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The Importance of Indonesia People's Shipping (*Pelayaran Rakyat*) in Terms of Value Added, Employment, and Competitive Position

by

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"*I will complete what I have started*"

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Abstract

People's shipping (*Pelayaran Rakyat*) is a form of traditional shipping that operates in Indonesia. It is considered to be an informal sea transport sector due to its characteristics in operation, company management and the scale of business. People's shipping mainly carries essential goods and general cargo. It operates between large islands and isolated areas such as remote islands and isolated coastal zones. The most important route for people's shipping is the south–north route, which connects the industrial and port cities of Java island to certain cities in Kalimantan and Sumatera Island. For decades, the sector has faced problems such as fierce competition with conventional domestic shipping and poor safety standards. The government supports this shipping industry by providing diesel fuel subsidies. The government also plans to revitalise and empower the sector. Government interest in the sector involves the question of the economic importance of people's shipping in the domestic shipping sector.

This thesis assesses the economic importance of people's shipping in the Indonesia domestic shipping industry. This topic was selected as part of the Indonesia government's plan to empower its maritime transport and logistics sector and the maritime issues of the unregulated traditional shipping industry in Indonesia. Desk research was conducted on people's shipping for this thesis. A combination of qualitative and quantitative analysis methods was used to answer the research questions analytically. First, qualitative analysis focuses on the role, importance, regulation, market segmentation, and the informal sector. Then, these aspects are summarised using SWOT analysis. Second, quantitative analysis is conducted on the cargo carried, developments over time, and the economic importance of people's shipping.

The results of the analysis of the cargo indicate that the average people's shipping industry did not produce enough voyages in a year, with only three voyages per port; the exception was Kalimas port, which had an average of 6.5 trips during the period 2011–2014. Also, the outcome of the economic importance analysis shows that the economic contribution of people's shipping is relatively small in the shipping industry. The sector's gross revenue contributed a 3.19 percent share to the GDP of the Indonesia sea transport market. The sector employed almost 30,000 workers in shipping the and port areas. It contributed only 0.59 percent of the workers in the transportation, warehousing, and communication sectors. This shipping industry accounted for one accident for every 268,000-ton cargo carried, while other domestic shipping areas (containers, conventional general cargo, tankers, and barges) accounted for only one accident for every 37 million tons of cargo transported. Even though these analyses present a declining trend, the future of people's shipping relies on the role of government action concerning the traditional shipping industry.

Keywords: people's shipping, traditional shipping industry, economic importance, Indonesia

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List of Abbreviation

BKI	Indonesia Classification Society/Register
BPS	Indonesia Statistics Bureau
DPC	People's Shipping Union Branch
GRT	Gross Register Tonnage
GT	Gross Tonnage
GRDP	Gross Regional Domestic Product
KLM	Sailing Motor Vessel
KM	Ministerial Decree
KNKT	National Transportation Safety Commission
NCVS	Non- Conventional Vessel Standard
PM	Ministerial Decree
PP	Government Regulation
Perpres	Presidential Decree
PELRA	People's Shipping (Pelayaran Rakyat)
Perda	Local Regulation
UU	Law

Chapter 1 Introduction

1.1. Background

Indonesia is strongly dependent on its domestic seaborne trade due to its status as an archipelago country. Two-thirds of the population is concentrated on Java island, and the rest of the population spread out on the other large islands (Population Review, 2016). The problem that affects Indonesia is its weak domestic logistics systems due to the lack of port infrastructures. The majority of goods flow from Java island, especially industrial and essential commodities (*barang pokok*). The inter-islands trade activity involves several shipping services, one of which is people's shipping.

According to Dick (1986), he identifies people's shipping as shipping companies, mostly small family-owned companies, that operate wooden-hulled boats with a maximum capacity of 175 GRT. The types of the vessel are mostly *Phinisi*, which is famous as a traditional vessel. The focus of people's shipping is to link the ports on the main island to the remote ports on other islands in Indonesia, such as Sumatera, Kalimantan, Maluku, and Papua(Dick, 1986).

Figure 1. People's shipping (PELRA) - Port of Sunda Kelapa
Source: (Port Trikarsa, 2017)

He also introduces the concept that sailing *prahu* (people's shipping) is more than basic traditional shipping. It has to capability to find and serve a market niche, especially within the geographic conditions of Indonesia, a country with many inhabited islands. It provides complimentary transportation to modern shipping. The idea of people's shipping as a sign of backwardness does not fit its characteristics. He indicates that its flexibility to adapt represents a great example of small businesses in sea transportation (Dick, 1975).

Moreover, people's shipping can operate its fleets to the remote ports since it is independent of the port infrastructure, especially in terms of the draft limitations and low requirements for cargo handling facilities. However, it has some drawbacks, such as poor human resources and limited freight capacity. Stevedore workers are used for cargo handling activity at each port. This employs a lot of workers around the port and enhances the economic activity in small ports. The three principal ports are Sunda Kelapa in Jakarta, Paotere in Makassar, and Kalimas in Surabaya.

The study conducted by Karana (2003) explains the primary commodities of people's shipping. The major products from Kalimantan, Sumatera, Sulawesi, and other small islands to Java are raw materials such as timber, agricultural products, and minerals. Then, the important cargoes from Java are cement, fertiliser, rice, and general cargo, most of which is produced in Java (Karana, 2003).

The people's shipping industry is recognised as part of the national sea transportation system, which is protected by national shipping law (Shipping Law (UU) No.17, Indonesia, 2008). This maritime industry employs many workers in both voyage and cargo handling operations. There are many small inhabited islands in Indonesia that generate demand for transported goods, and, in some cases, only the people's shipping fleet can satisfy this demand due to the small market size and geographic limitations. This contributes to the national economy in terms of employment and transportation services.

1.2. Research Question and Research Objectives

Based on the background, the research question is: **'What is the economic importance of people's shipping (PELRA) in Indonesia?'**

The sub-research questions are intended to provide detail for the main research question:

1. What is people's shipping (*Pelayaran Rakyat*)?
2. What is the role of people's shipping in Indonesia's inter-island trade?
3. What is the current state of people's shipping in terms of operation, cargo carried, regulation, and competitiveness?
4. What is the impact of people's shipping on the revenue and employment of the Indonesia's domestic shipping industry?

The sub-objectives to be achieved in this thesis are:

1. To find the role of people's shipping in Indonesia's inter-island trade
2. To find the present position of people's shipping in the domestic shipping sector
3. To find the economic importance of people's shipping in the domestic shipping industry

1.3. Problem Identification

People's shipping has existed in Indonesia for a long time. In the beginning, people's shipping accounted for a large proportion of the inter-island trade in Indonesia. There were an estimated 2,793 units of vessels in the people's shipping industry in 1997

(Karana, 2003). Later, the role of conventional shipping increased following advances in the development of the regional maritime trade. It was expected that the appearance of the conventional cargo vessel will diminish the role of the people's shipping sector in inter-island trade. After eight years, the number of vessels dropped to 1,371 in Indonesia in 2015 (Transportation, 2015). Surprisingly, people's shipping survived the fierce competition even though the industry size reduced by half.

The logistic performance index (LPI) of Indonesia dropped from 53rd in 2014 to 63rd of 160 countries in 2016, which indicates the throw-back in national logistics system connectivity (World Bank, 2016). The need for proper and highly reliable transportation modes is a must for national economic development. The capability of people's shipping to find a market niche, and its flexibility to serve many routes and isolated areas could be one of the solutions to empower inter-islands connectivity.

On the other hand, people's shipping has shown an indigenous capability to adapt through the decades. The reason for this might be the nature of Indonesia's geographic landscape as an archipelago, and also management concepts. There are many remote area/islands that rely on the logistical supply from the people's shipping fleet. This means that people's shipping is the economic engine in these regions. Nonetheless, there are many vessels that operate between the large islands and major cities, which obviously are not considered isolated areas. This raises the question about the market segmentation of people's shipping.

Furthermore, the role of the government appears in the people's shipping industry in two forms: the government subsidy programme and the establishment of regulation. The government continuously subsidises the sector through a diesel fuel subsidy programme. It will reduce the operation costs in the shipping operator. Regarding regulation, the Indonesian government has already established rules that control the quality of the service of people's shipping such as safety and route plans. Effective regulation is needed to enhance the development of people's shipping. This will encourage people's shipping to be more competitive because of its capability to enter the small islands across the Indonesian archipelago, while, at the same time, questions on the importance of people's shipping will arise.

Two methods of analysis will be used to explore the research question. First, qualitative analysis will focus on the aspects of the role, importance, regulation, market segmentation, and informal economy of people's shipping. These aspects will be summarised using SWOT analysis. Second, quantitative analysis will be conducted on the cargo, developments over time, and the economic importance of people's shipping.

1.4. Research Design

A combination of both qualitative and quantitative analysis methods will be used to answer the sub-research questions. Chapter 2 will focus on the literature analysis (qualitative analysis) of the people's shipping industry. The role of people's shipping in inter-island trade needs to be explained explicitly by the researcher. This will be described comprehensively through the development of the people's shipping sector from its beginnings in the 1970s to its current form in 2016.

In Chapter 3, the factors affecting people's shipping will be addressed to show its significance in inter-islands trade. It combined with the analysis of transport demand source to determine market segmentation. Moreover, the researcher needs to understand the policies in the people's shipping industry, such as government policy for operations, routes, and the safety standards of the vessels.

Furthermore, in Chapter 4, there will be an explanation of the methodology. The thesis will use both qualitative and quantitative methods to answer the sub-research questions. This research design section will be structured as follows to answer the research questions: The first method is the SWOT analysis, which focuses on four factors (strengths, weaknesses, opportunities, and threats) of the industry. Then, the cargo traffic and economic importance will be analysed; these consist of shipping revenues, employment, income of ship crews and stevedores, and safety. Safety will be assessed through the risk rate per cargo carried.

Next, at the beginning of Chapter 5, the SWOT analysis will be used to determine the position of people's shipping in the maritime transport sector. Since traditional shipping is already facing the modern era with its advanced technology and information, it is encountering fierce competition from other domestic shipping sectors, especially conventional cargo shipping. Moreover, the calculation of the cargo carried by people's shipping will result in a figure for the yearly cargo carried and the trips produced. This will consist of cargo carried analysis at the selected ports and the national level. The analysis of developments over time will be conducted to assess how people's shipping has adapted over time. Finally, shipping revenues, employment, income of ship crews and stevedores, and safety will be calculated to determine the economic importance of the sector in the shipping industry.

The last chapter will describe the significant key findings of both analysis methods regarding the importance and value of the economy of people's shipping in the Indonesian maritime industry. Then, essential recommendations for the government regarding the future of the people's shipping industry will be given.

Chapter 2 The Role of People's Shipping

2.1. People's shipping

PELRA (*Pelayaran Rakyat*) or people's shipping[1] is one of the forms of traditional shipping that exists in Indonesia. People's shipping has been used as a primary transportation method for inter-island trade for a long time. It operates to connect many large islands as well as isolated areas such as small islands and isolated coastal areas in Indonesia. People's shipping is used to transport agriculture, food, and livestock. It is also used to transport passengers from small islands with limited capacity (Karana, 2003).

Figure 2. Wooden Boats (Sailing Motor Boat)
Source: Author adopted from Triantoro (2015)

The type of vessel is easily noticed in people's shipping. Most of the ships in this sector are wooden-hulled vessels ranging in size from 20 GT to 500 GT. According to UU No. 17 of 2008, there are three types of vessel: the sailing boat (*Prahu*), the sailing motor boat (KLM), and the motor boat (KM). The sailing boat is the basic traditional boat that is dependent on the wind current; the sailing motor boat uses a marine diesel engine as its secondary propulsion. Practically, the ship operator prefer to use the diesel engine during the operation instead of utilize the wind current. So, the sail and mast in sailing motor

[1] The term 'people's shipping' originated from the article written by Dick (1975), 'Prahu Shipping in Eastern Indonesia'. Part 1, *Bulletin of Indonesian Economic Studies*, *11*(2), 69–107. doi: 10.1080/00074917512331332712.

boat often called as camouflage sail. Beside that, the motor boat only used the diesel engine as its primary propulsion as shown in the figure 3. The compact design of motor boat could ease the use of crane in handling operation.

Figure 3. Wooden Boat (Motorised Boat)
Source: Author

Figure 4. The Cargo Handling Operation of People's Shipping
Source: Author adopted from Triantoro (2015)

The industry uses the stevedore, or *kuli panggul*, for unloading and loading the cargo. The requirement of the stevedore varies depending to the vessel size and the cargo volume. Figure 4 shows that the traditional handling is often combined with the crane for certain heavy commodities, such as packs of timber and bags of cement.

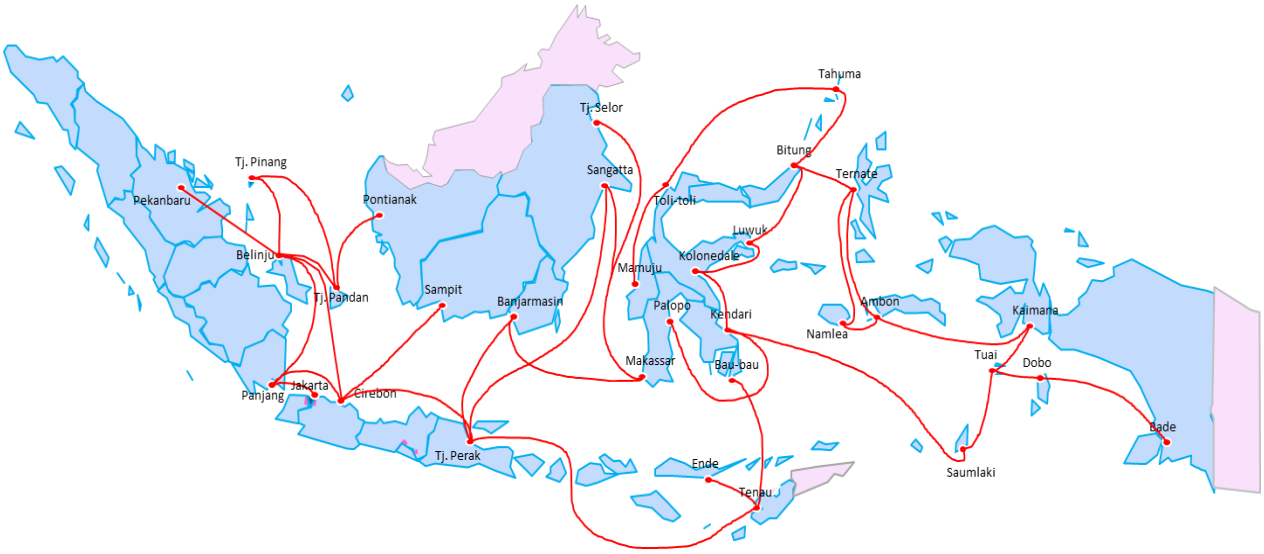

Figure 5. People's Shipping Route
Source: Author adopted from KNKT (2009)

Historically, people's shipping has operated across the Indonesian archipelago. It connects the major islands and the small islands in between. The traffic of goods is dominated by specialised ports for people's shipping on Java island. The flow of cargo entering Java is mainly raw materials and agricultural products, while the cargo from Java is cement, fertiliser, and intermediate or final products that are recognised as general cargo (Karana, 2003). Figure 5 illustrates the map of the people's shipping routes. Based on this map, there is 33 ports, spanning from the western region into the eastern region of Indonesia. In the case of Kalimas and Sunda Kelapa, these ports are organised as dedicated terminals under the main ports, which are Tanjung Perak and Tanjung Priok. However, since the operation of people's shipping is flexible, it also serves some non-commercial ports.

According to the map, it is likely that the most important route is the south–north route, rather than the west–east route. The south–north route is essential because it connects the industrial cities on Java island to certain cities in Kalimantan island. Some of the towns in Kalimantan are located by the river or the river delta, such as Pangkalan Bun, Sampit, and Banjarmasin. Vessels from Kalimas port carry essential goods (*barang pokok*) to these cities, and vice versa. The people's shipping fleet from Sunda Kelapa port, Jakarta, serves some cities in Sumatera island also located close to the river, such as Palembang and some of the islands in the Riau archipelago. The geographical conditions are a benefit for people's shipping due to its capability to sail in limited draft and serve small market demand. Nevertheless, the number of vessel in the people's

shipping fleet is tending to decrease. This is resulting is an absence of the fleet in some dedicated ports.

In the modern era, people's shipping is identified as short-sea transport, and is often managed by a family or a company as the owner that focuses on logistic and sea transportation. It has limited coverage of services since wooden-type motor boats are used that are not suitable as ocean going vessels. They mostly serve non-fixed routes or act as tramper shipping even though some of the bigger people's shipping companies often provide fixed routes, though the number is still limited (Triantoro, 2015). Tramper shipping often results in long stays in port, depending on the demand fluctuation. This can lead to adverse effects as the number of voyages per year will be small, and the schedule will be unpredictable for the customercustomer.

2.2. Commodity of People's Shipping

The products in the people's shipping sector are identified as general cargo goods. Cargo is carried in several packages depending on the nature of the product. The kinds of commodity in people's shipping tend to change over time. Mostly, alterations in the cargo type are a result of competition from other domestic shipping companies. During the 1990s, the primary commodity of people's shipping was timber, which was produced in Borneo and Sumatera island. At the beginning of the 2000s, people's shipping faced stiff competition from the barge fleet since this was capable of sailing to the timber production sites upriver and carrying larger volumes of cargo (Karana, 2003). According to reports from the three main ports, particular kinds of goods dominate the cargo transport volume of people's shipping. The commodities transported by people's shipping are mainly essential goods (*barang pokok*), as shown in Table 1. The dominant cargos are fertiliser, cement, sugar, flour, rice, and livestock fodder. Most of the consignment is packaged in bags and cardboard boxes, while some of the raw commodities, such as timber, wooden processed products, and steel, are carried without packaging (Prasetyo, 2017).

Table 1. People's Shipping Commodity

Type of Commodities	**Package**	**Type of Commodities**	**Package**
Fertilizer	Bag	Wood Product*	No package
Cement	Bag	Timber*	No package
Sugar	Bag	Vegetable	Bag
Flour	Bag	Orange	Bag
Rice	Bag	Dangerous goods	-
Livestock fodder	Bag	Non-Fuel	Drum
Chocolate	Bag	Construction Sand	No package
Bean	Bag	Red onion	Bag
Steel product	No package	Sea Salt	Bag
Electronics	Carton Box	Other General Cargo	-
Shrimp and Fish Paste	Carton Box		

Source: Author elaboration adopted from Sunda Kelapa (2016), Kalimas (2015), and Prattyni (2016)

Most of the primary commodities are produced in the industrial sector in Java, while there are specific cargoes such as logs from Kalimantan and cement produced in South Sulawesi. Reports from two major ports, Sunda Kelapa (2016) and Kalimas (2015), indicate that the cargo traffic is dominated by the cargo outflow from Java, and is three times larger than goods entering Java island. These conditions also apply to the cargo movement in Paotere port, Makassar, where the cargo throughput is not balanced (Prattyni, 2016).

2.3. The Development of People's shipping

Analysis of the development of the people's shipping sector through the decades shows that it started in the 1970s, until 2016. It has been influenced by several factors, such as regulation, politics, economic events, and competition.

2.3.1. People's shipping in the 1970s

According to Government Regulation No. 2 of 1969, inter-island shipping in the 1970s was divided into five sectors distinguished by type of operation, nature of employment, and type of vessel. These areas are: liner shipping (regular liner service), local shipping, *prahu* shipping (people's shipping), specialised shipping (bulk), and tug (barge) (Dick, 1986). Based on these criteria, the people's shipping sector has been distinguished from other sectors by the type of vessel, operation, and nature of employment. This industry can be easily noticed by the wooden-hulled sailing vessels, easily distinguishable from conventional vessels.

Starting in 1972, people's shipping faced the era of motorisation. The traditional sailing vessel was traded for the sailing motor boat, or *kapal layar motor* (KLM) (Sunaryo, 2010). Before the motorisation era began, *prahu* shipping was seen as traditional shipping with sailing wooden-hulled boats, or *Phinisi*, and others such as the *Lete-Lete*, the *Lambo* and the *Nade*. Figure 6 shows a *Phinisi* ship loaded with timber at 1978; an important inter-island commodity. After 1979, the motorization changed the shape of the *Phinisi* (sailing boat) fleet rapidly. Almost all the *Phinisi* fleet in Sunda Kelapa port used the motor engine as its propulsion (Veldman, 1990). The result was the role of people's shipping intersecting with the wooden boats from local shipping that served regular routes as a feeder. Moreover, the change of the propulsion type reduced dependency on the wind current. The main propulsion is a diesel engine, and the sailing screen functioned as camouflage as shown in the figure 2.

People's shipping mainly served as dry bulk carriers, with timber as a primary commodity. This type of commodity became prevalent in the sector because the large islands, such as Kalimantan and Sulawesi, are major suppliers of raw materials such as timber. The major industrial sectors are located in Java, particularly the paper pulp industry, which needs huge supplies of logs and timber. According to data from the study by Dick (1975), the total volume of wood accounted for in Java's major *prahu* shipping ports was 524,200

tons in 1972. However, in this era, people's shipping also encountered stiff competition from specialised dry bulk shipping such as barges (Dick, 1975).

