provision of teaching aids is also still lacking, and vessels for marine practice for cadets are also very limited, so many cadets are hampered by their sea practice (Widyandari, 2011).

The number of accidents that occur more because of human error, the placement of people who are not in accordance with their expertise, inadequate ship maintenance, weather conditions that are sometimes unpredictable, and so forth. Cultural factors that often cause accidents on shipping are ship maintenance. Ship maintenance is often overlooked by ship owners in pursuit of high profits. Not only is the problem of ship maintenance being ignored, the crew employed on the ship are also not qualified and competent people in their field, this problem is the reason for management to streamline ship expenses so that the company can continue to exist and run their business.

### **Sunda Strait Shipping Condition**

The Sunda Strait is a strait that has a very important role for Indonesian shipping. The Sunda Strait is part of the Indonesia Archipelagic Sea Lanes I (IASL I) connecting the Indian Ocean waters with the Karimata Strait and the Natuna Sea. Aside from being a route commonly used for international shipping, the Sunda Strait has a crossing line from Java Island (Merak Harbor) to Sumatra Island (Bakauheni Port). The distance between the two is  $\pm 30$  Km with a ferrying time of about 1.5 hours.

The Sunda Strait is often traversed by traffic in cargo ships, tankers, tugs, fishing vessels, military vessels. This causes a high density of traffic which causes the potential for accidents at sea due to collisions. The condition of shipping traffic density in the Sunda Strait causes a high risk of ship collisions. The heavy traffic of ships crossing IASL I and crossing vessels that cut IASL lines causes frequent accidents. Accidents occurred in the Sunda Strait, among others, KMP Jatra III and MT. Soechi Chemical VII on January 28, 2014 at 07.30 WIB; between KMP Portlink and Cargo FGA -138 on October 1, 2014 at 11:13 WIB; Bahuga Jaya KMP collision and MT. Norgas Chantika on September 26, 2012 at 04.50 WIB; Marinsa KMP collision and MV. Qihang on May 3, 2014 at 02.10 WIB (Lanal Banten, 2016 in Primana et al, 2017).

The Sunda Strait has the widest shipping lane with a distance of 52 nautical miles in the southern waters of the Sunda Strait and meanwhile there is the narrowest shipping lane corridor in the northern Sunda Strait with a distance of 2.2 nautical miles, due to several navigation hazards such as corals, shallowness and ship frame (Primana, et al 2017). Based on the depth of the waters, the depths in the Sunda Strait range from 10 meters to 1885 meters. Seabed materials in the Sunda Strait include coral, sand, and sand. This causes the captain to be careful and pay attention to the signs that exist when sailing.

One of the coral clusters located near the IASL I channel is the Koliot reef. Koliot Reef is a coral reef located in the northwest of Sangiang Island in the Sunda Strait waters. Koliot Reef is very dangerous for ships passing in IASL I because in Koliot Reef there are no Aid to navigation installed to provide danger signals for ships passing through. This disturbs the safety of shipping in



the Sunda Strait. The hydrographic data information in the waters of the Sunda Strait can be seen in Figure 1 (Indonesian Chart No. 170) from Pushidrosal.

