

# Analysis of Indonesian Ship Accident 2005-2010

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**Abstract**—There are so many accident in sea transportation in Indonesia. Accidents occurring in rivers, lakes, and crossing that reached Marine Court in 2005-2010 is due to human error factor (65%), and only a few accidents in the waters caused by natural factors. Given the reasons mentioned above should all accidents can be minimized if prevention efforts from all parties so as not to stumble on the same stone. Most of the accidents happen because of low concern aspects of the safety and security of the crew. The numbers differ from the manifest of passengers and the number of passengers on the field became a regular thing going on. There are four main issues in maritime transport, i.e. no persons or Government agencies that are willing to hold the responsibility of safety and security, tariff policy, the quality of human resources, as well as the implementation and enforcement of the regulations is not clear. Safety of sea transportation should also start from the port conditions are sterile. The port is the main key from out the influx of sea transport. Unfortunately, almost all ports in Indonesia does not have any crossing facilities or equipment to control weight, dimensions, and other types of payloads in any vehicle that boarded the ship. It becomes a threat to the safety of shipping crossing, particularly if a malicious payload that went into the ship without appropriate handling procedures.

**Keywords**—accident analysis, human error, Indonesia, ship.

## I. INTRODUCTION

Transportation is the lifeblood of society and the economy in Indonesia. In order to further integration of transport infrastructure and facilities that meet the requirements of security and safety of transport, it is necessary to make a standardization or regulation system and procedures, as well as human resource professionals to realize the service organization of the transport and works order intact as well as to power. Then it is necessary to a system of good governance, where Governments have function as transportation services include coaching against aspects of arrangement, supervision and controlling. The aspect of the arrangement, covering the establishment of a common policy and the determination of the policy between other technical standards, the norms, guidelines criteria planning, including the terms of security and safety procedures. The aspect of supervision, includes activities of the monitoring, judgment, and the investigation, recommendation and the act of corrective and law enforcement for the transportation to fit a standard, the norms, guidelines criteria the procedures and planning that has been set to the

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ordinance of the law. The aspect of controlling, covering the direction of guidance and operation, straightly, certification and training, also technical assistance in the field of development.

## II. SHIP ACCIDENT PROCESS

If it is restricted to the scope of the company (in terms of the micro), it appears that the occurrence of accidents owing to the discrepancy between the three major elements of production (sub human systems, environment and management physic) resulting in the occurrence of an action and the circumstances are not safe.

But directly of the accident can be grouped into two outlines causes, namely:

- a. Unsafe actions of humans (Unsafe Acts) for example: work without any authorize-failed to give a warning, working with the wrong speed and so on.
- b. A state of insecurity (Unsafe Condition) for example: the safety equipment on board which are damaged or are not usable, environmental and weather on the waters is not good for malicious items that can ship exploding/burning.

### UNSAFE ACT BY CREW:

Ship movement; the deployment of position of a vessel against a wave on the position of situations, where, when a turnaround the ship was trapped in position parallel the waves and difficult to control, then impelled and uncontrolled sloping with a large angle and drowned.

Stability; a ship in the conditions of stability negative crew of a ship incapable of knowing that the vessel in a state of perilously a result of stability negative impulse of a wave of the sea a little from the side, a ship direct obliquely and kept sideling until drowned. Stability negative this can be averted when the crew of a ship avoid being wrong because they do not want to calculate the stability of the boat with a variety of way.

Maintenance; Care in the bilges and ballast pumping system was not done properly by the crew of the ship. Bilges or ballast system consists of a pump, suction pipes and faucets as well as the exhaust pipes. The function of the pump system is to drain the bilges got dry and wells on the general cargo ship, while the ballast pump system is to fill and dump ballast water is used for the stability of ships. In the event of a leak in the tank or hatch, then this pump must be able to function properly. When the pump may not be working well less manicured and the volume of water in the tank the more hatch to drown the ship.

Malfunction Equipment; The Crew was unable to overcome the failure of the tool/malfunction. Into a tank of water damage can occur due to a failed in its operation sea chest withstand

sea water into the tank without control that ultimately the continued entry of water and drowning.

Mentality; often ship fires occur because slow in the business of extinguishing the fire that was small. The act of unsafe have come from a crew of a ship own courage afraid to do extinguish the fire when it wants to use the device breathing apparatus and empties into the darkness thick smoke an engine room that is on the fire. Fear this is an action that is not safe shown by crew of a ship.