Figure 6. *Phinisi* (Sailing Boat) at 1978
Source: Author adopted from Veldman (1990)

Dick (1986) argues that the role of people's shipping was estimated to be stronger because of the flexibility of services. This sector was conducted as a tramper or liner service due to its unspecified function as stated in government regulations. It seems that the government tried to keep the sector as the traditional sector. However, the lack of policy had an adverse effect on the industry. Regulation is a base for further development and recognition from the government perspective.

2.3.2. People's shipping in the 1980s

The role of people's shipping expanded in the 1980s since the fleet could serve longer distances than local shipping because of fleet motorisation. There was no limited area

coverage for people's shipping operations. The maximum limit of service area for local shipping is 200 miles (Dick, 1986). This benefited *prahu* shipping, as companies could seek new market niches.

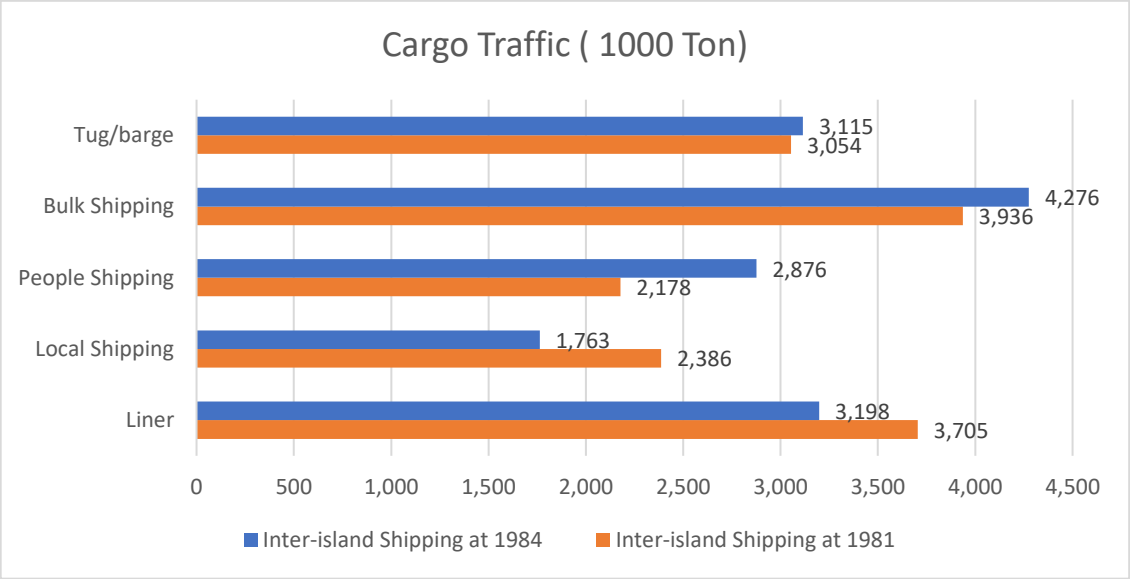

Figure 7. The Yearly Volume of Indonesia Inter-Islands Shipping at 1981 and 1984

Source: Author elaboration adopted from Dick (1986) and Veldman (1990).

In 1981, this sector accounted for 14.3 percent or 2,17 million tons of inter-island dry cargo flows as part of the major shipping sector in national seaborne trade. Routes were concentrated around Java, Southern Sumatera, Kalimantan, and Sulawesi. In 1984, surprisingly, the yearly cargo volume of people's shipping increased even while facing fierce competition from tugs/barges at the same time. The share of people's shipping in the national seaborne trade sector was 23.6 percent or 2,87 million tons. This percentage increased due to the boom in the mining sector. The people's shipping fleet had a total of 3,777 ships consisting of sailing boat, motorised sailing boat, and small motor boats. This booming event also increased the cargo transported by barge sector, as barges also offered flexibility in carrying dry bulk commodities. The barge sector accounted for a total share of 25.5 percent of national seaborne trade in the same year (Veldman, 1990). This percentage resulted from various commodities from as forestry (timber) and mining industries.

2.3.3. People's shipping in the 1990s (1989-2000)

During this period, the total cargo capacity carried by people's shipping increased enormously. According to Jinca (2001), the people's shipping sector saw peak popularity with a total share of national inter-island trade of 16–24 percent. This vast improvement was caused by the large fleet in people's shipping compared to other types of shipping. However, there was a small growth in the fleet, with a total of 2,789 vessels in 1989 and

2,793 vessels in 1996. The slow growth of the fleet size indicates that expansion trends were slowing down.

Table 2. People's Shipping at 1989-2000

Year	Fleet (unit)	Volume (1000 ton)	Company
1989	2,789	-	-
1996	2,793	8,327	652
1997	2,793	8,582	678
1998	-	5,181	-
1999	-	6,740	-
2000	-	7,261	-

Source: Author elaboration adopted from Karana (2003)

There was a significant event in the political sector during 1996–1999. The economic crisis of 1998 affected industry stability. Beginning in 1999, with a new leader, the government started to restructure the commercial sector in order to stabilise the country. In 2001, the government created Ministerial Decree (KM) No. 33 of 2001 to regulate shipping operations.

On the other hand, Karana (2003) argues that the reason behind the growth was the tendency of cargo owners to choose shipping that could offer on time and fast delivery. The cargo owner also pays attention to the safety of the cargo during the trip and at sea, which cannot be fulfilled by people's shipping due to the poor quality of the vessel. Even though shipping often provides insurance for the cargo, the liability coverage is low, otherwise the insurance would be costly. Also, the significant number of foreign vessels coming into Indonesia had a total share of 18.4 percent in 1990, with this sector still growing (JICA, 2003). This contributed to the high level of competition and the decline in demand for people's shipping.

2.3.4. People's shipping in 2001-2010

From 2000, people's shipping experienced significant changes, specifically in the operation side. According to Karana (2003), the government allowed the shipping company to act as the forwarder or agent. This decision led to the number of shipping companies increasing to 760 one year later, compared to 678 at the end of the 1990s (JICA, 2003). The people's shipping industry accounted for a total 7.261 million tons of cargo traffic in 2000. This volume had been fluctuating since the 1990s; the unstable political conditions could be a reason for the improvement in this sector. However, a report from (JICA, 2003) mentioned that, even though the domestic cargo volume was large for the PELRA sector, this sector only accounted for a share of 4–5 percent of total inter-island domestic trade. The small percentage of freight traffic showed a setback for PELRA development. Unfortunately, detailed data on the cargo carried by people's shipping during this period is not available. The Central Bureau of Statistics of Indonesia (BPS) only provides data on the vessel quantity and the companycompany.

Table 3. People's Shipping at 2001-2010

Year	Fleet (unit)	Company
2001	-	760
2002	3,000	-
2003	-	-
2004	1,229	441
2005	1,376	485
2006	1,232	507
2007	1,279	560
2008	1,287	583
2009	1,293	595
2010	1,293	632

Source: Author elaboration adopted from Karana (2003), Transportation (2008) and Transportation (2010).

During 2000–2005, there were significant changes in fleet and company quantity. The number of vessels fell significantly in 2004, as well as the number of companies. The government established Ministerial Decree (KM) No. 33 of 2001, which regulates the operation of the shipping industry, including people's shipping. The regulation came was enforced for around three years. Article 33 (1) states that the operator of domestic sea transport, including people's shipping, shall give the voyage plan and schedule at each port. Another clause, article 36 (3), indicates that the operator of national shipping must report the route plan to the *Dirjen Hubla* or General Director of Sea Transportation (Operation of Sea Transport Regulations, Ministerial Decree (KM) No.33, Indonesia, 2001). Moreover, the regulation also states that any shipping operator that fails to comply with the rules will have their permit revoked by the government. The enforcement of this new law had an impact on the operators of people's shipping, as well as the whole of the shipping industry, which explains the fleet reductions. However, due to the different data sources, there is a possibility of unmatched data.

Beginning in 2006, the people's shipping sector faced a stable growth period. The average growth rate for vessel quantity was 0.8 percent, while the yearly growth rate for company numbers was 3.8 percent as shown in the table 3. This stagnancy could be a result of the industry adapting to the enforcement of regulation. In addition, the establishment of UU No. 17 of 2008 regarding shipping industry played a significant role. The existence of a stricter law proves that the government was paying more attention to the maritime transport sector.

2.3.5. People's shipping in 2010-2015

The stagnancy of the fleet and companies continued during 2010–2015. The people's shipping industry faced difficulty in expanding its business. Statistics shows that the number of boats in the fleet accounted for an average of 1,300 over five years of operation. The problem arose in the shipbuilding and ship maintenance industry. The

illegal logging issue resulted in a lack of raw materials for local shipyards. According to Triantoro (2015), the slow growth rate in the people's shipping industry was a result of the rare and expensive prices of *Ulin* wood as a popular type of ship-building material. The government implemented strict controls for the forestry industry to reduce the illegal logging rate.

Table 4. People's Shipping at 2011-2015

Year	Fleet (unit)	Company
2011	1,314	651
2012	1,329	664
2013	1,340	647
2014	1,357	653
2015	1,371	657

Source: Author elaboration adopted from Transportation (2015)

On the other hand, Sunaryo (2010) argues that new building, as well as the existing fleet, could not be regulated under the classification rules. This was because of the absence of design and construction standards for wooden-hulled vessels. As a result, insurers could not provide cargo insurance for people's shipping activity (Sunaryo, 2010). Also, non-standard vessels and strict wood regulations had a significant impact on the weak industry. Even though the people's shipping sector had the benefit of flexibility in terms of operation (tramper or liner), the lack of knowledge about the new regulation disrupted shipping operations. A lot of people's shipping vessels faced a problem by the port state control (flag state), especially concerning the docking schedule regulation for the non-class vessel (Jinca, et al., 2013).

2.3.6. People's shipping in 2016

There is a small amount of shipping data to explain the people's shipping sector in 2016. Unfortunately, the data from Paotere Makassar port ends at 2014, and there is no data available for 2015 and 2016. According to the data from Kalimas port, the number of people's shipping vessels calling at the port increased from the previous year. In contrast with the number of calls, the cargo throughput volume declined from the previous year, as shown in Table 5.

Table 5. Sunda Kelapa and Kalimas Report 2015-2016

	Sunda Kelapa		Kalimas		
Year	**2015**	**2016**	**2015**	**2016**	**Unit**
Call	1,109	459	363	448	Ship
GT	244,908	105,030	47,394	59,083	GT
Total Cargo Throughput	608,566	264,057	836,415	787,028	Ton

Source: Author elaboration adopted from Sunda Kelapa Kalibaru (2017) *and* Port of Tanjung Perak (2017)

On the other hand, the report from Sunda Kelapa port shows an enormous change in both calling and cargo volume. The number of calls dropped to half in 2016 from 2015, followed by the fell of cargo throughput. However, there was no accurate explanation for the downward trend at Sunda Kelapa port in 2015–2016. The decline in transport demand and fierce competition might also be possible causes of the declining trend.

Chapter 3 The Importance of People's Shipping

3.1. The Concept of Traditional shipping

The people's shipping industry has seen a stable trend regarding the number of vessels and companies. The only significant changes occurred in 2002–2004 when the number of vessels dropped significantly. This condition raises questions about the existence and the importance of the people's shipping industry, especially from the government side.

Culture is naturally attached to people's shipping. Malisan et al. (2012) explain that traditional sea transport (people's shipping) is part of a maritime culture that plays a major role in transporting goods through the Indonesian archipelago. It comprises national cultural values, as indicated by the management concept and vessel type (Malisan, et al., 2012). The typical vessel design for people's shipping is the *Phinisi*. It originated from the *Bugis* tribe on Sulawesi island. The *Phinisi* is a famous type of traditional vessel that is capable of sailing on the ocean (Dick, 1975).

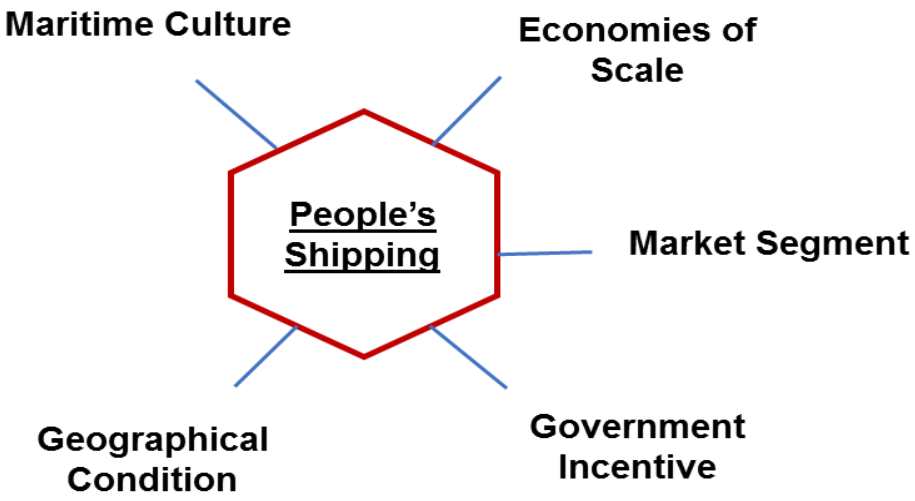

Figure 8. Five Factors Affecting People's Shipping

Source: *Author's elaboration*

The concept of the traditional shipping is also shown in the management and operational side. People's shipping enterprises are commonly owned by small, family-run companies. Triantoro (2015) explains that the management team consists of the simple commercial department and the owner. The tariff for transporting cargo varies from other shipping companies, which often leads to price competition. This contrasts to conventional shipping liners, which create cartel to control freight rates. However, on the operational side, the relationship between master and crew is close. The master divides the profits from the vessel using a one-third theorem. The owner will gain one-third of the profits, another one-third is allocated to voyage costs and the rest is divided among the crew (Triantoro, 2015). However, some shipping companies have already implemented a

salary system for the ship crew, which divides the salary based on personal tasks. Additional bonuses will be given if profits exceed expectation, at around 5–10 percent of the base salary.

On the other hand, Dick (1975) argues that the sailing *prahu* (people's shipping) is more important than the basic concept of traditional sea transport. It provides complimentary transportation to conventional shipping. The idea of people's shipping as a sign of backwardness does not suit the characteristics of people shipping. He indicates that its flexibility to adapt represents the perfect example of small businesses in sea transportation (Dick, 1975). The term 'complementary' refers to the function as a feeder to the main port. The government still recognises people's shipping as one of the major sea transportation methods, which is mentioned in UU No. 17 of 2008 (Shipping Law (UU) No.17, Indonesia, 2008). Moreover, the argument from Karana (2003) also strengthens the concept of the feeder. He suggests that people's shipping is a part of the national sea transport system, functioning as a feeder for the main ports (Karana, 2003). The role of people's shipping in connecting isolated areas generates greater economic activity in these areas.

As a feeder, people's shipping serves hub ports and feeder ports. It transports cargo between domestic hub ports and small ports, and vice versa, or operates between small ports. The fleet must compromise small market sizes and draft limitations. Economies of scale benefit people's shipping since it is unprofitable for a larger vessel to enter the market. Government intervention also has an influence on the sector. The government continuously subsidises the diesel fuel supply for the people's shipping industry since the biggest expense associated with transporting goods is the fuel cost.

In 2015, the Indonesia government met with the ASEAN Economic Community (AEC). The AEC compromises the free trade area and free movement of labour through the ASEAN countries (Antara News, 2015). An enormous flow of goods enters Indonesia, as well as labour. Strengthening people's shipping is a must for the government, in order to capture the chance of high demand for inter-island transport. Moreover, the base law, article 16 of UU No. 17 of 2008, mentions that the development of people's shipping is necessary to protect the national transportation system (Shipping Law (UU) No.17, Indonesia, 2008). The development plan is targeted at services, the job field, and the competency of the crew. Triantoro et al. (2016) mentions that the empowerment of people's shipping sector by the government will enhance the strength of the three main pillars of politics, the economy, and culture under the ASEAN Economic Community.

3.2. Market Segmentation

Seaborne transport activity exists because of the demand for transporting goods or passengers from place A to place B. This term is also applied to the people's shipping, sector while the demand for people's shipping arises from the need to transport goods due to the presence of demand to consume product on some of the islands. The demand occurs because of the geographical specialisation and the desire to acquire a greater

choice of goods. So, the demand for people's shipping is determined as derived demand (Coyle, et al., 2011).

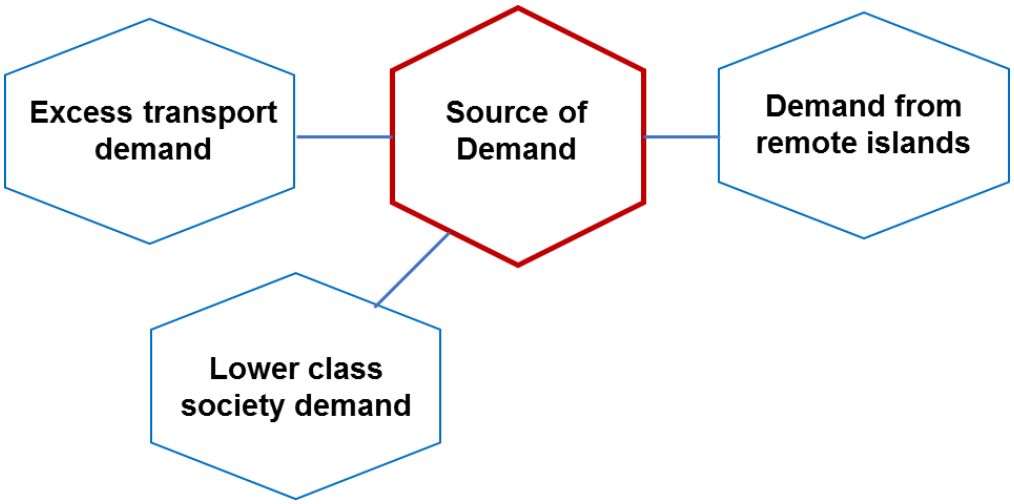

Figure 9. Three Factors Influence the People's Shipping Demand

Source: *Author's Elaboration*

The concept of derived demand in shipping links to the source of the transport demand analysis. In people's shipping industry, there are certain factors that influence the transport demand, as shown in Figure 5. These consist of three possible demand sources for this sector. The low price and quality of services associated with the demand from lower-class society. The income parameters and budget constraints are the determinant factors for choosing this transport mode. Large hub ports, such as Sunda Kelapa and Kalimas, are located near suburban areas, areas accessible to local immigrants and small industrial areas. The freight cost is considered a low price that is affordable for the low-income people. Further detail on freight rate is analysed in section 5.3.1, shipping revenues.

One of the characteristics of people's shipping is that it is also complementary to the larger shipping sector. The unmatched demand for transporting goods and the supply of bigger shipping results in excess capacity. The excess capacity originates from the demand that cannot be satisfied by larger vessels due to the unprofitable market size and draft limitations. Since the people's shipping fleet has vessel sizes up to 500 GT, the demand can be satisfied economically.

The geographical specialisation creates demand for seaborne transport, demand between large islands, to remote places such as the small islands and isolated coastal areas of Sumatera and Kalimantan[2]. For example, the demand for timber as a valuable raw material for the paper industry and civil construction in Java. The forestry sector is

[2] Due to extensive road construction and port developments, this role in isolated areas is decreasing.

commonly located in Kalimantan, Sulawesi, and Sumatera island (Karana, 2003). Another example is the demand for rice and flour from the Kangean islands, a group of small islands in the Java Sea. For a small island, the demand for flour and rice comes from the people who live there. Most of the island's residents work as a fisherman, so rice and wheat plantations are rare.

According to the annual report for 2015 from Sunda Kelapa port, one of the leading specialised ports for people's shipping, the inflow of goods in the people's shipping sector is dominated by logs, cement, sand, oil products, and quartz sand, with a total volume of 597,479 tons. The outflow is fertiliser, cement, rice, flours, coarse foods, steel, and electronics, with total volume 1,585,717 tons (Sunda Kelapa , 2016). Furthermore, another significant specialised port, Kalimas, saw a similar trend in people's shipping cargo traffic. The total discharge volume was 168,427 tons, while the cargo outflow was 619,842 tons in 2015 (Kalimas, 2015). These data show the unbalanced amounts of discharge and load of cargo at both ports. The huge gap is determined as the cargo traffic unbalance between Java and other islands. One of the reasons for this is that the government has implemented strict regulations on logging, which is a primary commodity for the people's shipping industry. The law aims to prevent deforestation in Kalimantan and Sumatera island (Sunaryo, 2010).

3.3. Value Added Potential

The people's shipping industry generates value added to maritime transport. It provides a transport service for general cargo. The main commodities are cement, food, and essential goods for living, as explained in section 2.2. Essential goods dominate the cargo carried by people's shipping. The traditional shipping service mainly targets niche markets that cannot be served by conventional shipping. The major reasons for this are geographical location and market size. The sector has significant value in logistics in terms of connecting isolated areas.

