

# Transport Safety Analysis in Pamatata Port Viewing from the Feasibility of the Ship and the Quality of Human Resources

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**Abstract:** Transportation is crucial because it opens the door to isolation by connecting remote regions with more developed places. These regions are located far from the hub of economic activity. Competent facilities, network systems, and human resources are required to support effective transportation. Without these two elements, it is impossible to provide transportation services, particularly ferry transportation, in a secure, comfortable, and effective manner. The purpose of the study is to evaluate the output, ship condition, and human resource quality at the Pamatata crossing or port. The study's findings are evident. 1. Passenger ship capacity to and from the port of Pamatata is reportedly adequate. In comparison, fewer automobiles can be transported at the port than can be transported from the port of Bira to the port of Pamatata Selayar. 2). Only 16.7% of Pamatata Port's personnel are qualified for work in the shipping industry, which is a low percentage and endangers maritime security.

**Keywords:** Safety, competence, Human Resources

## 1. INTRODUCTION

One of the strategies for accelerating and expanding national economic development is to prioritize strengthening connectivity between islands, especially the outermost islands, to overcome the problem of disparity in commodity prices in various regions [1]. A connectivity system is needed so that the relationship between islands and between islands can run smoothly to support the economic development of a region [2]. Connectivity can only be realized if sea transportation continues to be played significantly. One of them is by maximizing the role of ferry transportation as a moving bridge that connects the road network separated by waterways to transport passengers and vehicles and their cargo [3].

Governments and the transportation industry must create an environment free from safety and security risks that could damage or delay domestic and global networks [4]. To ensure the safety of ferry transportation, a number of regulations have been set, such as ISPS Code, SOLAS 73, STCW 78 and its amendments, Marpol 73/78, and Human Resources for shipping must make adjustments to these rules as an effort to improve safety [6,7,8,9].

Maritime safety affects human life, property, and the health of the marine environment, so it is important to become the focus of the marine transportation sector [10]. The lower the supervision can result in an increase in the potential for accidents

that result in fatalities, loss of goods, and marine pollution. Although efforts to reduce the risk of accidents always have an impact on increasing costs, the consequences of accidents will be much greater. Maritime authorities need to strengthen safety training for maritime practitioners to improve operations and sense of responsibility [11].

Ferry port operators must pay attention to the safety and comfort of crossing transportation [12]. Ferry boat safety is compliance with construction, design, or technical standards so that it is considered seaworthy. A cruise ship becomes unsafe if during its operation there is an unexpected and unwanted accident [13].

Some of the factors causing the low level of maritime safety in Indonesia include; the distribution of human resources for sea transportation in Indonesia is uneven, especially in remote areas, small islands, and borders. Most transport vessels are made without using safety standards. In addition, many of the fleets in Indonesia are used vessels purchased from other countries [14,15].

According to the above definition, a study was conducted to evaluate the safety of ferry travel at the Pematata port from the perspectives of ships and human resources.

## 2. METHODOLOGY

At Pamatata Port's inter-island ferry port, this study was conducted. These two ports were specifically picked because they provide ferry service from Benteng-Selayar to the other islands, including Southeast Sulawesi, the Maluku Islands, East Nusa Tenggara, and West Nusa Tenggara. The ports of Sumbawa Benteng and Pemenang operate very often, and the number of passengers increases yearly.

This study employs a quantitative, descriptive approach. A description of the symptoms or phenomena associated with the following would be appropriate in this situation: (1) Ferries operating at the Benteng and Pemenang ports, (2) Productivity of operating ferry transport vessels, (3) Human Resources for port operators based on competency certificates, and (4) Ship safety certificate.

All ferry transport ships, whose samples were Pamatata ships present in the port at the time of data collection, and all personnel employed by the ports of Benteng and Pemenang, whose primary responsibilities and functions directly related to the safety of ferry transport, comprised the population of this study.

To examine the problems in this research, data processing is carried out on the results of the achievement scores of respondents based on the results of each indicator with the percentage formula formulation proposed [16] as follows:

$$F/N \times 100\%$$

Where:  
F = Number of findings with the answer YES  
N = Number of observed indicators

**Confirm Percentage (%) Achievement Score**

Confirmation of the percentage (%) of the achievement score used to analyse instruments 3 and 4 in this study is divided into 5 categories, namely: a) Very threatening shipping safety, b) Sufficiently threatening shipping safety, c) Threatening shipping safety, d) Not threatening shipping safety and e) does not threaten the safety of shipping.