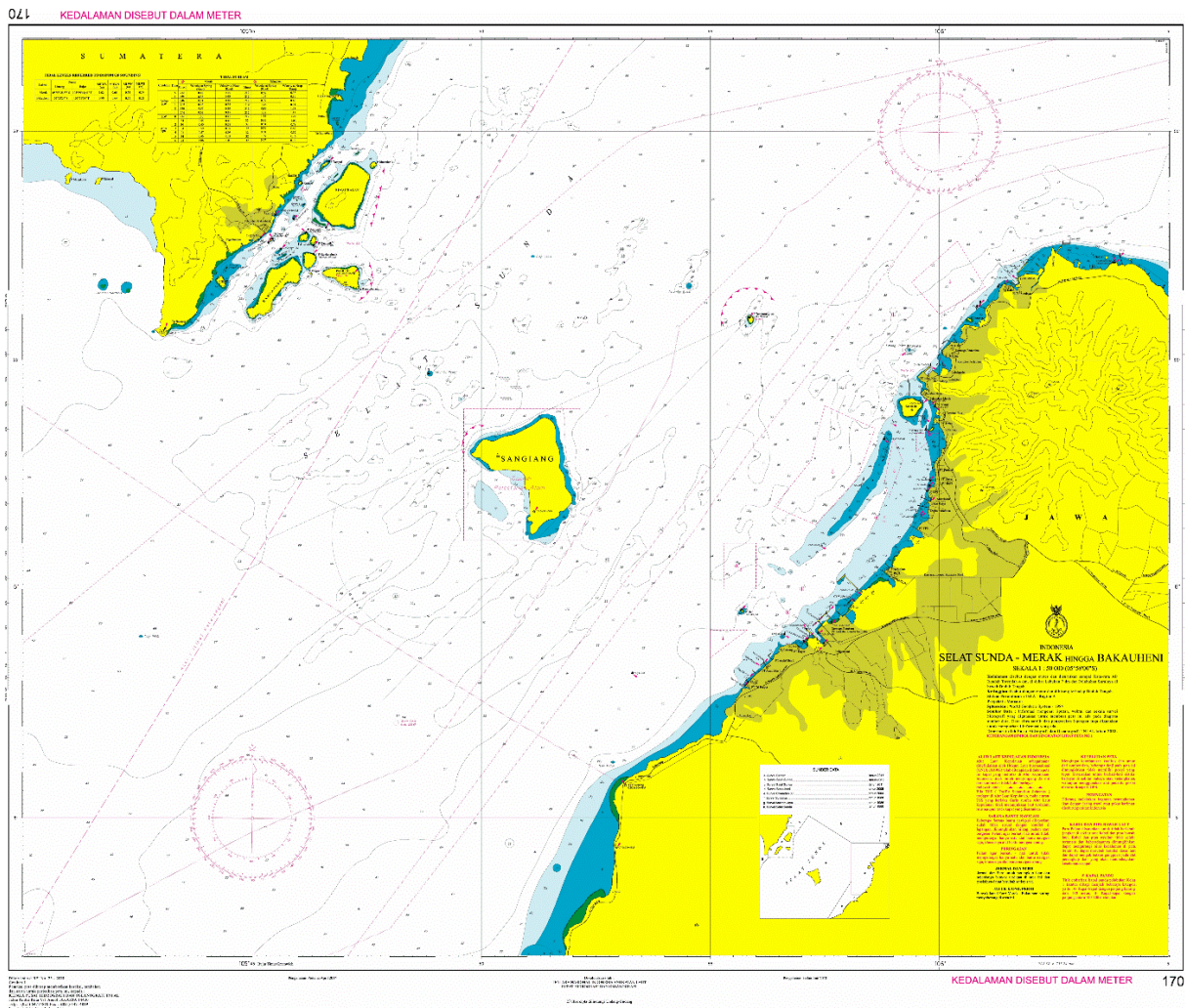


Figure 1. Indonesian Chart No 170 Sunda Strait

## CONCLUSION

Based on the results and discussion, it is known that the factors that affect shipping safety in general are facilities, infrastructure, and culture. the factors that most influence the safety of the cruise are cultural factors. The factors are the ability of the captain, preacher, and crew in navigating the load; negligence in carrying out the task (closing the door impermeable), the inaccuracy of the officer in conducting a feasibility inspection; shortage of personnel in the inspection of ship worthiness.

Sailing conditions in the Sunda Strait are the ALKI I sealanes and crossings from Java to Sumatra. This causes heavy traffic in the Sunda Strait, making it prone to ship accidents. In addition there are some corals in the Sunda Strait that are not equipped with navigation signs so that it is dangerous in shipping vessels.

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