The dedicated port for people's shipping is identified as the general cargo port. According to the port reform toolkit from the World Bank, containerised and general cargoes tend to have the highest value-added services potential (World Bank, 2007). People's shipping handling operations consist of warehousing, loading, and unloading by crane and stevedoring. Cargo handling activity involves a significant amount of handling companies in the port. Due to the characteristics of the vessels and the goods packages, manual handling by workers is still necessary. The workers work as a group based on the ship size and cargo characteristics. A small group consists of eight employees; a medium group has 12 persons; a large group has 15 people.

3.4. Regulations

3.4.1. Introduction to The People's Shipping Regulation

The laws and regulations concerning people's shipping in Indonesia are created as Laws/Acts. The latest Law/Act for the maritime transport sector is UU No.17 of 2008

regarding shipping. According to this law, the people's shipping sector is separated from domestic sea transportation. Article 15 (1) of UU No.17 of 2008 states that 'People's shipping is a traditional shipping enterprise and a part of water transport activity that has an important role and specific characteristics'. The second clause of article 15 explains the provisions of people's shipping such as the nationality, flag state, and seaworthiness. It indicates that people's shipping is recognised by law as a traditional type of shipping and must operate under the Indonesia flag (Shipping Law (UU) No.17, Indonesia, 2008). Moreover, in article 16, the government includes people's shipping as part of the national transportation system and addresses that its operation will be further regulated by government regulation (PP).

Regulation concerning the people's shipping sector in Indonesia is structured from the top down. The regulation framework is presented below:

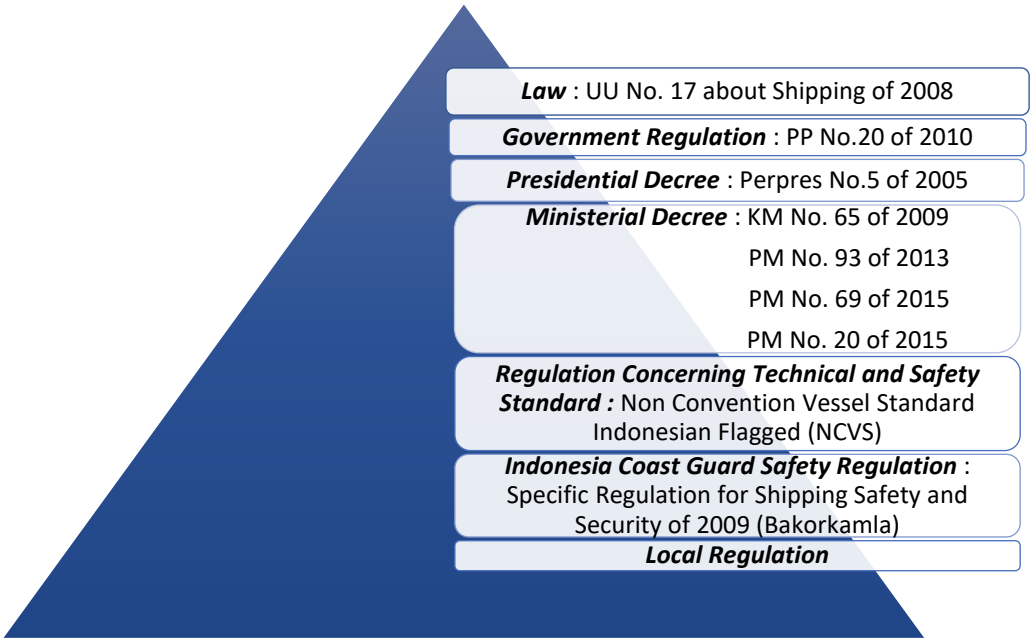

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Figure 10. Structure of Law in People's shipping Sector
Source: *Author's elaborations of various sources*

According to article 28, only two people can issue a business permit for people's shipping. First, a city or district mayor for shipping who operates across the district ports. Then, a governor for shipping, who runs on domestic ports and international ports. Further provision of the business license is regulated under local regulation.

Furthermore, as stated in article 17 of UU No.17 of 2008, another law, a government regulation (PP), will regulate specific provisions concerning the people's shipping sector. Government regulation (PP) No. 20 of 2010 explains the characteristics of the vessel, operation, cargo, and the structure of the enterprise. However, there is old law,

Presidential Decree No 5 of 2005, which instructs all the stakeholders in the shipping industry to implement the cabotage rule. Cabotage addresses the obligation to use local components for the shipyard, domestic crew for national shipping, and government incentives in the maritime transport sector (Empowerment of the national shipping industry, Presidential Decree (Perpres) No.5, Indonesia, 2005). In 2009, this regulation triggered an additional law from the government concerning people's shipping, KM No.65 of 2009.

There are three types of vessel in the people's shipping sector: traditional sailing boats, sailing motor boats (KLM), and specific motor boats (KM), as stated in article 45 (2) (Water Transport, Government Regulation (PP) No. 20, Indonesia, 2010). The traditional sailing boat is rarely used since the establishment of the motorised boat and tough competition in inter-island trade. For the KLM, the sail is often used as secondary propulsion to reduce fuel costs, or only as camouflage. The maximum size of the sailing motor boat is 500GT, as stated in Article 54 of ministerial decree 93 of 2013 (Water Transport Enterprise, Ministerial Decree (PM) No. 93, Indonesia, 2013). Nonetheless, in practice, there are some vessels that exceeds the maximum size such as the wooden ships from Local shipping. It sometimes noticed as the part of people's shipping fleet due to the similarities in vessel type and operation area.

On the other hand, the Ministerial Decree (PM) No.69 of 2015 regulate tariff and tax for shipping under the port authority. The article of 52 indicates that the port dues for domestic shipping are applied based to the GT of the vessel (Tariff and Tax of Water Transport, Ministerial Decree (PM) No. 69, Indonesia, 2015). As the people's shipping operates in domestic route, the port authority recognises it as part of domestic shipping.

3.4.2. Regulation Concerning Technical and Safety Standard

The law regarding technical standard is a major issue in Indonesia maritime industry, especially in traditional shipping like people's shipping. For many years, this sector was almost untouchable by the proper standard of seaworthiness. Most of the vessel has been built traditionally by a small dedicated shipyard. When the era of modern shipping (the conventional vessel recognised by international convention) started, the people's shipping faces difficulties to compete with them. Even though the market segmentation is different, but the consumer tends to demand a fast and safe transport. In addition, the problem also comes from insurer since they require a good ship standard as a guarantee of the insurance.

The wooden-hulled vessels used for people's shipping are included in the non-conventional vessel class because they operate as Indonesian flagged vessels. This means that the people's shipping is regulated under flag state. According to the base law, UU No. 17 of 2008 article 129, vessels that operate in Indonesian waters must apply the rules of classification (Shipping Law (UU) No.17, Indonesia, 2008). The exception is fishing boats and wooden vessels, as stated in article 10 (1) of PM No. 7 of 2013 (The Classification Obligatory for Indonesian Flagged Vessel, Ministerial Decree (PM) No. 7,

2013). Therefore, non-conventional vessel standard Indonesian flagged (NCVS) are further regulated by KM No. 65 of 2009, which came into force in 2013.

The vessel types of people's shipping (wooden-hulled ship) are included in the non-conventional vessel standard (non-class), as stated in Ministerial Decree No.65 of 2009. This regulates the structure and ship stability, machinery, load lines, safety, and crewing (Non- Conventional Vessel Standard, Ministerial Decree (KM) No. 65, Indonesia, 2009). This rule is not organised by the Indonesia Classification Society (BKI) because the classification only manages the rules for conventional vessels or steel-hulled ships.

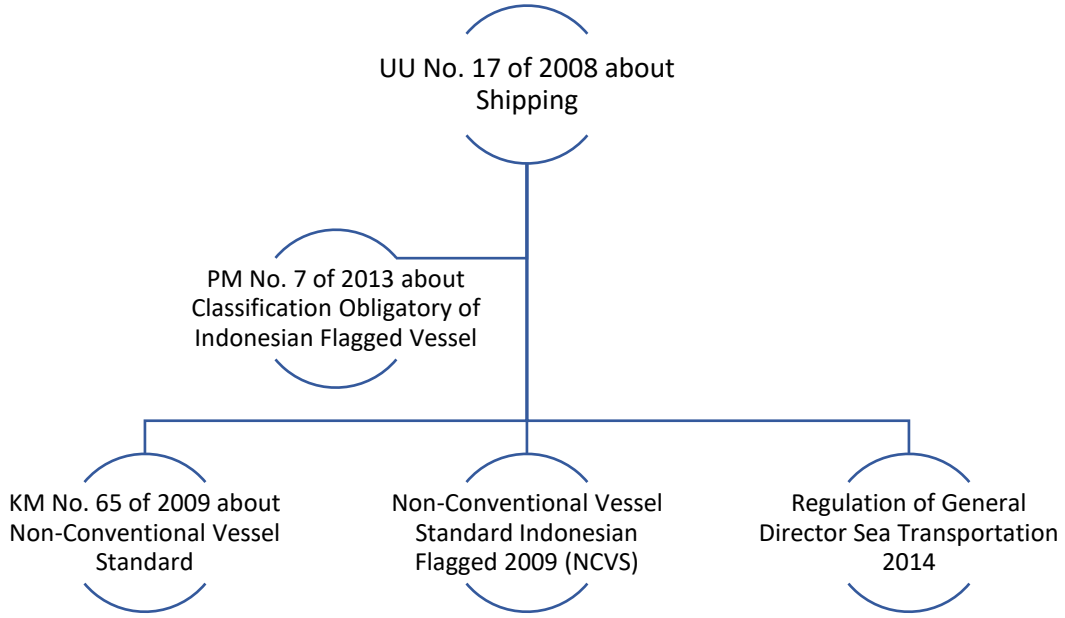

Figure 11. People's Shipping Vessel as Non- Conventional Vessel

Source: *Author elaborations from various sources*

Furthermore, the Director General of Sea Transportation (*Dirjen Perhubungan Laut*) on behalf of the Ministry of Transportation publishes the docking regulations for Indonesian vessels. This states that, for any ship that lies in non-class, the docking schedule for renewal survey/inspection is once every year (Sea Transportation (Dirjen Hubla), 2014).

However, there is an overlapping regulation in terms of safety issues. The Indonesia Coast Guard (*Bakorkamla*) identifies the size of the sailing motor boat (KLM) in a mandatory certificate requirement as a vessel under 35GT and 35–150GT (Nikson, 2009). This means that the rule does not recognise people's shipping vessels larger than 150GT. This confuses the primary task of *Bakorkamla* to secure all seaborne activities in Indonesian territory.

3.4.3. Local Regulations

Local laws for people's shipping are regulations created by local government, such as cities, districts, or provinces. Article 28 of the government regulation (Water Transport, Government Regulation (PP) No. 20, Indonesia, 2010) mentions that only a mayor and a governor are able to issue business permits for people's shipping companies. However, not all provinces in Indonesia issue rules about people shipping since this industry is only concentrated in certain regions. Figure 4 below shows certain local laws (*Perda*) concerning people's shipping.

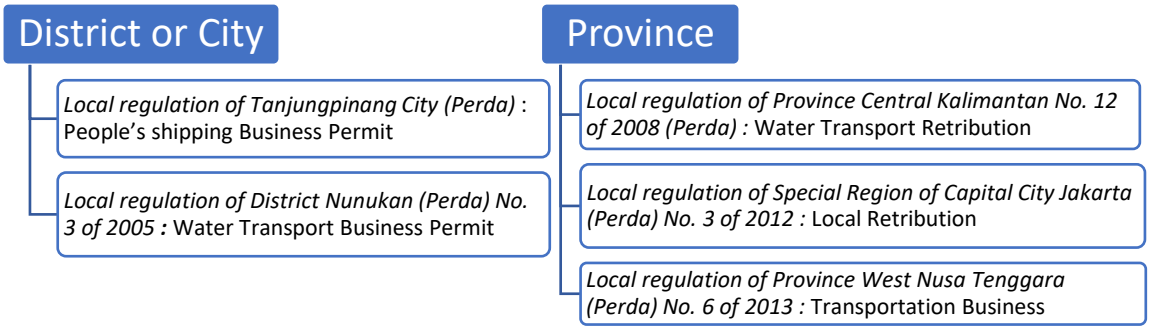

Figure 12. Example of Local Regulation Concerning People's shipping

Source: *Elaborated by author from various sources*

Based on the example, local law regarding *PELRA* is concerned with business permit regulation and retribution for water transport activity. Provisions for the amount of retributions are often different depending on the province policy. Also, the clause for a business permit is similar to that of local government as government regulation (PP) No. 20 of 2010 gives the template of the People's Shipping Business License (*SIUPER*) (Water Transport, Government Regulation (PP) No. 20, Indonesia, 2010)

3.5. People's Shipping and The Informal Economy

People's shipping is considered to be part of informal economic activity. According to a study by Thomas (1992), informal economic activity are the activities in the economy that are not listed in the national income of accounts due to their characteristics. The informal economy consists of the household, informal, irregular, and criminal sectors. Since people's shipping is a sea transport sector, it comes under the definition of an informal sector. Informal sectors are mainly found in developing countries. A sector is categorised as informal if it has the following characteristics: ease of entry, reliance on domestic resources, family-owned company, small coverage of operation, labour-intensive sector and low-tech, workers' skills are acquired through informal education, unregulated industry, and a competitive market (Thomas, 1992). These characteristics fit the typical features of the people's shipping industry, except for the regulation aspect. People's shipping is a legal business under Indonesia shipping law (Shipping Law (UU) No.17,

Indonesia, 2008) and other related laws. However, still, regulations seem to overlap each other and are not well managed by the government.

Compared to the study on informal land transport by Cervero (2000), under the United Nations Centre for Human Settlements, informal transport is considered a gap filler. This kind of transportation exists to fill the spaces not filled by public transportation. Informal transport is related to small, frequently idling, and slow-moving vehicles. It is often blamed for traffic jam problems in cities. Consequently, the government tends to reduce the role of informal sector by enforcing strict regulation. On the other hand, informal transport provides benefits such as providing essential mobility for poorer classes in society, employment for less-educated workers, and complimenting the transport system as feeder services (Cervero, 2000). Unlike informal land transport, which commonly occurs in the large cities of developing countries, traditional shipping not only gives logistic transport services for low-class people but also delivers significant value for supplying logistics to isolated areas.

Other informal sectors in the shipping industry are also seen throughout the world, such as the dhows in the Arabian Sea and the schooners in the Caribbean Sea. The dhows are wooden sailing motor ships with an average size of about 31.2GT, operating around the Gulf of Arabia, East Africa, and West India. The crew requirement is around 14 seafarers with limited training experience (Boerne, 1999). Similar to other traditional shipping, the dhows have low safety and navigation standards. The dhows play a role as a feeder service for formal shipping. According to a preliminary study of dhows in the East African region by Boerne (1999), they contributed 14,000 employees in East Africa. Thus, combining employment size and the role as feeder services, it is likely that dhows make a significant contribution to the East African maritime industry.

Moreover, informal sea transport is also founded in Central America. Traditional cargo vessels, called schooners, operate between small islands in the Caribbean Sea. The schooners are small motorised wooden vessels less than 150GT. They mainly carry general cargo and essential goods such as vegetables, fruit, and flour. This traditional shipping type commonly operates under family-based companies, with the owner also working on-board the ship (Boerne, 1999). Boerne (1999) argues that the level of these vessels' safety quality reflects the development of the region and the market expectation. Regarding the safety aspects, the safety quality of the schooners is better than that of the dhows in the East Africa region. He also emphasises that the absence of the schooners on one small island could lead to the occurrence of formal shipping, which will result in higher transport costs. The increase in the price of essential goods will harm the islander's purchasing power parity since job options and salary are limited on the small island.

Based on these facts, it can be concluded that the operation of people's shipping between large islands is similar to the role of dhows as feeders in the Arabian Sea and East Africa region, while voyages to small islands and isolated areas are closer to the character of the schooners in the Caribbean Sea. The difference is that both dhows and schooners operate across different countries. Due to the small scale and limited accessibility to

finance sources, the traditional shipping industry needs support from external parties to be able to survive and remain competitive in the domestic shipping sector. The party most suited to empowering informal sea transport is the government.

Chapter 4 Research Methodology and Data

The aims of chapter four are to introduce the qualitative method, quantitative method and provide an explanation about how to assess the economic impact of the people's shipping. First, the SWOT will assess the competitiveness of the industry. Next, the analysis of the national cargo traffic will be used to obtain the figure of the total cargo transported from people's shipping sector in particular year. Then, the development over time analysis will focus on the people's shipping improvement through the decades.

The economic importance of people's shipping is measured in terms of its revenues, employment and safety. The safety is assessed using the risk comparison analysis. It will compare the risk rate of people's shipping sector to other domestic shipping industry.

4.1. Strengths- Weakness- Opportunities- Threats (SWOT) Matrix

The SWOT analysis is related to the strategy formulation. A strategy is determined as a match of a company or organisation uses regarding its internal resources, skills, opportunities and external risk. To understand how the people's shipping industry could survive and the strategy needed for the future development, the SWOT analysis is conducted. The SWOT matrix is a matching tool that could be used to develop four main factors that explain the strength, the weakness, the opportunity and the threat of a sector/company.

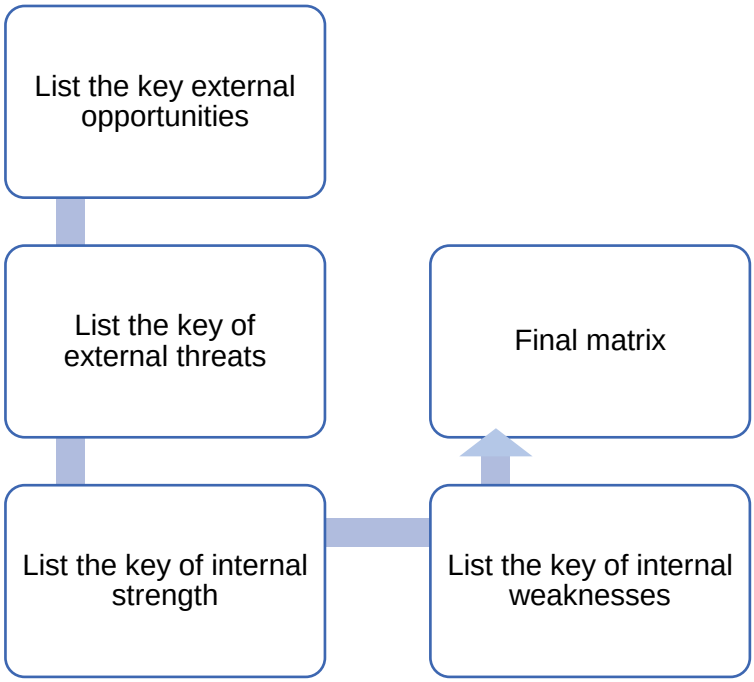

Figure 13. SWOT Analysis Steps
Source: *Author adopted from* David (2011)

These four aspects lead to the formulation of external and internal strategy of the people's shipping However, the matching process between the internal factors and external factors are the most important part of the formulation matrix. It needs a right judgment to create best matches of each strategy (David, 2011).

4.2. The Cargo Carried People's Shipping Sector

The total cargo carried by people's shipping sector is calculated using the throughput data from certain ports in Indonesia. However, it is a possible that the data concerning people's shipping is insufficient for the whole sector calculation. It needs a justification to choose a specific port that have significant throughput and classified as an important port for the people's shipping industry. The justification will build under the analysis of the cargo flow pattern from the primary commodities and the port call recorded from several years. The selected ports are Sunda Kelapa port, Kalimas port and Paotere Makassar port which will represent the whole sector.

Furthermore, the cargo calculation is divided into two parts, a cargo calculation of the selected ports and a cargo analysis of the whole sector. First, the cargo calculation in selected ports will focus on the average GT of the vessel, average cargo carried per call yearly, and a number of trips produced by the ship that entering the port. It will show the cargo flow patterns of people's shipping in each port. The formula as follows:

Equation 1. Average GT of Vessel

$$Average\ GT^{t} = \frac{number\ of\ call^{t}}{total\ vessel\ GT^{t}}$$

Where:

- Number of call ^{t} : Total call produced by the sector on the port in year t
- Total vessel GT ^{t} : Total gross tonnage of the vessel accounted in year t

The average cargo carried per call is calculated using the total cargo volume either load or unload. This calculation will show the volume of cargo carried by a vessel in each port call. It will determine the economical ship size for the sector at specific year because the average cargo transported in each port call also reflect the transport demand from the region that served by people's shipping.

Equation 2. Average Cargo Carried per Call

$$Average\ Cargo\ Carried^{t} = \frac{total\ load^{t}}{number\ of\ call^{t}}$$

Where:

- Total load ^{t} : Total volume of cargo outbound (load) from the port in year t

The number of trip is calculated using the load factor of the vessel. The load factor percentage is determined by the cargo filling level for the heaviest link. The fleet operation

from the selected ports are considered as the heaviest link due to its characteristic as the important ports in people's shipping sector.