Less skilled; misapplication of the portable extinguishing a flame to any species of fire is not the same. Fires gas, for example, can only be extinguished with CO<sub>2</sub> or closes the valve. Crew of a ship left flame was a little girl and did firefighters immediately but performs activities that another.

#### UNSAFE ACT AT THE DOCKYARD

Shipyards in Indonesia mostly do not do the work which meet the standard of occupational safety. The results of observations the operator of a ship that is incorporated in INSA (Indonesia Ship owner Association) noted that the accident a sinking ship all started is of shipyards.

Unsafe act by a field worker a company shipyards who manufactures vessels in Indonesia that departs from competence workers a shipwright ( welders ) not certified standard weld, and they produce the work that standard, mall a ship easily to leak and easily cracked so that straightforward drowning and this happened many on ships in Indonesia / supervision this problem never done.

#### UNSAFE ACT BY THE REGULATOR

The act of / practice of supervision of a vessel by a regulator in the field impressed not qualified and desultory incursion and this as a fact that endangers the on the boat to cause to crash ship at sea.

Unsafe act of a regulator, a pitch that is lacking; professional; unskilled and less firmly this is the second rank source of an accident. Supervision or audit in shipyards never done by the regulator, this is the condition of being ironic pertaining to an accident of a ship.

Portable Fire, must be replaced once a year without doing any testing of the tool with so much then the currency will issue a large fare which applies in respect of a lawful reasonable.

Regulators in the functionally, who holds the role of lies, which is overseeing the stuff out in, oversee the transport and accounts for revenue for the country's maritime sector, changes needed to be made at least on par with the Finance Department officer about the salary.

#### UNSAFE ACT BY THE METEOROLOGY, CLIMATOLOGY AND GEOPHISIC DEPARTMENT

Data about the weather most is presented in the form of old data/expiry, such as ocean waves are presented does not match the reality that is happening. It's very dangerous to ships at sea when you access such data for the purposes of navigation.