**Table 1.** Range of Values and Qualifications

No.	Range (%)	Qualification
1	81 – 100	Not really a threat to shipping safety
2	61 – 80	Does not threaten shipping safety
3	41 – 60	Threatening shipping safety
4	21 – 40	Enough to threaten shipping safety
5	0 - 20	Very threatening shipping safety

**3. RESULTS AND DISCUSSION**

**Pamatata Selayar Class III Port**

There were 3 units and 3 operators operating ferry transport vessels in 2019 to transport people and vehicles from Pamatata Port to Bira. As an additional

service, PT. ASDP Indonesia Ferry operates 2 ships on the route from Makassar Port to Benteng Port.

The age of the operating vessels varies from the most recently built in 2015 (4 years) and the oldest built in 1994 (24 years). The description of each of these vessels is shown in Table 2.

**Table 2.** Data of Ferry Vessels Operating at Selayar Port (Selayar-Bira Pamatata Port)

No.	Ship name	Production year	Gross Tonnage	Capacity	Capacity	Information
				Passenger	Vehicle	
1	KMP. Bontoharu	1999	1124	300	20	Group VI Liner Pamatata Bira
2	KMP. Sangke Pallangga	2005	560	180	10	
3	KMP. Kormomolin	1997	884	250	12	
				730	42	
				Average		
				Average 243	14	

**Source:** Analysis results, 2020.

Looking at the age of the ship, in table 2 above it is known that KMP. Sangke Pallangga is the

youngest ship built in 2005 or currently its operating period is 14 years. The other two (2) ships are older,

KMP. Kormomolin was built in 1997 and KMP Bontoharu was built in 1999. Currently, the two vessels have an operating life of 22 and 20 years, respectively.

If based on the size of the tonnage, KMP. Bontoharu is the ship with the largest tonnage. The other two ships, namely KMP. Kormomolin 884 GT is KMP. Sangke Pallangga 560 GT. Or the ship with the smallest tonnage.

To compile production data, data taken from the number of arrivals and departures of ships are used at the ports of Pamatata and Bira. Production data is data on the number of passengers and vehicles transported in the period 2016 to July 2019. Details of production data in the last 4 years are presented in Table 3.

**Table 3.** Data on Ferry Transport Operating at Pamatata Port

Year	Number of Arrivals	Number of Departures	Passenger		Vehicle			
			Arrival	Departure	Group II		Group IV	
					Departure	Arrival	Departure	Arrival
Until July 2019	487	487	70,200	77,868	10768	9378	8725	8513
2018	840	840	111,795	110,623	12709	15736	13821	14741
2017	784	784	87,607	83,943	14243	14714	14408	14618
2016	822	822	90,840	99,176	14243	14714	14408	14818

**Source:** Analysis Results, 2020

In table 3, it is known that the production of Pamatata port is based on the number of passengers and the number of Group II and Class VI vehicles that go up and down at the Pamatata and Bira ports. Furthermore, production calculations are carried out by comparing the number of arrivals and departures of passengers and vehicles according to vehicle class. The data on vehicles transported from Bira Port to Pamatata Port available at Port Authority Office

Selayar are Group II and Class IV vehicle data only. However, based on the survey, for each ship's arrival, the number of vehicles varies from Group IV, V, and VI. Based on these facts, this study determined the average size of the vehicles transported to be categorized into Golonan VI vehicles. This is also done because the data for Group V, VI, and VII vehicles are not available.

**Table 4.** Production and Transport Capacity Data

Year	Total		Total		Total Production					
	Arrive	Departure	Capacity Passenger	Capacity Class VI	Passenger		Class VI vehicles		Class VI vehicles	
					Down	Go On	Down	Go On	Down	Go On
July,2019	487	487	243	8	70200	77868	10768	9378	8725	8513
2018	840	840	243	17	111795	110623	12709	15736	13821	14741
2017	784	784	243	17	87607	83943	14243	14714	14408	14618
2016	822	822	243	17	90840	99176	14243	14714	14408	14818

Furthermore, to find out a comparison between the passenger capacity or the ship's ability to carry passengers in 1-time shipping route from Bira Port to

Pamatata Port, a measurement of passenger capacity against production is carried out.

**Table 5.** Passenger Capacity to Production

	Arrival	Passenger/ship Capacity	Total Capacity	Down	Information	
					surplus	deficit
July, 2019	487	243	118,341	70,200	surplus	48,141
2018	840	243	204,120	111,795	surplus	92,325
2017	784	243	190,512	87,607	surplus	102,905

2016	822	243	199,746	90,840	surplus	108,906
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Table 5 shows the total annual passenger capacity which is the product of the number of ship arrivals and the passenger capacity of each ship. The total capacity as of July 2019 is 70,200. From 2016 to July 2019, every year there is a surplus of passenger

capacity, in other words, the total passenger capacity for each ship arriving at Pamatata Port is greater than the number of passengers disembarking at Pamatata Port.