Equation 3. Number of Trip Produced

$$Number\ of\ Trip^{t} = \frac{average\ cargo\ carried^{t}}{average\ GT^{t}\ x\ load\ factor}$$

Where:

- Load factor : The load factor of the vessel based on the heaviest link
- Average Cargo Carried ^{y} : Average cargo carried by the sector in year t

Second, the total cargo carried by the whole people's shipping sector is a sum of either load or unload volume of the selected ports. Then, the calculation of average GT, average cargo carried per call and number of trip produced are conducted using similar formulas as mentioned in cargo calculation of selected ports.

4.3. The Developments Over Time of People's Shipping

This sub chapter will analyse the development of people's shipping overtime. The data gathered from several kinds of the literature of people's shipping started from the study of people's shipping by Dick (1986) and Veldman (1990) to the study by Jinca (2001), Karana (2003), Report of Tanjung Perak 2011-2016 (2017), Report of Sunda Kelapa Kalibaru port 2008-2016 (2017) and the study of Paotere Makassar port by Prattyni (2016).

The analysis consists of average cargo carried yearly by a vessel[3], a number of trips produced by the sector and the total employment from the shipping and port side. The formulas used in this part are similar to the equations from the cargo traffic analysis. It will result in the historical development trend of the people's shipping sector which explained by the economic, political and significant changes to the people's shipping industry in particular year. The explanation will give an insight of the future of people's shipping.

4.4. Assessment of Economic Importance

4.4.1. Shipping Revenues

From the economic point of view of the government, the financial support to the people's shipping sector must be beneficial. The benefit of the investment will come from the total revenues of the people's shipping sector, total employment of the people's shipping, the income of ship crews and stevedoring and the risk rate compare to other domestic

[3] The approach to acquire the average cargo carried by vessel yearly is different to the cargo carried calculation analysis in section 4.2 which use the port call data. This section used the total cargo transported and the fleet quantity to make the development over time analysis comparable per selected year.

shipping. In addition, there are two steps for revenue calculation. First, the analysis of the cost structure in people's shipping. A freight rate bears the cost of ship operation and operation of non-ship plus the profit margin. Second, the total revenue of the sector will be calculated based on the total cargo carried by people's shipping in a particular year. The output will be a total revenue generated by people's shipping using average freight rate. The formula is as follow:

Equation 4. Total Revenue of The Sector

$$\textit{Total Revenue} = total\ cargo\ carried\ by\ sector^{t}\ x\ \ average\ freight\ rate^{x}$$

Where:

- Total cargo carried by sector ^{t} : Cargo carried by people's shipping in year t
- Freight rate ^{x} : Average freight rate from selected route

The average freight rate will be acquired from the sample of freight rates from several major routes which collected from secondary and primary sources. The most important route is from south to north of Indonesia which connects the Java and Sulawesi to Sumatera and Kalimantan. One freight rate will be chosen as a representation of average freight rate under some assumptions. The freight rates from various sources need to be corrected to 2014 as base year of calculation. The price after inflation correction is calculated using the inflation rate as shown at Appendix 2.

4.4.2. Port Revenues

The revenue of port concerns income from anchorage dues, berth dues and wharfage dues. The people's shipping does not need an assistance either from the pilotage and tugs service due to the small ship size. The first formula is the anchorage revenue as shown below:

Equation 5. Anchorage Revenue

$$\textit{Anchorage revenue}^{t} = Anchorage\ dues\ x\ \ total\ GT^{t}\ x\ average\ anchorage\ duration^{t}$$

Where:

- Total GT ^{t} : Total GT of vessel call in year t
- Average anchorage duration ^{t} : Average vessel spends in anchorage (one day)

This formula using the average anchoring duration of a vessel while waiting for berth space to unload/load its cargo. However, since the ship berthing in sideway position, it only needs a small space for berthing operation. The berthing area can handle many ships at the same time. It leads to the assumption that most of the fleet does not need a long anchorage time. Therefore, one day is taken as average anchorage time. Next, the berthing time is obtained from the average port time in sample port which is 19 days as

shown in the Appendix 9 and subtracted by the average anchorage time (one day). So, the berthing time is 18 days. The formula for berth revenue is as follow:

Equation 6. Berth Revenue

$$Berth\ revenue^{\ t} = Berth\ dues\ x\ total\ GT^{\ t}\ x\ average\ berth\ duration^{\ t}$$

Where:

- Total GT ^{y} : Total GT of vessel call in year t
- Average berth duration ^{y} : Average vessel spends in berth area (18 days)

Moreover, the wharfage dues paid by a vessel once for each call. The vessel pays the wharfage dues for a space that they used in cargo handling operation. The cargo could unload/load directly from the warehouse near the wharfage area or truck using the crane and stevedoring assistance.

Equation 7. Wharfage Revenue

$$Wharfage\ revenue^{\ t} = Wharfage\ dues\ x\ total\ GT^{\ t}$$

Where:

- Total GT ^{y} : Total GT of vessel call in year t

4.4.3. Employment

The employment analysis divided into two types, the employment in the shipping side and the port side (cargo handling activity). The employment in the shipping side will be calculated based on the vessel quantity times the crew requirement of each vessel size. The crew requirement is determined using the study of people's shipping by (Romadhoni, 2013) and (Prasetyo, 2017) and the detail cases of people' shipping (*PELRA)* in 2014 as shown in Appendix 8. The number of vessel size in each size category calculated using the ratio of vessel size from 50 samples of ship under the People's Shipping Union Branch (DPC *PELRA*) Kalimas as shown in the Appendix 1. The formula is as follow:

Equation 8. Employment of Ship Side

$$Employment\ at\ ship = (total\ number\ of\ vessel_{SML}\ x\ number\ of\ crew_{SML})$$

Where:

- Total number of vessel $_{SML}$: Total number of small, medium and large vessel
- Number of ship crews $_{SML}$: Number of crews for small, medium and large vessel

Moreover, the port area employment measured by the total fleet times the handling worker requirements for each ship size. The handling operation determined that each

ship needs at least one gang of stevedore (handling worker). A big gang (group) is consist of 15 employees; the medium gang has 12 people; a small gang composed of 8 workers.

Equation 9. Employment of Port Side

$$\textit{Employment at port} = (total\ number\ of\ vessel_{SML}\ x\ number\ of\ stevedore_{SML})$$

Where:

- Total number of vessel $_{SML}$: Total number of small, medium and large vessel
- Number of stevedore $_{SML}$: Total of stevedore for small, medium and large vessel

4.4.4. Income of Ship Crews and Stevedore

The revenue of shipping crew uses the data of total monthly crew salary based on the ship size category. The ship crew salary calculated under an assumption that the company will give a fixed salary per month for its crew as shown in the Appendix 5. Even though some of the people's shipping companies use a one-third scheme for profit sharing, the company still pays the crew with a monthly fix salary depending on job position. The company will give an extra incentive if the profit exceeds the expectation; around 5-10 percent of the base salary (Triantoro, 2015). The formula is as follow:

Equation 10. Ship Crew Income

$$\textit{Crew Income} = (total\ number\ of\ vessel_{SML}\ x\ \ total\ crew\ salary\ of\ vessel_{SML}\ x\ 12)$$

Where:

- Total number of vessel $_{SML}$: Total number of small, medium and large vessel
- Crew salary of vessel $_{SML}$: Total monthly crew salary of small, medium and large vessel

Furthermore, the shipping expenses for stevedoring is equal to the income of stevedore sector from cargo handling of the ship. The income of stevedoring uses the cost of one gang (group) stevedore. The income is calculated by multiply the total fleet by the cost of one gang stevedore and times the average number of trip produced. Then, multiplying the result by two (2) which stands for both unloading and loading operation as shown in the Appendix 4.

Equation 11. Stevedoring Income

$$\textit{Stevedoring Income} = (total\ number\ of\ vessel_{SML}\ x\ \ cost\ of\ stevedoring_{SML}\ x\ n\frac{trip}{year}\ x\ 2)$$

Where:

- Total number of vessel $_{SML}$: Total number of small, medium and large vessel
- Cost of stevedoring $_{SML}$: Cost of stevedoring for small, medium and large Vessel
- n trip per year : Average number of trip per year

4.4.5. Risk Comparison Analysis of People's Shipping

The people's shipping risk analysis will focus on the number of accident concerning people's shipping fleet. The study of mitigation risk analysis by Prasetyo (2017) states that the people's shipping has higher insurance value per GT compared to other domestic shipping (Prasetyo, 2017). Nonetheless, this risk analysis will focus on the loss percentage analysis of each domestic maritime transport sector such as people's shipping, conventional domestic cargo shipping and domestic container shipping. The result is the comparison of the number of vessels damaged and the human casualties to the total fleet of each sector. Also, the relation of cargo carried volume per year to the number of the accident will be assessed. It will give the figure of vessel loss rate to cargo volume carried per sector.

Chapter 5 Data Analysis and Result

This chapter presents the result of SWOT analysis, cargo carried analysis, the development overtime analysis, and the economic importance assessment of people's shipping industry. It will answer the main research question of this thesis about "What is the economic importance of the people's shipping (PELRA) in Indonesia?".

5.1. SWOT Analysis of People's Shipping

The first step of the SWOT analysis in people's shipping is to determine and list the internal and external factors. The list will show all the factors that influence the development of the people's shipping sector. The internal factors consist of the strengths and weakness of people's shipping. Then, external factors include the opportunities and threats to the sector from external sources.

After analysing the role, operation, and regulation of people's shipping, the significant findings in terms of internal strengths are economical operation and operational flexibility. The low cost, market size, and flexibility are the advantages of the people's shipping players, while the low price per ton is a benefit for the customer. Moreover, the most important point in the list of weakness are the safety standard issues, less well-trained crews, and workers' requirements in both shipping and handling operations. Unfortunately, from the customer perspective, the fleet spends a great deal of time in port, which results in uncertain schedules.

On the other hand, the key opportunities for people's shipping are the new technical standards. There is also a problem with the enforcement of the regulation of the flag state, such as docking schedules for non-conventional vessels (Sea Transportation (Dirjen Hubla), 2014). The results are presented in a matrix below:

Table 6. SWOT Analysis

INTERNAL STRENGTHS	INTERNAL WEAKNESSES
• Low transport price per ton • Capable of operating in low draft areas • No restrictions on operation area • Simple cargo handling operation • Small cargo capacity that fits the demand and market size	• Lack of safety standards • Fleet spend a lot of time in port • Less well-trained crews • Involves many workers in both shipping and handling operation

EXTERNAL OPPORTUNITIES	EXTERNAL THREATS
• Non-conventional vessel standard (NCVS) for Indonesia flagged vessel • Government plans to include people's shipping in hub and spoke operation • Subsidies for diesel fuel • Additional ship investment from the government to the local shipyards	• Competition with conventional general cargo vessels • Small container ship service (150 TEU) in pioneer route (Sea-Toll) • Scarcity of timber as the primary raw material for new building ship • Enforcement of flag state regulations • Society demands more sophisticated and safe transport

The results show that both the strengths and weaknesses of people's shipping have been traditionally attached for decades. The main difference is that people's shipping serves small markets for the transportation of goods. The size of the sector has tended to decline over the years as the result of decreasing demand due to poor safety and fierce competition. However, this is also a strength for people's shipping because the small demands mainly originate from either isolated areas or excess demand from conventional domestic shipping. The isolated areas have a small market size and infrastructure restrictions, while excess demand provides small volumes of cargo that can only be served economically by people's shipping. The word 'economical' means that the cargo capacity of the vessel fits the demand size.

On the other hand, the people's shipping (*PELRA)* industry faces a variety of threats. The common threats are its competitors, conventional cargo, and container shipping. The fierce competition from conventional cargo shipping will last longer since general cargo vessels can satisfy the consumer need for safe sea transport. The Indonesian government established a small container service (feeder) to connect the islands of East Nusa Tenggara, Maluku, and Sulawesi as part of the Sea-Toll programme in 2017.[4] This will significantly eliminate the role of people's shipping in the eastern region, which will turn the south–north routes of people's shipping into the primary route. The industry also faces problems from the sources of wood materials for the shipbuilding industry. This slows the growth of the sector since the wood traditionally used is becoming rare and costly.

The opportunities mainly originate from the government side. The diesel fuel subsidy is the old way of the government keeping the engine of the industry running. It aims to maintain low voyage costs and low prices per ton of cargo. It seems that the fuel subsidy is a short-term plan by the government because the main problems are the reduction of demand and the safety issues. Therefore, the government's new plan to cope with the

[4] A study of small container services by Adiliya (2017), *Analysing Integrated Maritime Transportation Systems: The Case of the Port of Tenau Kupang as a Potential Transshipment Port for South-East Indonesia*. Rotterdam: MEL–Erasmus University.

safety issues is to establish technical regulation for non-conventional vessel (NCVS) for new shipbuilding and wooden vessel dedicated shipyards. This plan is combined with the Indonesian Ministry of Transportation's plan to invest 100 people's shipping vessels in 2017 (Transportation Indonesia, 2017). This will benefit both dedicated shipyards and the *PELRA* industry. Nonetheless, there may be industry confusion regarding who will operate these vessels. The NCVS will have an adverse economic effect on the people's shipping sector in the long term since the well-standardised vessel is costly, resulting in a high transport price per ton of cargo, even though the safety standards will be improved significantly at the same time. It seems that the government is trying to pull the people's shipping sector into the formal sector. The best chance for people's shipping is to operate as a hub and spoke service. The main hubs are the ports that are located in the regions where the primary commodities (mainly essential goods) of people's shipping are produced. These ports also operate as the main hub of international and domestic shipping. This will provide a market for the people's shipping sector since the possibility of excess demand is larger in these ports.

5.2. The Cargo Carried Analysis

The total cargo carried by the people's shipping sector is calculated using the throughput data from certain ports in Indonesia. Unfortunately, the lack of data regarding the cargo movement of the people's shipping sector is an obstacle. Therefore, the total cargo volume will be assessed based on the assumptions that the data available from the cargo throughput reports of Sunda Kelapa, Kalimas, and Paotere Makassar port can be used to represent the cargo volume movement of the whole of the people's shipping sector. The assumptions are the port classification, the production area of the main commodities, and port origin and destination.

5.2.1. The Classification of Ports

The people's shipping industry does not recognise the classification of ports. People's shipping serves a small volume from the excess demand of conventional shipping. It also operates as a feeder for the smaller ports. The demand for transporting goods relates to the production level of an area. The GDP represents the goods and services produced within a country in each period. It measures the production level of the country in monetary value.

While the original term GDP uses the scope of the country as a whole, gross regional domestic product (GRDP) presents the production of goods and services at the region/province level. Indonesia has 33 provinces. Therefore, we measure the significance of the ports of Sunda Kelapa in DKI Jakarta, Kalimas Surabaya in East Java, and Paotere Makassar in South Sulawesi using the GRDP. However, the port of Sunda Kelapa serves not only the DKI Jakarta region but also the West Java region.

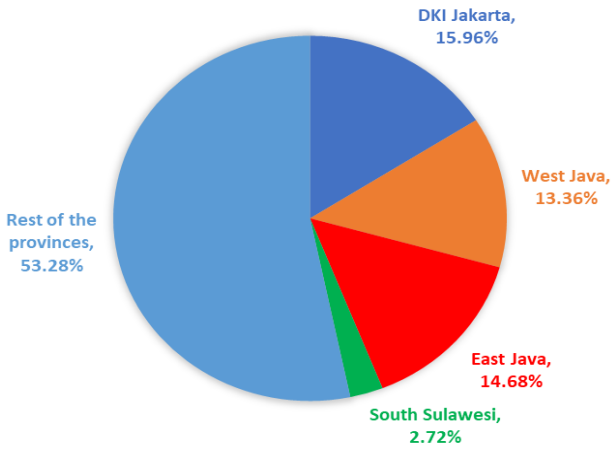

Figure 14. Share of Gross Regional Domestic Product (GRDP)
Source: *author adapted from* BPS (2015)

According to the GRDP statistics from the BPS (2015), the four provinces accounted for a total share of 46.72 percent, which is nearly half of the total GRDP from all provinces in Indonesia. The DKI Jakarta region has the biggest share, with 15.96 percent, followed by other areas of Java island. South Sulawesi's share of GRDP is 2.72 percent, but it is still positioned as having the biggest share in the eastern region of Indonesia because of the major industrial area located in South Sulawesi and products transported via Makassar port, especially in the cement industry. The cement industry in South Sulawesi serves the demand from Indonesia's eastern region market.

On the other hand, the amount of goods outflow from those three ports is significantly larger than the cargo inflow. According to the report from Sunda Kelapa port for 2014, the cargo unloads volume accounted for 83,985 tons, while the load volume was 562,564 tons (Sunda Kelapa , 2016). The reports from other ports such as Kalimas and Paotere Makassar port also show similar trends; the cargo load volume is three times larger than the cargo unload volume (Kalimas, 2015) (Prattyni, 2016).

The percentage of the GRDP share and the trend of the throughput volume shows the importance of port location since these three dedicated ports are positioned in major production areas. Thus, these ports are classified as major ports for the people's shipping sector.

5.2.2. Production Area of The Main Commodities

According to the reports from the ports of Sunda Kelapa, Kalimas, and Paotere Makassar, the primary products of the people's shipping sector are kaolin, quartz sand, fertiliser, cement, sugar, flour, rice, and livestock feed. There is a study about the main economic activities or production based on the economic corridors by the Ministry of Coordinating Economic Affairs under the Masterplan of Acceleration and Expansion of Indonesia

Economic Development 2011–2025 (MP3EI). The report examines the economic strength and potential of Indonesia according to the corridors. The data combines the main producers of rice and maize. Table 5 shows that most people's shipping commodities are produced in Java and Sulawesi. Only timber[5], as an important cargo, is produced in Kalimantan. It can be concluded that the production sources of the primary commodities in the people's shipping sector originate in Java and Sulawesi. This means that the selected ports can be used to represent the whole of the people's shipping sector.

Table 7. Mapping of Main Economic Activities

Main Economic Activity	Sumatra	Java	Kalimantan	Sulawesi	Bali-Nusa Tenggara	Papua - Maluku
Steel	●		●			
Food and Beverages		●				
Rice and Maize	●			●		
Textile		●	●			
Transport Equipment		●	●			
Shipping		●				
Animal Husbandry					●	
Food Agriculture				●		●
Timber			●			
Cocoa				●		

Source: *Author adopted from* Economic Affairs (2011) *and* Investments (2017)

5.2.3. Port Origin and Destination

The decision of using three major ports of people's shipping, Sunda Kelapa, Kalimas and Paotere Makassar, to calculate national cargo carried volume may result in the double counting of throughput. However, the data of port origin and port destination are needed to avoid the possibility of vessel sails between these three ports and double counting in cargo throughput.

The list of port origin and destination on Kalimas port are recorded from 2009 to 2013 as shown in figure 15. The data is sufficient enough to check the ship call between those three ports. The figure 14 indicates that the main destination of the vessel from Kalimas port are Banjarmasin, Waingapu/Bima, and Sampit. The Banjarmasin port accounted total more than a thousand calls from Kalimas port. Mostly, the vessel from Kalimas went to the eastern region of Indonesia and served several ports there. The list also mentions that no ship went to Sunda Kelapa and Paotere Makassar port.

[5] Since the barge fleet provides better transportation options, the quantity of timber carried by the people's shipping fleet is considerably reduced.

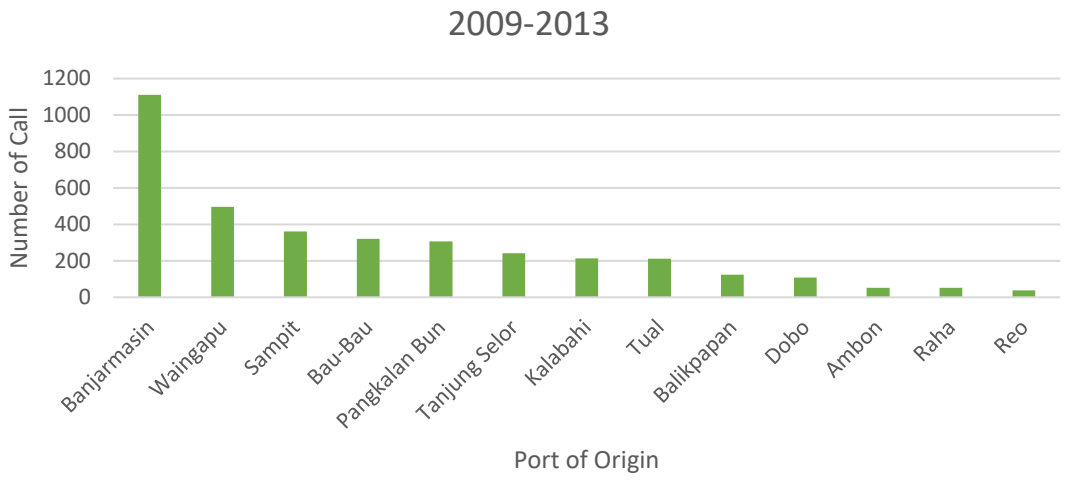

Figure 15. Port of Destination List of Kalimas port for 2009-2013
Source: *author adopted from* Perak 2014

Furthermore, the port of origin also shows the similar trend with the port of destination data. The vessel from Banjarmasin, Waingapu/Bima, and Sampit dominated the number of call in Kalimas port. The list also presents that there was no ship came from both Sunda Kelapa and Paotere Makassar port. Nonetheless, since the data only gives top ten list, there is a possibility that some ships made a voyage between those three ports. However, the number will be small.