### III. SHIP ACCIDENT DATA

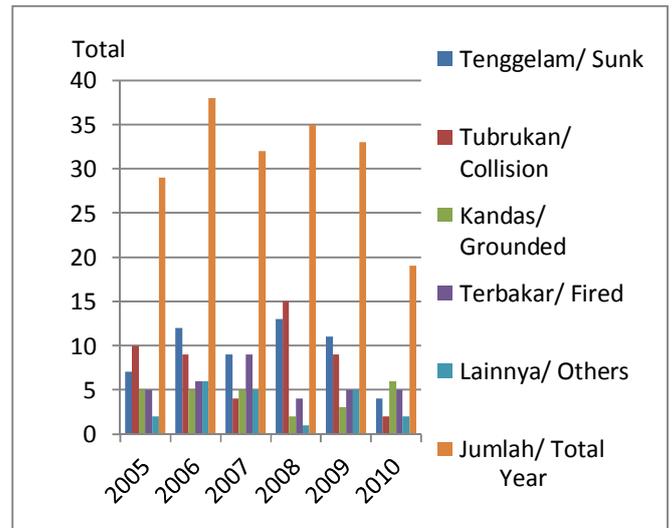


Fig. 1 The Number Of Ship Accident Based On The Results Of The Marine Court

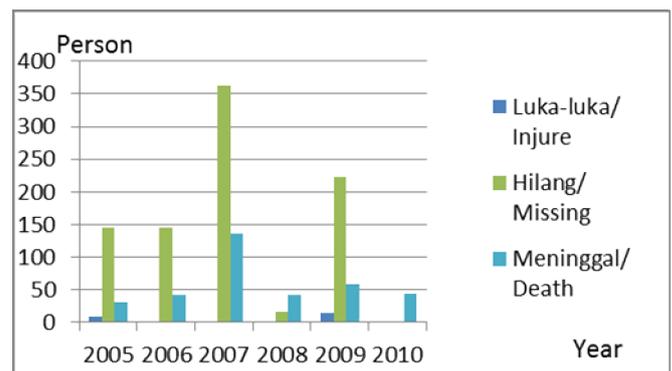


Fig. 2 The Number Of Casualties Based On The Results Of The Marine Court

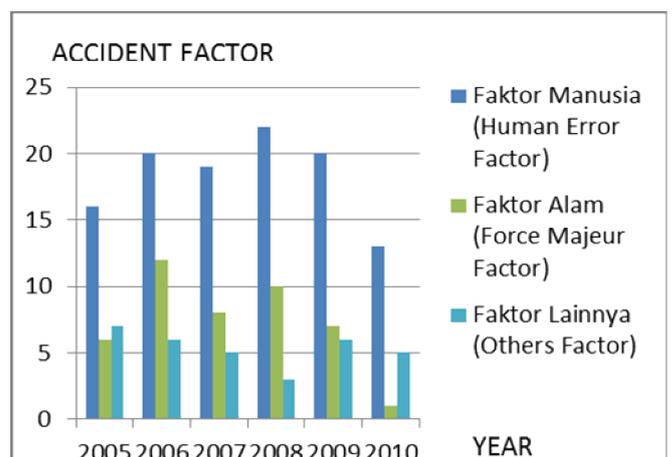


Fig. 3 Mapping nonlinear data to a higher dimensional feature space

#### IV. RESULT

Marine accidents increases along with the increasing number of ships. As has been widely understood, marine accidents can be caused by human factors, natural, and technical, as well as the interaction and combination of all three of these factors. In sailing, a man as transport users to interact with the ship and the surrounding environment (including other ships, cruise lines, ports, and the situation of local conditions). These interactions are sometimes very complex and related to various aspects of the. Aware of the multiplicity of aspects related to the third of these factors, seeking the safety of cruise through a reduction in the number of accidents and the risk of death and serious injuries due to accidents and goods transported is certainly not enough attempted through mono-sector approach, but rather takes a multi-sector approach to the efforts.

Operationally, these sectors are grouped into five approaches known as 5-E Approach, namely: engineering approach (engineering), education (education), law enforcement (enforcement), and thus raising (encouragement), as well as the readiness of emergency (emergency preparedness). The things that hinder the process of improving safety of navigation are as follows:

1. The Division of responsibilities for safety management of multi sector
2. The absence of adequate and accurate information
3. Inadequacy of actions to coordinate and to implement's handling of safety in all sectors which require improvement
4. Inadequacy of availability of human and financial resources to support the action/preventive programs crash.

Shipping safety programs have come back to much to be done. But it is difficult to measure the degree of success because these programs is still done separately. If it exists coordination is very doubtful its effectiveness. The problem of coordination between institutions for programs increase safety of seafaring still is very weak. Each party is still running singly tracer, and as a result the impact of concrete in the form of a decrease in the number of accidents is still far from hope.

#### V. CONCLUSION

1. The safety of the ship is affected by the ship's supplies, ships, load functions charge and driver skills. In order for the safety of passengers and crew aboard stay awake, then supplies the ship had to be adapted to the standard of safety, the use of the ship as its main function, the burden of the charge does not exceed the limit load required, the driver of a ship actually sailed the ship accomplished and master cruise lines took place.
2. Debriefing knowledge cruise ship on the driver really needed especially with regard to mastery of a ship is steered, lane and routes through which it passes. It can be conducted through institutional approach, such as the establishment of an association both owners as drivers, and crew of a ship

related to the pattern and way of life investors river transportation, that is largely based on traditional. So that every step the socialization will lead to the proper direction and may be accepted by all parties.

3. Water transport which covers the river flow is often subjected to the superficiality and narrowing of the Groove, this will disturb the ship traffic, and potentially cause accidents such as ships aground and ships-shoulder between the ship, therefore need to be provided on-site infrastructure that is more representative.
4. The number of ship accident in Indonesia is quite a concern, especially during the period 2005-2010, with 185 cases of occurrence of the accident. In 2005 recorded 29 crash, 2006 event: 38 accident, 2007: 32 crash, 2008: 35 accidents, 2009: 32 accidents happen in 2010 and 19 cases of accidents, accidents on average for 6 years was 30,83%. The kind of accident that occurs on average for 6 years (2005-2010) was sunk (30%), impact (26%), ran aground (14%), fire (17%) and others (13%). While the cause of the accident, the ship was 65% human error, technical fault, 24% 11% because of other conditions.
5. The high number of accidents sea in Indonesia nows should be paid attention all sides, not only government, but also the owner of a ship related institutions and the citizens who must be more active in providing information. Of the results of observations, the main cause of the accident the sea is because the excess of the capacity of transport set, whether it is transportation of goods and people. Do not even rarely users shipping services exert oneself aboard a ship though the ship was filled with determination can be placed on board ship.

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