**Table 6. Vehicle Capacity to Production**

	Arrival	Vehicle/Ship Capacity	Total Capacity	Down	Information	
July, 2019	487	8	3896	10768	minus	-6872
2018	840	17	14280	12709	surplus	1571
2017	784	17	13328	14243	surplus	-915
2016	822	17	13974	14243	surplus	-269

Table 6. is known as the total capacity of vehicles per year which is the multiplication of the number of ship arrivals with the capacity of vehicles that can be transported by each ship. The total capacity as of July 2019 is 3896 or the carrying capacity of ferry boats from Bira Port to Pamatata Port is smaller than the number of vehicles that should be transported. In 2018 there was a surplus or the number of vehicles to be transported was smaller than the vehicle's load capacity. However, the capacity in 2016 experienced a minus of 269 or in 2016 there were 269 vehicles that did not depart or were delayed in departing or departing with the next ship's schedule or the following day. In 2017 there was a minus vehicle capacity, in other words, the total vehicle load capacity for each ship arrival at Pamatata Port was 915 smaller than the number of vehicles that should be transported. In 2017 there were 915 vehicles whose transportation was delayed due to insufficient vehicle production capacity.

Specifically, regarding Human Resources at KSOP Class III Selayar, there are 18 Human Resources who are tasked with carrying out service activities every day. Human Resources personnel as many as 18 people. only 3 Human Resources have a marine diploma (COP) consisting of 2 people having an ANT III diploma and 1 person having an ATT I diploma. This number is equal to 16.7% of all Human Resources personnel at Port Authority Class III Selayar who have seafaring education and training background. In accordance with the range of values and qualifications in Chapter III, it is stated that the available human resources are in the category of very threatening shipping safety.

The crossing transportation route from Bira Port to Pamatata Port which has been inspected by Port Authority Class III Selayar officers. The inspection of the shipping safety certificate is carried out on the KMP. Bontoharu, KMP. Sangke Pallangga and KMP. Cormomoline. Against KMP. Bontoharu, KMP. Sangke Pallangga and KMP. Kormomolin

inspected the ship's safety certificate. The inspection is carried out by officers and copies of the documents are stored in a folder at the Selayar Class III Port Authority Office. The safety certificates are as follows:

1. International Tonnage Certificate
2. Certificate of Nationality
3. Certificate of Seaworthiness/ Passenger Dispensation
4. Safety Management Certificate (ISM Code)
5. International Oil Pollution Prevention Certificate
6. Load Line Certificate
7. Certificate of Ship Hull
8. Certificate of Machinery
9. Cargo Ship Safety Radiotelephone Certificate / Certificate of Ship's Radio Telecommunication Equipment with Gross Tonnage Size 35 to d. 300 (100 m3 to 850 m3)
10. Fire Extinguisher Certificate
11. Certificate of Inflatable Life Raft

Based on the results of document inspection on the three ships that regularly sail from Bira Port to Pamatata Port, it is known that KMP. Bontoharu, KMP. Sangke Pallangga and KMP. Kormomolin has all the required ship safety certificates. The three ships have 11 complete certificates and are still valid, thus it can be said that the ships are operating in seaworthy condition.

As many as 16.7% of all Human Resources at Port Authority Class III Selayar have a shipping education and training background. Even though they do not have a seafarer's certificate, 12 of them have a basic certificate of seamanship or equal to 75%.

Maintain good supervision, especially with regard to the accuracy of the ship's safety certificate at the Pamatata port. The evidence demonstrates that all ships arriving at and leaving from both ports possess ship safety certificates and are properly stored. This

criterion demonstrates that the port's human resources are fully aware of the primary responsibilities and functions of the institution that supervises them in compliance with any applicable rules.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

The capacity of the ship carrying passengers to and from the Pamatata port is declared sufficient because the carrying capacity is greater than the number of passengers to be transported. There is a shortage of vehicle transport capacity at Pamatata Port because the total transport capacity is smaller than the number of vehicles that will depart from Bira Port to Pamatata Port. Specifically regarding the Certificate of Competence held by Human Resources at the Pamatata Port, only 16.7%. The number of Human Resources at the Port of Pamatata who have shipping education and training while the main task of the Human Resources is to serve shipping activities.

The number of Human Resources with Competency Certificates at Bira and Pamatata Ports must rise in order to accommodate the increasing vehicle transport capacity, notably on ships sailing from Bira Port to Pamatata Port. Selayar KSOP Class III Human Resources require training in search and rescue, harbor operations, and port operations.

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