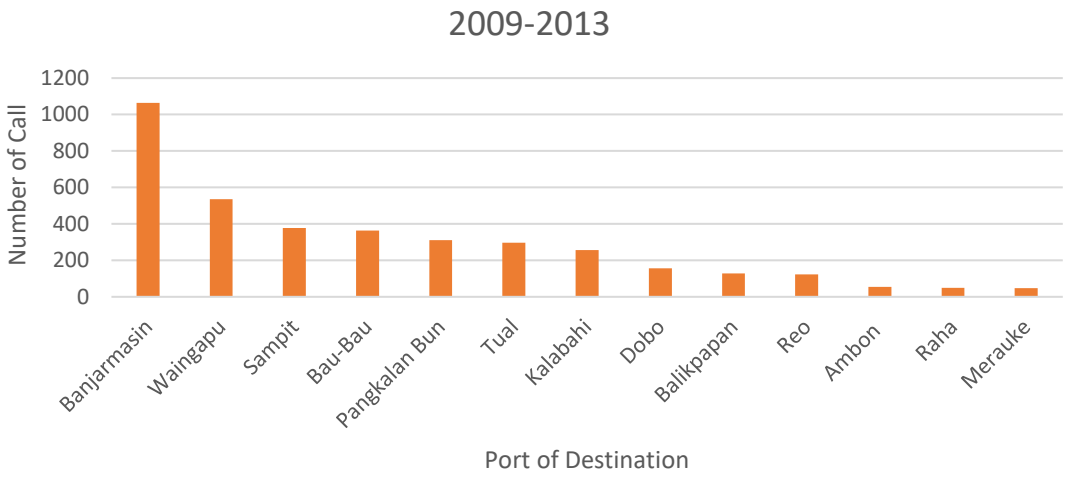

Figure 16. Port of Origin List of Kalimas port for 2009-2013
Source: *author adopted from* Perak (2014)

5.2.4. Cargo Calculation for Three Major Ports

The The data for input is the number of the calls, the total GT of the vessel, and the unload and load volume for the port. The data provides a cargo traffic report from 2011–2014. The year 2014 was chosen to represent the latest data available for the three ports. The cargo calculation uses the load factor of 90 percent ship capacity for the heaviest link. The reason for this is that the tramper shipping only sails if the ship's cargo bay is full and profitable enough; but, this is still considered a declining trend. The cargo carried per call calculation uses the cargo load volume as the base calculation since a vessel only carries either unload cargo or load cargo.

Table 8. Sunda Kelapa Cargo Calculation

Sunda Kelapa Port	**Unit**	**2011**	**2012**	**2013**	**2014**
Load Factor (the heaviest link)	%	90.00 %	90.00 %	90.00 %	90.00 %
Number of call	Ship	1,821	1,815	1,510	1,278
Total GT of the vessel	GT	395,200	405,294	327,074	286,306
Unload volume	Ton	36,460	46,530	60,537	83,985
Load volume	Ton	738,278	784,299	683,577	562,564
Total	Ton	774,738	830,829	744,114	646,549
Average Vessel GT per call	GT	217	223	217	224
Average cargo carried by a vessel per year (load)	ton/ship	405	432	453	440
Number of trips yearly	trip/year	2.08	2.15	2.32	2.18
Number of trips (round up)	trip/year	3	3	3	3

Source: Author own calculation with data from Sunda Kelapa Kalibaru (2017)

Surprisingly, ship calls fell considerably, but the amount of cargo loaded by the sector remained significant. The results show that the trips produced by people's shipping total three voyages per year. It seems that the people's shipping fleet in Sunda Kelapa port consists of large vessels with a size range of 200–300 GT. Unfortunately, the large vessel has an adverse effect on the people's shipping players in this port. It also means that the people's shipping sector is not productive due to the insufficient size of the vessel. The average size of a vessel (GT) is too large compared to the average cargo carried by the ship per year. Three trips per year is a small number, because the fleet will spend most of its time in the port.

According to the results from Kalimas, the number of calls shows significant changes. Ship calls reduced to half in 2013. However, cargo throughput remained the same during 2011–2014. The reduction in the number of calls is likely to be a result of a decrease in

the people's shipping (*PELRA*) fleet due to fierce competition or inefficient management. Moreover, the average vessel's GT per call at Kalimas, at 120–135 GT, is smaller compared to the vessel size at Sunda Kelapa. This produces the outcome that the average cargo carried by ship per year has increased significantly at Kalimas port since 2013. The *PELRA* fleet at Kalimas port accounted for an average of nine trips per year in 2014.

Furthermore, based on the data on ship calls in 2014, the average time spent in port by people's shipping vessels was 19 days (Kalimas, 2014). This long duration is a result of the declining demand for transporting goods via *PELRA.* The combination of the time a vessel spends at Kalimas port and the trip produced has resulted in people's shipping in this port becoming very competitive and productive.

Table 9. Kalimas Surabaya Cargo Calculation

Kalimas Surabaya Port	**Unit**	**2011**	**2012**	**2013**	**2014**
Load factor (the heaviest link)	%	90.00 %	90.00 %	90.00 %	90.00 %
Number of call	Ship	878	1,018	664	565
Total GT of the vessel	GT	118,912	134,257	83,849	70,947
Unload volume	Ton	140,043	132,167	119,529	163,401
Load volume	Ton	527,820	562,040	522,751	517,784
Total	Ton	667,863	694,207	642,280	681,185
Average vessel GT per call	GT	135	132	126	126
Average cargo carried by a vessel per year (Load)	ton/ship	601	552	787	916
Number of trips yearly	trip/year	4.93	4.65	6.93	8.11
Number of trips (round up)	trip/year	5	5	7	9

Source: Author own calculation with data from Port of Tanjung Perak (2017)

Another port, Paotere Makassar, presents a declined call number while the average vessel size per call increased has upward trend over the last four years, 2011–2014. This means that the *PELRA* fleet at this port produces a smaller number of trips per year.

Table 10. Paotere Makassar Cargo Calculation

Paotere Makassar Port	**Unit**	**2011**	**2012**	**2013**	**2014**
Load factor (the heaviest link)	%	90.00 %	90.00 %	90.00 %	90.00 %
Number of call	Ship	1,631	1,392	1,272	1,138
Total GT of the vessel	GT	201,946	203,770	181,178	183,781

Paotere Makassar Port	Unit	2011	2012	2013	2014
Unload volume	Ton	105,222	77,550	65,181	79,497
Load volume	Ton	362,039	308,441	277,186	262,574
Total	Ton	467,261	385,991	342,367	342,071
Average vessel GT per call	GT	124	146	142	161
Average cargo carried by a vessel per year (Load)	ton/ship	222	222	218	231
Number of trips yearly	trip/year	1.99	1.68	1.70	1.59
Number of trips (round up)	trip/year	2	2	2	2

Source: Author own calculation with data from Prattyni (2016)

The number of trips per year produced in this sector was two for Paotere port. This figure is considerably smaller than the result for Sunda Kelapa port. Nonetheless, since cargo movement in Paotere is less than in Sunda Kelapa, the result is reasonable. Since people's shipping at both ports produced fewer trips than for Kalimas, the size of the sector will continue the decrease at these ports.

5.2.5. Cargo Calculation at National Level

The cargo calculation for the whole sector will use the assumption that Sunda Kelapa, Kalimas, and Paotere ports represent the people's shipping industry and the remaining ports are smaller compared to these. The region of the three major ports and its hinterland represent a 46.72 percent share of national GDP and the production area of the primary commodities.

Table 11. People's Shipping Cargo Calculation

People's Shipping Sector	Unit	2011	2012	2013	2014
National fleet	Ship	1,314	1,329	1,340	1,357
Load factor (the heaviest link)	%	90.00 %	90.00 %	90.00 %	90.00 %
Number of call	Ship	4,330	4,225	3,446	2,981
Total GT of the vessel	GT	716,058	743,321	592,101	541,034
Unload	Ton	281,725	256,247	245,247	326,883
Load	Ton	1,628,137	1,654,780	1,483,514	1,342,922
Total	Ton	1,909,862	1,911,027	1,728,761	1,669,805

People's Shipping Sector	Unit	2011	2012	2013	2014
Average vessel GT per call	GT	165	176	172	181
Average cargo carried by a vessel per year (load)	ton/ship	376	392	431	450
Number of trips yearly	trip/year	2.53	2.47	2.78	2.76
Number of trips (round up)	trip/year	3	3	3	3

Source: Author own calculation

The data shows that the total number of ships in the fleet has remained unchanged for the past four years. The cargo calculation at the national level shows an impressive result, with the average vessel GT per call at 181 GT and the average cargo carried by ship per year at 450 tons in 2014. This indicates that the majority of the people's shipping fleet does not produce enough trips per year. This leads to the conclusion that the people's shipping sector did not become productive enough in the period 2011–2014. Also, the average vessel GT per call proves that the size of ship mainly ranges between 100–300GT. Operating a larger vessel will be costly if the transport demand is not profitable for the company. The best size of ship is around 100–150 GT, which will produce an average of four trips per year if the volume of cargo traffic remains the same in the future.

5.3. Developments Over Time in People's Shipping

Table 12 shows how the people's shipping industry has developed over the decades. The data on the sector was collected from several types of literature. The average vessel size* (GT) is included under the characteristic of the fleet size as explained by the literature from a particular year. In addition, employment is calculated using the ship crew and stevedoring requirement for each vessel size. The calculation of the average cargo carried by ship per year is the result of the total cargo load divided by the number of ships in the fleet.

Table 12. Development in Time of People's Shipping

		Veldman (1990) and Dick (1986)	*Karana (2003) and Jinca (2001)*	*Karana (2003) and Jinca (2001)*	*Author Elaboration*
		1984	**1996**	**2000**	**2014**
Data	**Unit**				
Total fleet	Ship	4,759	2,793	3,000	1,354
Total GT of the vessel	GT	-	-	-	541,034
Total cargo carried load (per 1000 ton)	Ton	4,639	8,327	7,106	1,343
Total number of call	Ship	-	-	4,330	2,981

		Veldman (1990) and Dick (1986)	*Karana (2003) and Jinca (2001)*	*Karana (2003) and Jinca (2001)*	*Author Elaboration*
		1984	**1996**	**2000**	**2014**
Cargo					
Average cargo carried by a vessel yearly	Ton	975	2,981	2,369	992
Characteristic of the fleet	GT	< 175 GT	70 % > 200 GT	70 % > 200 GT	20-500 GT
Average vessel GT *	GT	100	200	200	300
Number of trips	trip/year	9.7	14.9	11.8	3.3
Number of trips (round up)	trip/year	10	15.0	12.0	4.0
Employment					
Stevedoring requirements **	Worker	8	15	15	15
Employment port side	Worker	38,072	41,895	45,000	20,310
Ship crew requirements ***	Person	8	12	12	12
Employment shipping side	Person	38,072	33,516	36,000	16,248

Source: Author calculation with data and assumptions adopted from Dick (1986), Veldman (1990), Jinca (2001) *and* Karana (2003)

**= 8 workers for 20-100 GT, 12 workers for 100-200 GT, 15 workers for 200-300 GT
***= 8 workers for 20-100 GT, 10 workers for 100-200 GT, 12 workers for 200-300 GT

The development analysis starts from 1984, when motorisation was developed and changed the shape of the sector. The traditional sailing boat was replaced by the motorised sailing boat. This had an effect on the operational side whereby the number of crew members reduced and ships were no longer dependent on the monsoon or wind season. In 1984, there were two players operating small cargo vessels: people's shipping and local shipping. The local shipping operated a larger wooden vessel under a limited route managed by the government. The cargo volume carried by the local shipping sector was 1.76 million ton while the people's shipping had 2,87 million ton. These two sectors were often competing due to overlapping operation areas especially in dense route such as Kalimantan, Sulawesi and Sumatera (Veldman, 1990). The analysis included both of the people's shipping and Local shipping because these sectors started to combine during its development period.

According to the research by Dick (1986) and Veldman (1990), the people's shipping sector accounted of a cargo carried volume of over 4.63 million ton in 1984. The fleet of

people's shipping consisted of a motor boat, sailing motor boat, and a small boat with size less than 175 GT (Veldman, 1990) and (Dick, 1986). The average vessel GT in 1984 justified by 100GT[6] due to the variety size of the ship in this period. The average cargo carried per ship yearly combined with the average vessel GT shows that *PELRA* was a productive sector. The results were eight voyages per ship per year, producing employment for 76,144 people on both the shipping and port sides of the business. The number of people employed was related to the vessel size and the number ships in the fleet. The employment rate on the port side will be higher if the number of vessels increases.

The data for 1996 shows that the sector saw peak performance with the total cargo carried reaching more than eight million tons, and the quantity of ships reduced to 2,793, with an average vessel size of more than 200GT. A study on people's shipping by Karana (2003) indicates that the peak condition was a result of the high demand for the transportation of raw materials such as timber. Also, the people's shipping fleet was larger compared to other domestic shipping fleets (Karana, 2003). The flexibility and low cost made people's shipping a very popular sector. Another study by Jinca (2001) emphasises that the sector saw peak popularity in 2001 with a total share of national inter-island trade of 16–24 percent, while 70 percent of vessels were larger than 200GT. The peak trend led to 15 voyages per vessel per year, and the number of people employed was 75,411. The employment rate eventually reduced because the fleet size had decreased by 1996 declined compared to 1884.

The *PELRA* sector in 2000 saw a declining trend. The number of vessels increased to 3,000, but the amount of cargo transported decreased significantly. There are some possible reasons for this. First, the replacement of the president in Indonesia in 1998 led to a massive economic crisis and mass protests across the country. This impacted on the sea transportation industry, either directly or indirectly. Second, the revitalisation of the shipping industry after the crisis also had an effect. The shipping industry became more competitive since a lot of investment was aimed at the conventional shipping market, and the *PELRA* sector faced fierce competition from conventional vessels. The industry produced fewer trips per year than in 1996 but created more employment due to the increasing in the number of ships. However, the benefits of increased employment did not last long because the cargo capacity in GT was higher than the volume cargo carried per year. This resulted in a decrease in the size of the people's shipping industry.

In 2014, the size of the people's shipping fleet was halved, while the total volume carried was only one-fifth of the volume cargo in 2000. The result was people's shipping produced fewer trips per year, which was not profitable for the companies. The average vessel size varied from 20GT to 500GT because some of the large wooden ships from the local shipping sector blended into the people's shipping sector. In the past, these sectors had been separated due to their different roles in transporting goods; then, they combined. The fierce competition that resulted in reduction in the size of the industry

[6] the characteristic of the fleet size (<175GT) as explained by Dick (1986) and Veldman (1990)

might the most likely reason. It created confusion regarding the vessel size limitation in the domestic shipping sector.

5.4. The Analysis of Economic Importance

This sub-chapter analyses the contribution of the people's shipping industry. It will present the results of the calculations of revenue, employment, income of both ship crews and stevedores and risk analysis using the latest data from 2014.

5.4.1. Shipping Revenues

The freight rate of people's shipping bears the operational expenditures plus the profit of the shipping company. Operational expenses are divided into two parts: operational ship cost and the operational non-ship cost. A sample 500GT vessel carrying cement commodities on the route between Sunda Kelapa and Palembang from the study by Triantoro (2015) is used to find the percentage of the contribution per cost item. The operational ship cost consists of fuel costs, lubricating oil costs, and crew provision costs, while maintenance includes paint, parts, and additional service cost. These costs amount to 44 percent of the gross revenue of a 500GT vessel for one trip, as shown in Appendix 3. Port dues account for a tiny percentage because these are low in the people's shipping sector. Moreover, the operational non-ship cost includes office staff salary, ship crew's salary, office costs (administration, communication, energy), certification costs, and docking costs. These costs amount to 54 percent of the gross revenue of the vessel. The majority of expenses are accounted for by the ship crew's salary and docking costs. The flag state obliges every non-conventional vessel to dock once a year (Sea Transportation (Dirjen Hubla), 2014).

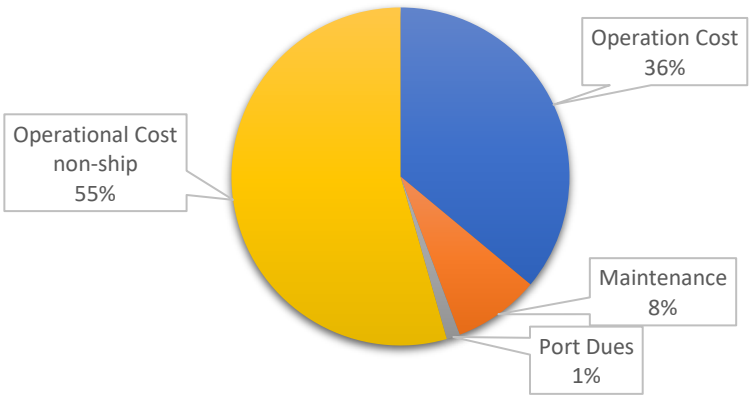

Figure 17. The Percentage of Cost Structure
Source: *Author's calculation with data adopted from* Triantoro (2015)

Figure 16 shows that the operational non-ship costs account for a large proportion of the gross revenue per round trip in people's shipping. The reason for this is that the crew's

salary and docking costs account for significant expenses. Docking costs are separate from maintenance costs because these unconventional vessels must dock once a year, while maintenance costs occur during voyages. However, it is doubtful that maintenance costs account for a significant amount. Practically, companies tend to reduce maintenance costs as the control from the flag state is still weak. It is likely that the company determines the freight rate based mainly on the voyage cost, and they can manage non-ship operation expenses to obtain more profit.

Table 13 shows samples of freight rates from major routes in the people's shipping industry. The most important routes are the south–north routes* that connect Java to Kalimantan and Sumatera, as shown in Figure 14. The importance of the east–west route that is dominated by the ports in East and West Nusa Tenggara is reduced because the east–west route faces new competition from the small container vessel service (Sea-Toll programme). It serves the same ports in the southern area of eastern Indonesia. Further detail of the freight rate samples is given in Appendix.2.

Table 13. List Freight Rate from Major Routes

Route	Freight Rate (USD per Ton) (2014)	Distance (nm)
Sunda Kelapa - Makassar	$94.7	785 nm
	$94.7	
	$138.1	
Sunda Kelapa - Kalimas	$73.0	388 nm
	$78.9	
	$134.1	
Sunda Kelapa - Palembang*	$13.0	340 nm
Kalimas - Sorong	$157.8	1816 nm
	$159.8	
Kalimas - Balikpapan*	$81.3	
Kalimas - Sampit*	$44.7	360 nm
	$61.0	360 nm
Kalimas - Tanjung Selor	$243.9	
Kalimas - Banjarmasin*	$36.6	273 nm
Makassar - Kalimas	$71.0	443 nm
	$78.9	
	$157.8	
Makassar - Sunda Kelapa	$110.5	785 nm
	$129.4	
	$130.2	
Sorong - Kalimas	$143.6	1816 nm
	$149.9	

Route	Freight Rate (USD per Ton) (2014)	Distance (nm)
	$165.7	
Belawan - Kalimas	$86.8	1104 nm
	$142.0	
	$157.8	

Source: Author elaboration adopted from Triantoro (2015), Prasetyo (2017) *and author field survey*

The routes from Kalimas to Sampit and Banjarmasin are the busiest in the people's shipping sector, with almost 1,500 calls made during 2009–2013. The distance from Kalimas to Banjarmasin is 273 nautical miles, and from Kalimas to Sampit is 360 nautical miles. Therefore, the freight rate for Kalimas–Sampit is chosen to represent the average freight rate in the people's shipping sector. First, Kalimas–Sampit is one of the most important routes for people's shipping. The freight rate for a distance of 360 nautical miles covers the routes to the ports that are traditionally served by people's shipping fleet from the main hub ports such as Sunda Kelapa, Kalimas, and Paotere Makassar port. Figure 14 shows that a radius of 360 nautical miles from Kalimas port covers Pangkalan Bun, Banjarmasin, Sampit, and Waingapu. It covers Panjang, Palembang, Tanjung Pandan, and Belinju from Sunda Kelapa port. It also covers most of the ports in Sulawesi, East Kalimantan, and East Nusa Tenggara from Makassar port.

Figure 18. The Radius Coverage of Selected Freight Rate

Source: Author Elaboration via (Maps, 2017)

The gross revenue of the sector in 2014 is calculated by multiplying the total volume of cargo carried by the freight rate of the Kalimas-Sampit route. The Kalimas-Sampit freight rate represents the average radius operation coverage of the people's shipping fleet from the port of origin.

Table 14. People's Shipping Sector Revenue Calculations 2014

Shipping Gross Revenue	Average Freight Rate of Selected route	Total Cargo Carried (1000 ton)	Revenue (1000 USD)
People's Shipping	$52.8	1,343	$70,906
Port Revenue (1000 USD)	Anchorage dues	Berth dues	Wharfage dues
Sunda Kelapa	$2.3	$370	$42
Kalimas	$0.6	$92	$11
Paotere Makassar	$1.6	$238	$28
Total	$4.3	$701	$81
Total Port and Shipping Revenue (1000 USD)	**$71,693**		

Source: Author calculation with data adopted from Transportation (2015) *and* Lazuardy (2015)

The results of the revenue calculation show that the people's shipping sector created 70.9 million USD in 2014. The port side saw only a tiny contribution because the source of port revenue is only port dues. The unique characteristics of people shipping are one of the reasons of the small port revenue. The vessel operation in the port area does not require a pilot or tug service. The other reason is the handling operation conducted by the external stevedoring companies that provide handling workers. Another income source for the port is the warehousing rent fee. The income from warehousing is difficult to calculate because the rent terms can be different depending on the form of cooperation and port policy.

The GDP of Indonesia in 2014 was 890.81 billion USD (Economics, 2017). This includes the value of all domestic products and services in Indonesia. According to a report from the Indonesian Central Bureau of Statistics (BPS) for 2014, the sea transportation sector contributed a share of 0.25 percent to total GDP. This means that the GDP of sea transportation in 2014 was 2.22 billion USD. Therefore, the people's shipping sector contributed a share of 3.19 percent of GDP in the sea transportation sector in 2014. Moreover, the proportion of the sector to the whole shipping industry is somewhat small based on its contribution to the GDP of sea transportation. In 2014, the sector size was considerably smaller than its successful period in the 1990s. After the 1990s, people's shipping faced a difficult time due to fierce competition and poor-quality vessel standards compare to conventional vessels. In the early 21st century, the new government switched the economy from being Java-centred to the whole country. This resulted in the significant

economic growth on the big islands such as Sumatera, Kalimantan, and Sulawesi. It was followed by an increase in reliable, fast, and safe transport demand, which could not be satisfied by people's shipping. Hence, the small share of the industry in terms of sea transport GDP has been caused mainly by the decreasing size of the people's shipping sector.

5.4.2. Employment and Labour Income

The employment analysis is divided into two: shipping and port side. Employment is calculated using vessel size categories: small vessels (20–100GT), medium vessels (100–200GT), and large vessels (200–300GT) using a vessel size ratio from 50 samples of ships under the People's Shipping Union (DPC *PELRA*) of Kalimas, as shown in Appendix 1. The vessel size categories are applied to both shipping and port calculation.

Table 15. Employment and labour Income 2014

Shipping Side	**Vessel**	**Crew Requirement**	**Number of Crew**	**Crew Salary of a Vessel (monthly)**	**Income (1000 USD)**
Small Vessel	136	8	1,088	$896.9	$1,464
Medium Vessel	1,031	10	10,310	$1,121.1	$13,3870
Large Vessel	190	12	2,280	$1,300.5	$2,965
Total	1357		**13,678**		**$18,233**
Port Side	**Vessel**	**Stevedoring Requirement**	**Number of stevedore**	**Cost of One Gang Stevedoring (per Call)**	**Expenses (1000 USD)**
Small Vessel	136	8	1,088	$119.0	$129
Medium Vessel	1,031	12	12,372	$174.4	$1,438
Large Vessel	190	15	2,850	$215.9	$328
Total	1357		**16,310**		**$1,895**

Source: Author calculation with assumptions adopted from (Prasetyo, 2017)*,* (Cases Record of Indonesia Maritime Court, 2014) *and* (Romadhoni, 2013)

The results show that the shipping side created around 13,000 jobs while the port side generated 3,000 more workers. The total number of stevedore means the need of handling workers in cargo handling operation. Practically, since the vessel arrives in the port (port call) in different time, the same gang of stevedores could serve more than one vessel in different port call. The income of the ship crews and the shipping expenses for stevedoring contributed a share of 0.91 percent of GDP in the sea transportation sector in 2014. The cargo handling side According to a report from the BPS in August 2014, total employment in transportation, warehousing, and communication was 5.1 million workers (BPS, 2017). The people's shipping industry contributed 0.59 percent of workers to these sectors. The jobs created in the port area originated from cargo handling. The

handling operations of people's shipping need support from stevedoring due to the nature of cargo packaging (bags). Sometimes, the load/unload operation also uses additional shore cranes for heavy cargoes such as timber and logs, which is more expensive (Dick, 1975). These characteristics mean that people's shipping is a labour-intensive sector in the domestic shipping industry especially in the port side. The shipping side was traditionally also labour intensive because of the large crew numbers needed to operate the sailing vessels. However, the motorisation of the fleet reduced the crew requirement, but companies still often use ship crews to support cargo handling operations. Details on the ship crew requirements and salary are presented in Appendix 5.

On the other hand, the income calculation result indicates that shipping generates more value than the cargo handling sector. The result only shows the shipping expenses or sector income for the cargo handling workers. The shipping companies pay crews a fix month salary, while stevedoring is dependent on the number of trips produced by people's shipping. The fewer trips made by people's shipping per year, the less the total revenue.

Furthermore, it is difficult to calculate the exact income per stevedore. The total need of stevedore does not directly relate to the total expenses because a gang of stevedore could serve more than one vessel due to the different time of port call. The income of a stevedore is expected to be small but still reasonable if stevedoring is taken as part-time work. However, the stevedores are involved not only in the unloading and loading of cargo but also in the warehousing area where cargo is moved between the warehouse and the trucks. The income can be higher if the stevedores work overtime and during weekends. This can double their salary due to the expensive cost of overtime and weekend operation. For a major port such as Kalimas, where the majority of the people's shipping fleet produces an average of nine trips per year, the income of stevedore will be significantly higher than at other port that has only three or four trips per year. Further detail on stevedoring calculations is shown in Appendix 4.

5.4.3. Risk Comparison Analysis of People's Shipping

The risk of people's shipping is analysed using records from cases from the Indonesia maritime court, as shown in Appendix 7. The accident analysis explains the causes of accident and the results of both human casualties and ship losses for people's shipping, conventional general cargo, and domestic container shipping.

Table 16. Risk Comparison Analysis

	Unit	People's Shipping	General Cargo	Domestic Container
Total fleet	Ship	1,354	1,252	332
Number of accidents	Ship	5	16	5
Causes				
Grounded	Ship	0	5	0
Sink	Ship	1	3	1

	Unit	People's Shipping	General Cargo	Domestic Container
Collision	Ship		6	3
Fire	Ship			
Collision and sink	Ship	3	1	1
Fire and sink	Ship	1	1	0
Result:				
Human				
Human injury	Person	2	0	0
Human loss	Person	9	12	1
Ship				
Ship partial loss	Ship	0	7	3
Ship total loss	Ship	5	5	2
No damage	Ship	0	3	0
Percentage:				
Percentage of accident to total fleet	per cent	0.37%	1.28%	1.51%
Percentage of ship partial loss to number of accident	per cent	0.00%	43.75%	60.00%
Percentage of ship total loss to number of accident	per cent	100.00%	31.25%	40.00%
Percentage of no damage taken to number of accident	per cent	0.00%	18.75%	0.00 %

Source: Author calculation with data adopted from Cases Record of Indonesia Maritime Court (2014), Prasetyo (2017), Indonesia (BKI) (2014) *and* Transportation (2015)

Collisions with other vessels is one of the leading causes of accidents in people's shipping, resulting in the ship sinking or total losses in five cases. Accidents in 2014 saw nine human losses and two injuries. The poor quality of the ships and the lack of safety equipment could be the biggest factor. Accidents in general cargo shipping amount to 31.25 percent of total loses from 16 cases, which is a lower risk. Most accidents are caused by collisions and grounding. Grounding cases rarely causes significant damage to the vessel. Domestic container shipping also accounted for a slightly higher risk than general cargo due to the smaller size of the fleet compared to other shipping sectors.

Nevertheless, the percentage of accidents in the total fleet shows a contrary result. People's shipping carries less risk of accidents than other domestic shipping sectors. Conventional cargo shipping also accounts for a higher number of human casualties than people's shipping. The general cargo shipping sector consists of larger vessels that requires larger crew numbers, which might be the most likely reason.

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Table 17. Risk Rate per Cargo Carried

	Unit	People's Shipping	Domestic Shipping (Container, General Cargo, Tanker, Barge)
Total cargo carried (per 1000 ton)	Ton	1,342	407,209
Accidents:			
Number of ship total loss	Ship	5	11
Risk rate per ton Cargo carried (per 1000 ton)	Ton	268	37,019

Source: Author calculation with data from Cases Record of Indonesia Maritime Court (2014) *and* Transportation (2015)

Therefore, the risk rate per cargo carried is calculated as shown in Table 16. This shows the number of total losses and the volume of freight transported using people's shipping compared to Indonesian domestic shipping. People's shipping has a higher rate of accidents, at one accident for every 268,000 tons of cargo carried, while domestic shipping accounted for a rate of one accident for every 37 million tons of cargo transported. This result obviously shows that the people's shipping industry carries a high risk. The potential risk rate leads to the conclusion that the demand for safe transport cannot be satisfied by the people's shipping industry. Hence, the high rate of risk will be a significant obstacle for the development of the sector. The Ministry of Transportation plans to establish non-conventional vessel standards to enhance the quality of new-build vessels, which is the best chance for the development of the industry (Transportation, 2009). Nevertheless, there is confusion about the party that will enforce and manage the standard. It is likely that the Indonesia Classification Society (BKI) will be the best possible party since the Register Bureau already has experience in this field.[7]

[7] From the interview with Mr. Hariyanto from the Regulatory Department of the Indonesia Classification Society (BKI Register) in June 2017.

Chapter 6 Conclusions and Recommendations

The people's shipping industry already survived through the decades of Indonesia domestic shipping industry. This shipping industry transformed from the pure traditional shipping to the semi-traditional shipping as the result of the establishment of motorisation, the adaptation from the regulation and fierce competition.

6.1. The Key Findings of People's Shipping

The people's shipping (*PELRA*) is considered as an informal sea transport sector. It plays an important role in some routes and markets. The size of the sector has decreased over time due to the declining demand for transport via the people's shipping. The main source of the transport demand is the excess demand for conventional cargo shipping and container shipping. The remote areas with limited accessibility also provide a market for *PELRA* as the ships can operate in a limited draft. The most important route is the south-north route which connects Sumatera, Java, Kalimantan, and Sulawesi. It links the major port cities in Java with the cities in Kalimantan and Sumatera, which use the river for transporting goods. The pattern of cargo movement shows that the origins of the primary commodities are Java and Sulawesi.

Furthermore, in 2014, the whole sector recorded an average of only three trips per year. Surprisingly, the vessels in the port of Kalimas undertook many voyages per year with nine trips. This means that the people's shipping in Kalimas was more productive than the national average. Moreover, the *PELRA* sector's gross revenue contributed a 3.19 per cent share to Indonesia's GDP of sea transport in 2014. The sector employed almost 30,000 workers in both shipping and port side. It accounted for only 0.59 per cent of the workers in the total employment in the transport, warehousing and communication sectors. The income of ship crews and expenses of stevedoring contributed a share of 0.91 per cent to the GDP of sea transport in 2014. Based on these results, it can be concluded that the people's shipping is a small shipping industry. The sector is considerably smaller than it was during its most successful period in the 1990s. One of the reasons for this is the significant economic growth in the big islands such as Sumatera, Kalimantan, and Sulawesi, which boosted the trade volume between the islands during the period 2000-2014. This was followed by the increase in the demand for reliable, fast, and safe transport, which is obviously not satisfied by the people's shipping due to the poor quality of the vessels. Therefore, the small contribution of the industry to the GDP of sea transport is mainly caused by the decreasing size of the *PELRA* sector over time.

Furthermore, the sector has a higher risk rate per cargo carried than other domestic shipping, and society tends to demand fast, reliable, and safe sea transport. The safety problem must be tackled to attract the consumers and generate a higher demand for transport. The government intends to bring the industry into the formal sector with the changes in the technical standard in the new building regarding ship drawing standards and safety. The government will invest in many ships via local dedicated wooden

shipyards to supply additional vessels to the shipping industry. Therefore, the cost of people's shipping will increase as a result of the improvement in ship quality and operation.

Moreover, the role of the informal transport sector will decrease or increase depends to the rate of development in the region it serves. Since the Indonesia has thousands of islands and the economic development would spread to across the archipelago, in which takes a long time, the market niche will always available for the people's shipping. It means that the role of people's shipping as feeder to serve the isolated areas would not disappear in the short time. However, consider that the people's shipping operates in the hub and spoke instead of a liner, the market from the small island would not be as bigger as market size of big islands such as Java, Sumatera, Kalimantan and Sulawesi[8]. These characteristics of operation and market trends would potentially reduce the fleet and vessel dimension in the future.

6.2. The Recommendations

The people's shipping is a small sea transport sector which still plays a significant role in the inter-island trade especially for the customer from low financial class and isolated areas. The route from west area to eastern Indonesia has a new competitor from the container liner service under the Sea-Toll program. The government should include people's shipping as a hub and spoke operation which focuses on the south-north route which connects port cities in Java, and towns in Kalimantan, Sulawesi and Sumatera. The people's shipping can operate as complimentary transport for other domestic shipping (conventional shipping) under the Sea-Toll program. It can fill the market niche which cannot be served by the conventional shipping services. Regarding regulation, the regulation of docking schedule for the non-conventional vessel forced the people's shipping fleet to dock in the shipyard once in a year. Since docking is costly, it is possible that the ship operator will ignore the docking schedule. It creates a problem with the port state control which controls the vessel traffic and ensures the safety operation of the ship in the port (the flag state). This negative effect can be reduced by non-conventional vessel standard (NCVS).

The enforcement of NCVS as new technical and safety standard can be managed by the Indonesia Classification Society (BKI) which already had experience with the ship register. It needs a proper coordination with people's shipping union (DPC) as the representative of the people's shipping industry. At the same time, the government must ensure the availability of the raw material for ship building. Both shipyard and shipping need a finance support from the government such as ease of tax. The well-standardised vessel can give longer dock schedule, from once in a year to once in few years, in which lead to less docking cost. However, the improvement of the vessel quality and management will increase the cost and transport price per ton of cargo. The government could continuously subsidise the fuel to control the transport price while the government

[8] The major routes of people's shipping industry

can also promote the culture value of the *Phinisi* and other types of vessel to attract the market.

Furthermore, further recommendation is a concern to the less trained crew in people's shipping. Unskilled ship crew would result in inefficient and unsafe shipping operation. Currently, only the captain and the chief engineer have the seafarer certificate while the rest of the crew are less educated seafarers. The crew of the people's shipping commonly originated from the fisheries industry, the fishermen who enter the people's shipping industry. The ministry of transportation, sea transport department, could tackle this problem by holding a training workshop using the state seafarer academy. The ministry must coordinate with the people's shipping branch union (DPC PELRA) to support these training and convince the ship operators about the importance of the training program.

6.3. The Limitation of This Study and Areas for Further Research

The research presents the timeline of the people's shipping development started from the 1970s to the latest year, 2016. The economic importance, development overtime, and cargo carried are assessed to answers all the sub- research questions. We have used the all necessary limitations to generate a reliable result. This part will describe all the limitation used and lead to the suggestion for further research. We had a challenge in collecting the data about cargo throughput in people's shipping industry. The first limitation is the use of cargo throughput data of Sunda Kelapa, Kalimas, and Paotere port to represent the whole people's shipping sector. These ports are selected under the analysis of the cargo flow pattern from the primary commodities and the port calls recorded for several years. The data is collected from the port authority's database and the primary data of the previous studies. Nonetheless, there are some holes in the data which lead to the decision of using 2014 data as base calculations. We expect that in the future, there would be more data available in people's shipping sector. So, the sector could comprehensively assess for further development especially in the operation and economic scope.

Furthermore, we also had the challenge to determine all the variables in the economic importance assessment. All approach that used for the number of crew, stevedore and size of the vessel are collected from the previous research concerning people's shipping. There are no exact rules that manage the crew requirements for each vessel. Similar conditions also applied on the cargo handling side. Also, there is confusion about distinguishing the local shipping and the people's shipping. These sectors blended due to the adaptation from fierce competition with conventional domestic shipping. Our research shows that the vessel size concentrated between 100-300 GT with an average size around 181 GT.

Finally, the focus of the research is the economic importance of people's shipping that focuses on the analysis of the selected ports Sunda Kelapa, Kalimas, and Paotere Makassar with respect to the fact that the region behind these ports produces most of the commodities. Then, this research is not cover the operation of people's shipping between the small ports. The further research can go through the complete cargo carried

assessment which includes the important areas such as Banjarmasin, Palembang, and small islands in Riau Archipelago, Maluku and East Nusa Tenggara. It would give a full picture of the people's shipping industry.

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Appendices

Appendix 1. The List of The Vessel from People's Shipping Union Kalimas

Table 18. Ship Size Ratio from 50 Ships

Size	Range (GT)	Ratio ship size	Vessel (2014)	Vessel per size (unit)	Vessel per size (unit) (2014)
Small	20-100	0.1	1357	135.7	**136**
Medium	100-200	0.76		1031.32	**1031**
Large	200-300	0.14		189.98	**190**
				Total	**1357**

No	7 - 100 GT	GT	No	100 - 200 GT	GT
1	Berkat Mulia II	95	13	Mayangsari	148
2	Mitra Bahari	98	14	Usaha Bersama	140
3	Budi Makmur	35	15	Mina Abadi	147
4	Usaha Bersama	28	16	Nusa Berlian	147
5	Merdeka I	48	17	Berkat Saudara	116
No	**200 - 300 GT**	**GT**	18	Dharma Kencana	117
1	Sejarah Setia	227	19	Lafina	166
2	Permadani Setia	276	20	Berkat Rahmat	132
3	Karya Saudaraku	235	21	Adila	149
4	Armada Buana	289	22	Ramadhani	149
5	Sri Muna	277	23	Ichsan	109
6	Fitrah Keluarga	202	24	Nur Aminah	117
7	Duta Kencana	244	25	Kencana Bahari	160
No	**100 - 200 GT**	**GT**	26	Kartika Buana	170
1	Cakra Indah III	148	27	Fitrah Sejati	148
2	Yala Kencana	134	28	Mutiara Inti Permana	169
3	Putra Mas	149	29	Alam Makmur	109
4	Trisienda Pratiwi	173	30	Cahaya Abadi	145
5	Bintang Samudera	172	31	Hasil Karya Bersama	105
6	Trisienda Pratama	173	32	Karya Makmur	119
7	Prima Setia	170	33	Makmur Bersama	150
8	Mega Setia	101	34	Citra Buana	158
9	Araya Jaya	147	35	Citra Wiguna	148
10	Berkat Mulia	163	36	KLM Setia Tunggal	110
11	Surya Indah	142	37	Arrohmah Jaya	119
12	Griya Idola	101	38	Rajawali	146

Source: Author Elaboration adopted from (Prasetyo, 2017)

Appendix 2. The List of Freight Rate from Major Routes and Inflation Rates of Selected Years (2014,2015, and 2016).

Table 19. Freight Rate List from Major Routes

Route	Type	Year	Freight Rate (RP)	FR after Inflation (RP) (2014)	FR after inflation (USD) (2014)	Distance
S. Kelapa - Makassar	A	2015	1,200,000	1,123,480	$94.7	785 nm
	B	2015	1,200,000	1,123,480	$94.7	
	C	2015	1,750,000	1,638,408	$138.1	
S. Kelapa - Kalimas	A	2015	925,000	866,016	$73.0	388 nm
	B	2015	1,000,000	936,233	$78.9	
	C	2015	1,700,000	1,591,597	$134.1	
S. Kelapa - Palembang*	A	2015	165,000	154,479	$13.0	340 nm
Kalimas - Sorong	A	2015	2,000,000	1,872,467	$157.8	1816 nm
	B	2015	2,025,000	1,895,873	$159.8	
Kalimas - Balikpapan*	A	2017	1,000,000	964,692	$81.3	
Kalimas - Sampit*	A	2017	550,000	530,580	$44.7	360 nm
	B	2017	750,000	723,519	$61.0	360 nm
Kalimas - Tj Selor	A	2017	3,000,000	2,894,075	$243.9	
Kalimas - Banjarmasin*	A	2017	450,000	434,111	$36.6	273 nm
Makassar - Kalimas	A	2015	900,000	842,610	$71.0	443 nm
	B	2015	1,000,000	936,233	$78.9	
	C	2015	2,000,000	1,872,467	$157.8	
Makassar - S. Kelapa	A	2015	1,400,000	1,310,727	$110.5	785 nm
	B	2015	1,640,000	1,535,423	$129.4	
	C	2015	1,650,000	1,544,785	$130.2	
Sorong - Kalimas	A	2015	1,820,000	1,703,945	$143.6	1816 nm
	B	2015	1,900,000	1,778,843	$149.9	
	C	2015	2,100,000	1,966,090	$165.7	
Belawan - Kalimas	A	2015	1,100,000	1,029,857	$86.8	1104 nm
	B	2015	1,800,000	1,685,220	$142.0	
	C	2015	2,000,000	1,872,467	$157.8	

Source: Author elaboration adopted from (Triantoro, 2015)*,* (Prasetyo, 2017) *and author field survey*

Table 20. Indonesia Inflation and Exchange Rate (USD to Rupiah)

Type	Indonesia Inflation Rate		
	2014	**2015**	**2016**
December	8.36%	3.35%	3.02%
November	6.23%	4.89%	3.58%
October	4.83%	6.25%	3.31%
September	4.53%	6.83%	3.07%
August	3.99%	7.18%	2.79%
July	4.53%	7.26%	3.21%
June	6.70%	7.26%	3.45%
May	7.32%	7.15%	3.33%
April	7.25%	6.79%	3.60%
March	7.32%	6.38%	4.45%
February	7.75%	6.29%	4.42%
January	8.22%	6.89%	4.14%
Average Inflation Rate	6.42%	6.38%	3.53%

Exchange rate	**USD to Rupiah (2014)**
	1 USD = 11,865 Rupiah

Source: Author elaboration adopted from (World Bank, 2016) *and* (Bank of Indonesia, 2017)

Appendix 3. The Percentage of Share of Cost to Specific Freight Rate 2014

Freight rate at 2015	165000	Rupiah/ton
GT	500	GT
Gross Revenue	181,500,000	

Table 21. Cost Structure Analysis

Type of Cost	Unit	Total	After Inflation (Rupiah) (2014)	Share to Gross Revenue
Operation Cost		**Rp65,400,000**	**Rp64,749,580**	**36.03%**
Fuel cost (2014)	Rp5,500	Rp55,200,000	Rp55,200,000	
Lubricant	Rp26,000	Rp5,200,000	Rp4,868,413	
Provision	Rp5,000,000	Rp5,000,000	Rp4,681,167	
Maintenance		**Rp15,000,000**	**Rp14,043,500**	**8.26%**
Paint	Rp2,000,000	Rp2,000,000	Rp1,872,467	
Parts and service	Rp13,000,000	Rp13,000,000	Rp12,171,033	
Port Dues		**Rp2,330,000**	**Rp2,181,424**	**1.28%**
Anchorage cost	Rp100	Rp100,000	Rp93,623	
Berth cost	Rp48	Rp480,000	Rp449,392	
Wharfage cost	Rp2,500	Rp1,250,000	Rp1,170,292	
PELRA Union cost	Rp1,000	Rp500,000	Rp468,117	
Operational Cost non-ship		**Rp98,770,000**	**Rp100,525,496**	**54.42%**

Source: Author calculation with data adopted from (Triantoro, 2015)

Appendix 4. The List of and The Calculation Stevedoring Cost 2014

Table 22. List Stevedoring Cost from Kalimas Port

Week Day			
Person	**Ship**	**Person**	**Land Area**
	Cost (Rupiah) (2017)		**Cost (Rupiah) (2017)**
8	**1,567,780**	**6**	**1,148,490**
9	**1,750,080**	**7**	**1,330,790**
10	**1,932,380**	**8**	**1,513,090**
11	**2,114,680**	**9**	**1,695,390**
12	**2,296,980**	**10**	**1,877,690**
13	**2,479,280**	**11**	**2,059,990**
14	**2,661,580**	**12**	**2,242,290**
15	**2,843,880**	**13**	**2,424,590**
16	**3,026,180**	**14**	**2,606,890**
17	**3,208,480**	**15**	**2,789,190**
18	**3,390,780**	**16**	**2,971,490**
19	**3,573,080**	**17**	**3,153,790**
20	**3,755,380**	**18**	**3,336,090**
21	**3,937,680**	**19**	**3,518,390**
22	**4,119,980**	**20**	**3,700,690**
23	**4,302,280**	**21**	**3,882,990**
24	**4,484,580**	**22**	**4,065,290**
25	**4,666,880**	**23**	**4,247,590**

Source: Data support from Adiliya (2017) Port of Tanjung Perak

Table 23. Stevedoring Cost Calculation Per Vessel Size

Week Day				
Ship Size (GT)	**Worker**	**Cost (2017) (RP)**	**Cost after inflation (2014) (RP)**	**Cost (USD) (2014)**
20-100	8	1,567,780	1,412,452	$119.0
100-200	12	2,296,980	2,069,407	$174.4
200-300	15	2,843,880	2,562,123	$215.9

Source: Author calculation with data support from Adiliya (2017) from Port of Tanjung Perak

Appendix 5. The List of and The Calculation of Ship Crew Salary 2014

Table 24. Crew Salary for 20-100 GT (Per Month)

Vessel 20-100 GT				
No	**Position**	**Salary (Rupiah) (2015)**	**Salary after inflation (Rupiah) (2014)**	**Salary (USD) (2014)**
1	Captain	2,000,000	2,128,383	$179.4
2	Deck officer	1,500,000	1,596,288	$134.5
3	Engine Foreman 1	1,500,000	1,596,288	$134.5
4	Quarter Master 1	1,000,000	1,064,192	$89.7
5	Oiler 1	1,000,000	1,064,192	$89.7
6	Oiler 2	1,000,000	1,064,192	$89.7
7	Deck Crew 1	1,000,000	1,064,192	$89.7
8	Deck Crew 2	1,000,000	1,064,192	$89.7
Total			10,641,917	$896.9

Source: Author calculation with data adopted from (Romadhoni, 2013) *and* (Prasetyo, 2017)

Table 25. Crew Salary for 100-200 GT (Per Month)

Vessel 100-200 GT				
No	**Position**	**Salary (Rupiah) (2015)**	**Salary after inflation (Rupiah) (2014)**	**Salary (USD) (2014)**
1	Captain	2,000,000	2,128,383	$179.4
2	Deck officer	1,500,000	1,596,288	$134.5
3	Engine Foreman 1	1,500,000	1,596,288	$134.5
4	Engine Foreman 2	1,500,000	1,596,288	$134.5
5	Quarter Master 1	1,000,000	1,064,192	$89.7
6	Oiler 1	1,000,000	1,064,192	$89.7
7	Oiler 2	1,000,000	1,064,192	$89.7
8	Deck Crew 1	1,000,000	1,064,192	$89.7
9	Deck Crew 2	1,000,000	1,064,192	$89.7
10	Deck Crew 3	1,000,000	1,064,192	$89.7
Total			13,302,396	$1,121.1

Source: Author calculation with data adopted from (Romadhoni, 2013) *and* (Prasetyo, 2017)

Table 26. Crew Salary for 200-300 GT (Per Month)

Vessel 200-300 GT				
No	**Position**	**Salary (Rupiah) (2015)**	**Salary after inflation (Rupiah) (2014)**	**Salary (USD) (2014)**
1	Captain	2,000,000	2,128,383	$179.4
2	Deck officer	1,500,000	1,596,288	$134.5
3	Engine Foreman 1	1,500,000	1,596,288	$134.5
4	Engine Foreman 2	1,500,000	1,596,288	$134.5
5	Quarter Master 1	1,000,000	1,064,192	$89.7
6	Quarter Master 2	1,000,000	1,064,192	$89.7
7	Oiler 1	1,000,000	1,064,192	$89.7
8	Oiler 2	1,000,000	1,064,192	$89.7
9	Deck Crew 1	1,000,000	1,064,192	$89.7
10	Deck Crew 2	1,000,000	1,064,192	$89.7
11	Deck Crew 3	1,000,000	1,064,192	$89.7
12	Deck Crew 4	1,000,000	1,064,192	$89.7
Total			15,430,779	$1,300.5

Source: Author calculation with data adopted from (Romadhoni, 2013) *and* (Prasetyo, 2017)

Appendix 6. The Calculation of Revenue from Port Dues 2014

Table 27. Port Dues Calculation

Port Dues	Port (Rupiah) (2015)			Unit
	Kalimas	Sunda Kelapa	Makassar	
Anchorage dues	104	102	104	GT/Days
Berth dues	916	911	916	GT/24hr
Wharfage dues	1956	1850	1956	GT

Port Dues	Port (Rupiah) (2014)			Unit
	Kalimas	Sunda Kelapa	Makassar	
Anchorage dues	97.3	95.5	97.3	GT/Days
Berth dues	857.2	852.5	857.2	GT/24hr
Wharfage dues	1830.4	1731.2	1830.4	GT

Port Dues	Port (USD) (2014)			Unit
	Kalimas	Sunda Kelapa	Makassar	
Anchorage dues	$0.0082	$0.0080	$0.0082	GT/Days
Berth dues	$0.0722	$0.0719	$0.0722	GT/24hr
Wharfage dues	$0.1543	$0.1459	$0.1543	GT

Source: Author calculation with data adopted from (Lazuardy, 2015)

Appendix 7. The Ship Cases from Indonesia Maritime Court 2014

Table 28. Analysis of Conventional Cargo Shipping Accident 2014

NO	Name	GT	Class	Hull	Status	No loss	Partial Loss	Total Loss	Cargo Loss	Note
1	KM. Pilar Kalimantan	1,170	Cargo	Steel	Grounded	x			No	
2	KM. Sarana Utama	1,176	Cargo	Steel	Grounded	x			No	
3	KM. Kumala Bakti	495	Cargo	Steel	Grounded	x			No	
4	KM. Banda Naira	745	Cargo	Steel	Grounded	x			No	
5	KM. Santa Bahari	4,873	Cargo	Steel	Grounded		x		Partial	Hull Leakage
6	KM. Malinda Sakti	26	Cargo	Steel	Sink			x	Total	Bad weather
7	KM. Surya Tunas Makmur	172	Cargo	Steel	Sink			x	Total	Broken rudder stock
8	KM. Afiat 88	1,101	Cargo	Steel	Sink			x	Total	12 passengers missing
9	KM. Valerine	571	Cargo	Steel	Fire and Sink			x	Total	Fire and then sink
10	KM. Alken Pesat	1,303	Cargo	Steel	Collision and Sink			x	Total	Collide and sink
11	KM. Alpine	998	Cargo	Steel	Collision		x		No	Hull deformation
12	KM. Jaya Manggala	698	cargo	Steel	collision		x		No	
13	KM. Serasi X	5,822	Cargo	Steel	collision		x		No	Hull deformation
14	KM. Sinar Panjang	812	Cargo	Steel	Collision		x		Partial	
15	KM. Sahabat	1,644	Cargo Bulk	Steel	Collision		x		No	Hull Leakage
16	MV. Vishva Prerna	33,185	Cargo Bulk	Steel	Collision		x		No	Hull deformation

Source: Author elaboration with data adopted from (Cases Record of Indonesia Maritime Court, 2014) *and* (Prasetyo, 2017)

Table 29. Analysis of People's Shipping Accident 2014

NO	Name	GT	Class	Hull	Status	No loss	Partial Loss	Total Loss	Cargo Loss	Note
1	KLM. Sumber Bahari	292	Cargo PELRA	Wood	Sink			x	Total	
2	KLM. Rema Perkasa	179	Cargo PELRA	Wood	Collision and Sink			x	Total	Collide and sink
3	KM. Samudra Lestari	198	Cargo PELRA	Wood	Fire and Sink			x	Total	2 crew injured
4	KLM. Koto Jaya	73	Cargo PELRA	Wood	Collision and Sink			x	Total	Collide and sink
5	KM. Tambah Dunung	30	Cargo PELRA	wood	Collision and Sink			x	Total	9 casualties

Source: Author elaboration with data adopted from (Cases Record of Indonesia Maritime Court, 2014) *and* (Prasetyo, 2017)

Table 30. Analysis of Container Shipping Accident 2014

NO	Name	GT	Class	Hull	Status	No loss	Partial Loss	Total Loss	Cargo Loss	Note
1	KM. JM Dragon	3,508	Container	Steel	Sink			x	Total	Bad weather
2	KM. Lintas Bahari Utama	1,654	Container	Steel	Collision and Sink			x	Total	1 crew casualty
3	KM. Lintas Bengkulu	2,670	Container	Steel	Collision		x		No	Hull deformation
4	KM Bintang Jasa 29	4,152	Container	Steel	Collision		x		No	
5	KM. Mentari Persada	7,312	Container	Steel	Collision		x		No	Hull deformation

Source: Author elaboration with data adopted from (Cases Record of Indonesia Maritime Court, 2014) *and* (Prasetyo, 2017)

Table 31. Analysis of Tanker Shipping Accident 2014

NO	Name	GT	Class	Hull	Status	No loss	Partial Loss	Total Loss	Cargo Loss	Note
1	MT. AE Gas	3565	Tanker Shipping	Steel	Grounded	x			No	
2	MT. Patriot Andalan	3478	Tanker Shipping	Steel	Sink			x	Partial	During unloading operation
3	MT. Asumi XXVI	3611	Tanker Shipping	Steel	Collision	x			No	Collide with KLM Rema
4	MT. Layar Arthawibawa	13207	Tanker Shipping	Steel	Collision		x		No	Hull deformation

Source: Author elaboration with data adopted from (Cases Record of Indonesia Maritime Court, 2014) *and* (Prasetyo, 2017)

Table 32. Analysis of Barge Shipping Accident 2014

NO	Name	GT	Class	Hull	Status	No loss	Partial Loss	Total Loss	Cargo Loss	Note
1	KT. Bina Marine 99 and 92(TK)	3256 (TK)	Tug and Barge	Steel	Grounded	x			No	1 person
2	KT. ISE 5 and TK. ISE 6	794 (TK)	Tug and Barge	Steel	Grounded		x		No	Propeller Broken
3	KT. Toma 01 and TK. Hasa 01	3107 (TK)	Tug and Barge	Steel	Grounded		x		Partial	Hull Leakage
4	KT. Samudra Perkasa V and TK. Arung Perkasa I	3152	Tug and Barge	Steel	Grounded		x		Partial	Hull Crack
5	KT. Srikandi Baruna 2402 and TK. Baruna P 3002	3039 (KT)	Tug and Barge	Steel	Grounded		x		Partial	Hull Leakage
6	KT. Mega Lestari and TK. Lana Buana	183	Tug and Barge	Steel	Sink			x	Total	Bad weather
7	TK. Megah Prima III and KT. Mas Papua	2257 (KT)	Tug and Barge	Steel	Sink			x	Total	Bad weather
8	KT. Mitra Jaya XI and TK. Makmur Abadi III	1386 (KT)	Tug and Barge	Steel	Sink			x	Total	
9	KT. Nelly 58 and TK. Nelly 58	142	Tug and Barge	Steel	Collision		x		No	Frame in Cargo Bay crack
10	KT. Entebe Megastar 83 and TK. Financia 108	5338 (KT)	Tug and Barge	Steel	collision		x		No	Hull deformation
11	TK. Kim Heng 189 and KT. Citra 3	627 (TK)	Tug and Barge	Steel	Collision		x		No	Hull Leakage

NO	Name	GT	Class	Hull	Status	No loss	Partial Loss	Total Loss	Cargo Loss	Note
12	KT. Charly III and TK. Sumber Anugrah III	223 (TK)	Tug and Barge	Steel	Collision	x			No	
13	KT. Gressin Jaya and TK. Rahmat Jaya III	2605 (TK)	Tug and Barge	Steel	Collision	x			No	
14	KT. AB 4 and TK. BB 11	1826 (TK)	Tug and Barge	Steel	Collision		x		No	
15	TK. RL 3306 and KT. Ansanus XII	4255 (TK)	Tug and Barge	Steel	Collision		x		No	
16	TK. Anggada II and KT. Mitra Jaya I	973 (TK)	Tug and Barge	Steel	Collision		x		No	Hull Leakage
17	TK. Manna Line 808 and KT. TOB 07	3233 (TK)	Tug and Barge	Steel	Collision		x		No	Hull deformation
18	TK. Armada Kaltim 2301 and KT. Abunawas V	1421 (TK)	Tug and Barge	Steel	Collision		x		No	Hull deformation
19	KT. Mega Prima,TK. Sahabat Kapuas Mandiri XXXII	2283 (TK)	Tug and Barge	Steel	Collision		x		Partial	Hull Leakage

Source: Author elaboration with data adopted from (Cases Record of Indonesia Maritime Court, 2014) *and* (Prasetyo, 2017)

Appendix 8. The People's Shipping Case from Indonesia Maritime Court

Table 33. Detail of People's Shipping Cases 2014

Name	KLM. Sumber Bahari
Size	292 GT
NT	202
Flag	Indonesia
Length	34.29 m
Crew	13
Owner	PT. Tanjung Mas Bahari P
Captain	ANT V
Deck Officer	MPR TK II
Chief Engineer	JMPPR TK I
Engine Foreman 2	JMPPR TK II

Name	KLM. Koto Jaya
Size	73
NT	22
Flag	Indonesia
Length	24.23
Crew	6
Owner	Family owned
Captain	MPR TK I
Chief Engineer	JMPPR TK I

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Name	KLM. Rema Perkasa
Size	179 GT
NT	136
Flag	Indonesia
Length	26.38
Crew	11
Owner	Family owned
Captain	MPR TK I
Deck Officer I	MPR TK II
Chief Engineer	JMPPR TK II
Engine Foreman 2	JMPPR TK II

Name	KLM. Samudera Lestari
Size	198
NT	115
Flag	Indonesia
Length	30.29
Crew	11
Owner	Family owned
Captain	ANT IV
Deck Officer I	ANT V
Chief Engineer	ATT V
Engine Foreman 2	ATT V

Name	KLM. Rahmatia Sentosa
Size	246 GT
NT	
Flag	Indonesia
Length	28.28
Crew	10
Owner	PT. Citra Bahagia Dirmala
Certificate	
Captain	MPR TK I
Deck Officer I	MPR TK II
Chief Engineer	JMPPR TK I
Engine Foreman 2	JMPPR TK II

Source: Author elaboration with data adopted from (Cases Record of Indonesia Maritime Court, 2014)

Appendix 9. The Record of Ship Call from People Shipping Union (DPC PELRA)

Average = 19.18 Days spent at port

Round down = 19 Days spent at port

Table 34. Record of Ship Call in Kalimas Port 2014

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
1	Adila	100	26	8/22/2014	9/27/2014	36
2	Adila	149	24	10/25/2014	11/9/2014	15
3	Aisyah	100	25	4/9/2014	5/15/2014	36
4	Aisyah	100	25	5/29/2014	6/16/2014	18
5	Aisyah	100	25	6/29/2014	7/23/2014	24
6	Aisyah	100	25	8/12/2014	9/8/2014	27
7	Aisyah	231	30	9/29/2014	10/22/2014	23
8	Aisyah	231	30	11/10/2014	12/3/2014	23
9	Alam Makmur	109	23	3/4/2014	3/19/2014	15
10	Alam Makmur	109	23	4/14/2014	5/1/2014	17
11	Alam Makmur	109	23	5/27/2014	6/12/2014	16
12	Alam Makmur	109	23	7/13/2014	7/25/2014	12
13	Alam Makmur	109	23	9/1/2014	9/17/2014	16
14	Alam Makmur	109	23	10/2/2014	10/15/2014	13
15	Alam Makmur	109	23	11/14/2014	11/28/2014	14
16	Anugra Jaya-2	159	20	4/15/2014	4/29/2014	14
17	Anugrah - 1	100	22	2/3/2014	2/8/2014	5
18	Apu Womaduri Apung	89	23	5/8/2014	6/12/2014	35
19	Araya Jaya - Ii	147	26	1/14/2014	2/11/2014	28
20	Araya Jaya - Ii	147	26	3/25/2014	4/16/2014	22
21	Araya Jaya - Ii	147	26	5/29/2014	6/19/2014	21
22	Araya Jaya - Ii	147	26	8/7/2014	8/25/2014	18
23	Araya Jaya - Ii	147	26	9/27/2014	10/21/2014	24
24	Armada Buana - 1	100	24	7/5/2014	7/9/2014	4
25	Arohman Jaya	34	20	3/16/2014	3/28/2014	12
26	Araya Jaya - Ii	93	24	5/23/2014	6/16/2014	24
27	Arsama	173	27	10/10/2014	11/8/2014	29
28	Barokah Jaya - Ii	24	18	9/20/2014	10/8/2014	18
29	Bella Vista	235	30	2/10/2014	3/6/2014	24
30	Bella Vista	235	30	3/29/2014	6/13/2014	76
31	Bella Vista	235	30	8/23/2014	9/30/2014	38

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
32	Berkat Mulia	95	24	1/13/2014	2/7/2014	25
33	Berkat Mulia	163	25	1/18/2014	2/5/2014	18
34	Berkat Mulia	163	25	2/18/2014	2/24/2014	6
35	Berkat Mulia	95	24	2/23/2014	3/1/2014	6
36	Berkat Mulia	163	25	3/8/2014	3/19/2014	11
37	Berkat Mulia	95	24	3/17/2014	3/31/2014	14
38	Berkat Mulia	163	25	4/11/2014	4/18/2014	7
39	Berkat Mulia	95	24	4/18/2014	4/29/2014	11
40	Berkat Mulia	163	25	4/29/2014	5/10/2014	11
41	Berkat Mulia	95	24	5/17/2014	5/29/2014	12
42	Berkat Mulia	163	25	5/21/2014	5/31/2014	10
43	Berkat Mulia	95	24	6/12/2014	6/24/2014	12
44	Berkat Mulia	163	25	6/15/2014	6/20/2014	5
45	Berkat Mulia	163	25	7/4/2014	7/16/2014	12
46	Berkat Mulia	95	24	7/19/2014	8/19/2014	31
47	Berkat Mulia	163	25	7/31/2014	8/27/2014	27
48	Berkat Mulia	95	24	8/31/2014	9/13/2014	13
49	Berkat Mulia	163	25	9/13/2014	9/22/2014	9
50	Berkat Mulia	95	24	9/27/2014	10/11/2014	14
51	Berkat Mulia	163	25	10/4/2014	10/11/2014	7
52	Berkat Mulia	163	25	10/22/2014	11/3/2014	12
53	Berkat Mulia	95	24	11/1/2014	11/10/2014	9
54	Berkat Mulia	163	25	11/11/2014	11/18/2014	7
55	Berkat Mulia	95	24	11/28/2014	12/6/2014	8
56	Berkat Mulia	163	25	12/3/2014	12/15/2014	12
57	Berkat Rahmat	97	24	4/27/2014	5/13/2014	16
58	Berkat Rahmat	116	24	10/24/2014	11/3/2014	10
59	Berkat Saudara	99	26	5/13/2014	6/14/2014	32
60	Berkat Saudara	116	23	11/9/2014	11/22/2014	13
61	Berkat Saudaraku	99	24	5/25/2014	6/24/2014	30
62	Berkat Saudaraku	99	24	7/18/2014	8/28/2014	41
63	Berkat Saudaraku	99	24	9/8/2014	9/30/2014	22
64	Berkat Saudaraku	99	24	10/27/2014	11/8/2014	12
65	Berkat Seruyan - IV	33	33	5/24/2014	6/2/2014	9
66	Berkat Usaha	25	14	2/28/2014	3/17/2014	17

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
67	Berkat Usaha	25	14	4/13/2014	4/18/2014	5
68	Berkat Usaha	25	14	5/11/2014	6/1/2014	21
69	Berkat Usaha	25	14	6/26/2014	7/17/2014	21
70	Berkat Usaha	25	14	8/12/2014	8/31/2014	19
71	Berkat Usaha	25	14	9/20/2014	10/20/2014	30
72	Berkat Usaha	25	14	11/16/2014	12/3/2014	17
73	Berkat Zakyah-1	99	23	2/7/2014	2/14/2014	7
74	Bintang Anggrainy.II	97	23	6/11/2014	6/27/2014	16
75	Bintang Anggrainy.II	130	23	10/9/2014	10/27/2014	18
76	Bintang Bahagia	230	36	4/29/2014	5/24/2014	25
77	Bintang Bahagia	230	36	9/2/2014	11/7/2014	66
78	Bintang Mars	100	24	3/10/2014	3/16/2014	6
79	Bintang Mars	102	24	11/13/2014	11/29/2014	16
80	Bintang Samudra	172	32	2/14/2014	3/14/2014	28
81	Bintang Samudra	172	32	4/15/2014	5/7/2014	22
82	Bintang Samudra	172	32	6/6/2014	7/9/2014	33
83	Bintang Samudra	172	32	7/29/2014	8/29/2014	31
84	Bintang Samudra	172	32	11/11/2014	12/3/2014	22
85	Bintang Subur-1	99	20	2/21/2014	3/2/2014	9
86	Bintang Subur-1	99	20	3/23/2014	3/29/2014	6
87	Budi Makmur	35	22	2/10/2014	2/27/2014	17
88	Budi Makmur	35	22	3/16/2014	3/28/2014	12
89	Budi Makmur	35	22	5/2/2014	5/12/2014	10
90	Budi Makmur	35	22	6/7/2014	6/30/2014	23
91	Budi Makmur	35	22	7/14/2014	7/22/2014	8
92	Budi Makmur	35	22	8/23/2014	9/27/2014	35
93	Budi Makmur	35	22	10/24/2014	11/15/2014	22
94	Budi Makmur	35	22	12/12/2014	12/30/2014	18
95	Bunga Buana Indah	100	24	2/5/2014	2/15/2014	10
96	Bunga Buana Indah	100	24	6/12/2014	7/10/2014	28
97	Bunga Buana Indah	100	24	8/12/2014	9/8/2014	27
98	Bunga Buana Indah	146	24	9/29/2014	10/14/2014	15
99	Bunga Buana Indah	146	27	11/6/2014	11/22/2014	16
100	Bunga Padi.	100	24	5/20/2014	6/13/2014	24
101	Bunga Padi.	100	24	9/11/2014	10/11/2014	30

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
102	Bunga Padi.	100	24	11/21/2014	12/3/2014	12
103	Cahaya Abadi	145	27	1/15/2014	2/7/2014	23
104	Cahaya Abadi	145	27	3/8/2014	4/9/2014	32
105	Cahaya Abadi	145	27	5/13/2014	6/18/2014	36
106	Cahaya Abadi	145	27	8/11/2014	8/29/2014	18
107	Cahaya Abadi	145	27	9/22/2014	10/1/2014	9
108	Cahaya Abadi	145	27	11/3/2014	11/19/2014	16
109	Cahaya Abadi	145	27	12/11/2014	12/22/2014	11
110	Cahaya Agung	22	15	2/10/2014	2/18/2014	8
111	Cahaya Agung	22	15	3/3/2014	3/24/2014	21
112	Cahaya Iman	66	19	2/23/2014	3/29/2014	34
113	Cahaya Nirmala - 2	102	25	1/1/2014	1/12/2014	11
114	Cahaya Nirmala - 2	102	25	3/15/2014	4/8/2014	24
115	Cahaya Nirmala - 2	102	25	4/22/2014	5/19/2014	27
116	Cahaya Nirmala - 2	102	25	5/31/2014	6/26/2014	26
117	Cahaya Nirmala - 2	102	25	7/19/2014	7/29/2014	10
118	Cahaya Nirmala - 2	102	25	8/18/2014	9/22/2014	35
119	Cahaya Nirmala - 2	102	25	10/23/2014	11/9/2014	17
120	Cahaya Nirmala - 2	102	25	11/27/2014	12/6/2014	9
121	Cakra Indah III	148	25	3/9/2014	3/31/2014	22
122	Cakra Indah III	148	25	5/4/2014	5/28/2014	24
123	Cakra Indah III	148	25	7/5/2014	7/22/2014	17
124	Cakra Indah III	148	25	9/19/2014	10/9/2014	20
125	Cakra Indah III	148	25	11/12/2014	11/26/2014	14
126	Citra Bahari	162	28	1/9/2014	2/28/2014	50
127	Citra Bahari	162	28	4/14/2014	5/15/2014	31
128	Citra Bahari	162	28	6/24/2014	9/8/2014	76
129	Citra Bahari	162	28	10/22/2014	11/21/2014	30
130	Citra Buana	149	24	3/29/2014	4/15/2014	17
131	Citra Buana	149	24	6/2/2014	6/17/2014	15
132	Citra Buana	149	24	8/18/2014	8/31/2014	13
133	Citra Buana	149	24	11/12/2014	11/26/2014	14
134	Citra Saudara	100	27	3/17/2014	4/12/2014	26
135	Citra Saudara	100	27	5/16/2014	6/14/2014	29
136	Citra Saudara	115	27	10/23/2014	11/10/2014	18

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
137	Citra Ubm-I	97	24	8/27/2014	9/22/2014	26
138	Citra Wiguna	149	30	1/19/2014	2/7/2014	19
139	Citra Wiguna	149	30	3/12/2014	3/22/2014	10
140	Citra Wiguna	149	30	5/10/2014	5/24/2014	14
141	Citra Wiguna	149	30	7/13/2014	7/20/2014	7
142	Citra Wiguna	149	30	10/12/2014	10/27/2014	15
143	Duta Agung	148	30	1/8/2014	2/5/2014	28
144	Duta Agung	148	30	2/19/2014	2/27/2014	8
145	Duta Agung	148	30	3/22/2014	4/12/2014	21
146	Duta Agung	148	30	4/26/2014	5/18/2014	22
147	Duta Agung	148	30	6/17/2014	6/28/2014	11
148	Duta Agung	148	30	7/15/2014	7/24/2014	9
149	Duta Agung	148	30	9/1/2014	9/22/2014	21
150	Duta Agung	148	30	11/27/2014	12/12/2014	15
151	Duta Baruna	161	27	1/5/2014	2/5/2014	31
152	Duta Baruna	161	27	2/24/2014	3/7/2014	11
153	Duta Baruna	161	27	3/29/2014	4/14/2014	16
154	Duta Baruna	161	27	5/4/2014	5/27/2014	23
155	Duta Baruna	161	27	6/14/2014	6/24/2014	10
156	Duta Baruna	161	27	7/14/2014	7/22/2014	8
157	Duta Baruna	161	27	8/14/2014	8/30/2014	16
158	Duta Baruna	161	27	9/11/2014	9/27/2014	16
159	Duta Baruna	161	27	10/20/2014	11/8/2014	19
160	Duta Baruna	161	27	11/26/2014	12/3/2014	7
161	Duta Kencana	244	27	1/30/2014	2/13/2014	14
162	Duta Kencana	244	27	2/25/2014	3/15/2014	18
163	Duta Kencana	244	27	4/4/2014	4/21/2014	17
164	Duta Kencana	244	27	5/8/2014	5/31/2014	23
165	Duta Kencana	244	27	6/30/2014	7/9/2014	9
166	Duta Kencana	244	27	8/3/2014	8/25/2014	22
167	Duta Kencana	244	27	10/5/2014	10/18/2014	13
168	Duta Kencana	244	27	11/4/2014	11/19/2014	15
169	Duta Mulia	297	34	1/11/2014	2/5/2014	25
170	Duta Mulia	297	34	3/2/2014	3/23/2014	21
171	Duta Mulia	297	34	4/6/2014	4/29/2014	23

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
172	Duta Mulia	297	34	5/22/2014	6/9/2014	18
173	Duta Mulia	297	34	6/25/2014	7/8/2014	13
174	Duta Mulia	297	34	9/13/2014	10/9/2014	26
175	Duta Mulia	297	34	10/30/2014	11/9/2014	10
176	Duta Mulia	297	34	11/30/2014	12/7/2014	7
177	Duta Permai	97	23	6/7/2014	7/1/2014	24
178	Duta Permai	97	23	8/20/2014	9/22/2014	33
179	Duta Persada	167	31	2/13/2014	2/21/2014	8
180	Duta Persada	167	31	3/16/2014	3/30/2014	14
181	Duta Persada	167	31	4/24/2014	5/12/2014	18
182	Duta Persada	167	31	6/8/2014	7/2/2014	24
183	Duta Persada	167	31	8/27/2014	9/27/2014	31
184	Duta Persada	167	31	10/19/2014	10/28/2014	9
185	Duta Persada	167	31	11/19/2014	11/24/2014	5
186	Duta Persada	144	31	12/16/2014	12/25/2014	9
187	Duta Samudra	129	26	1/30/2014	2/10/2014	11
188	Duta Samudra	129	26	3/11/2014	3/29/2014	18
189	Duta Samudra	129	26	4/18/2014	5/6/2014	18
190	Duta Samudra	129	26	5/22/2014	6/14/2014	23
191	Duta Samudra	129	26	7/5/2014	7/16/2014	11
192	Duta Samudra	129	26	8/20/2014	9/6/2014	17
193	Duta Samudra	129	26	10/12/2014	10/27/2014	15
194	Duta Samudra	129	26	11/12/2014	11/19/2014	7
195	Duta Samudra	117	24	12/12/2014	12/20/2014	8
196	Facer Mas	140	27	1/13/2014	2/8/2014	26
197	Facer Mas	140	27	2/23/2014	3/14/2014	19
198	Facer Mas	140	27	3/31/2014	4/27/2014	27
199	Facer Mas	140	27	5/10/2014	6/9/2014	30
200	Facer Mas	140	27	6/24/2014	7/10/2014	16
201	Facer Mas	140	27	8/3/2014	8/25/2014	22
202	Facer Mas	140	27	9/27/2014	10/10/2014	13
203	Facer Mas	140	27	11/4/2014	11/14/2014	10
204	Facer Mas	140	27	12/8/2014	12/19/2014	11
205	Fajar Nusantara - 01	147	27	5/6/2014	5/29/2014	23
206	Fitra Sejati	98	20	3/25/2014	4/17/2014	23

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
207	Fitra Sejati	98	20	7/25/2014	9/8/2014	45
208	Fitra Sejati	98	20	10/14/2014	11/3/2014	20
209	Fitra Sejati	98	20	11/16/2014	12/15/2014	29
210	Fitrah Keluarga	195	25	4/25/2014	5/16/2014	21
211	Grya Idola	101	23	2/24/2014	3/2/2014	6
212	Grya Idola	101	23	3/24/2014	4/4/2014	11
213	Grya Idola	101	23	4/20/2014	5/1/2014	11
214	Grya Idola	101	23	5/17/2014	6/9/2014	23
215	Grya Idola	101	23	6/22/2014	7/11/2014	19
216	Grya Idola	101	23	7/23/2014	8/25/2014	33
217	Grya Idola	101	23	9/7/2014	9/22/2014	15
218	Grya Idola	101	23	10/7/2014	10/15/2014	8
219	Grya Idola	101	23	10/27/2014	11/7/2014	11
220	Grya Idola	101	23	11/19/2014	12/3/2014	14
221	Harapan Kita	118	26	2/9/2014	3/1/2014	20
222	Harapan Kita	118	26	4/3/2014	4/17/2014	14
223	Harapan Kita	118	26	5/23/2014	6/12/2014	20
224	Harapan Kita	118	26	7/22/2014	8/27/2014	36
225	Harapan Kita	118	26	9/30/2014	10/22/2014	22
226	Harapan Kita	118	26	11/26/2014	12/17/2014	21
227	Hasil Bersama	169	28	3/6/2014	4/5/2014	30
228	Hasil Karya Bersama	95	22	2/6/2014	2/21/2014	15
229	Hasil Karya Bersama	95	22	3/16/2014	4/6/2014	21
230	Hasil Karya Bersama	95	22	5/12/2014	5/23/2014	11
231	Hasil Karya Bersama	95	22	6/24/2014	7/10/2014	16
232	Hasil Karya Bersama	95	22	8/14/2014	9/6/2014	23
233	Hasil Karya Bersama	95	22	10/4/2014	11/1/2014	28
234	Hasil Karya Bersama	95	22	11/29/2014	12/17/2014	18
235	Hasil Pabbaresseng	99	28	1/28/2014	2/5/2014	8
236	Hasil Pabbaresseng	99	28	3/10/2014	4/14/2014	35
237	Hasil Pabbaresseng	99	28	5/31/2014	6/16/2014	16
238	Hasil Pabbaresseng	99	28	9/22/2014	10/25/2014	33
239	Hasta	100	24	3/22/2014	4/7/2014	16
240	Hasta	100	24	6/5/2014	7/10/2014	35
241	Hasta - I	189	30	9/13/2014	10/8/2014	25

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
242	Hero Jaya	94	22	5/3/2014	6/2/2014	30
243	Ichsan	100	24	3/25/2014	3/31/2014	6
244	Ichsan	100	24	5/19/2014	6/24/2014	36
245	Ichsan	100	24	8/22/2014	9/22/2014	31
246	Kartika Buana	76	24	1/10/2014	2/6/2014	27
247	Kartika Buana	76	24	2/19/2014	2/27/2014	8
248	Kartika Buana	76	24	3/10/2014	3/28/2014	18
249	Kartika Buana	76	24	4/25/2014	5/3/2014	8
250	Kartika Buana	76	24	5/17/2014	6/2/2014	16
251	Kartika Expres	93	23	1/6/2014	2/6/2014	31
252	Kartika Expres	93	23	2/16/2014	2/22/2014	6
253	Kartika Expres	93	23	3/2/2014	3/14/2014	12
254	Kartika Expres	93	23	3/24/2014	4/16/2014	23
255	Kartika Expres	93	23	5/8/2014	5/23/2014	15
256	Kartika Expres	93	23	6/10/2014	6/18/2014	8
257	Kartika Expres	93	23	7/9/2014	7/16/2014	7
258	Kartika Expres	93	23	8/14/2014	8/27/2014	13
259	Kartika Expres	93	23	9/10/2014	9/22/2014	12
260	Kartika Expres	93	23	10/8/2014	10/16/2014	8
261	Kartika Expres	93	23	11/6/2014	11/14/2014	8
262	Kartika Expres	93	23	12/4/2014	12/11/2014	7
263	Kartika Expres	93	23	12/24/2014	12/30/2014	6
264	Karya Abadi - 3	89	16	1/12/2014	2/23/2014	42
265	Lafina	100	25	2/7/2014	2/25/2014	18
266	Lafina	100	25	3/16/2014	3/31/2014	15
267	Lafina	100	25	4/27/2014	5/16/2014	19
268	Lafina	100	25	6/20/2014	7/24/2014	34
269	Lafina	100	25	8/28/2014	9/27/2014	30
270	Lafina	166	27	10/27/2014	11/5/2014	9
271	Liana	54	15	4/7/2014	6/30/2014	84
272	Liana	54	15	7/1/2014	9/23/2014	84
273	Liana	54	15	9/25/2014	12/29/2014	95
274	Madhani	100	25	4/6/2014	4/18/2014	12
275	Madhani	101	25	5/12/2014	5/21/2014	9
276	Madhani	100	25	6/6/2014	7/12/2014	36

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
277	Madhani	100	25	8/11/2014	9/8/2014	28
278	Madhani	249	31	10/30/2014	11/19/2014	20
279	Madhani	249	31	12/7/2014	12/20/2014	13
280	Mahogani-1	100	24	3/8/2014	4/19/2014	42
281	Makmur Bersama	100	24	2/6/2014	3/19/2014	41
282	Makmur Bersama	100	24	4/22/2014	6/18/2014	57
283	Makmur Bersama	100	24	9/1/2014	9/27/2014	26
284	Makmur Bersama	100	24	11/3/2014	11/22/2014	19
285	Mayang Sari	147	26	1/24/2014	2/15/2014	22
286	Mayang Sari	147	26	2/26/2014	3/8/2014	10
287	Mayang Sari	147	26	3/23/2014	4/13/2014	21
288	Mayang Sari	147	26	4/27/2014	5/15/2014	18
289	Mayang Sari	147	26	5/27/2014	6/13/2014	17
290	Mayang Sari	147	26	6/29/2014	7/12/2014	13
291	Mayang Sari	147	26	7/31/2014	8/28/2014	28
292	Mayang Sari	147	26	9/16/2014	9/27/2014	11
293	Mayang Sari	147	26	10/16/2014	10/23/2014	7
294	Mayang Sari	147	26	11/5/2014	11/18/2014	13
295	Mayang Sari	147	26	12/2/2014	12/16/2014	14
296	Merdeka	99	22	3/19/2014	3/30/2014	11
297	Merdeka - I	48	22	11/18/2014	12/1/2014	13
298	Mina Abadi	147	20	1/9/2014	2/5/2014	27
299	Mina Abadi	147	20	2/19/2014	2/27/2014	8
300	Mina Abadi	147	20	3/11/2014	3/23/2014	12
301	Mina Abadi	147	20	4/5/2014	4/27/2014	22
302	Mina Abadi	147	20	5/10/2014	5/26/2014	16
303	Mina Abadi	147	20	6/10/2014	6/25/2014	15
304	Mina Abadi	147	20	7/9/2014	7/22/2014	13
305	Mina Abadi	147	20	8/20/2014	9/5/2014	16
306	Mina Abadi	147	20	9/22/2014	10/9/2014	17
307	Mina Abadi	147	20	10/21/2014	11/2/2014	12
308	Mina Abadi	147	20	11/17/2014	11/25/2014	8
309	Mina Abadi	147	20	12/8/2014	12/22/2014	14
310	Mitra Abadi	238	30	1/14/2014	5/26/2014	132
311	Mitra Bahari	98	26	4/13/2014	5/3/2014	20

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
312	Mitra Bahari	98	26	7/1/2014	7/24/2014	23
313	Mitra Bahari	98	26	9/4/2014	9/27/2014	23
314	Mitra Bahari	98	26	11/22/2014	12/7/2014	15
315	Mitra Samudra	125	25	1/10/2014	2/5/2014	26
316	Mitra Samudra	125	25	2/18/2014	2/24/2014	6
317	Mitra Samudra	125	25	3/6/2014	3/24/2014	18
318	Mitra Samudra	125	25	4/12/2014	4/22/2014	10
319	Mitra Samudra	125	25	5/11/2014	5/27/2014	16
320	Mitra Samudra	125	25	6/14/2014	6/28/2014	14
321	Mitra Samudra	125	25	7/20/2014	7/24/2014	4
322	Mitra Samudra	125	25	8/19/2014	8/28/2014	9
323	Mitra Samudra	125	25	9/18/2014	10/9/2014	21
324	Mitra Samudra	125	25	11/3/2014	11/9/2014	6
325	Mitra Saudara	99	27	3/17/2014	3/29/2014	12
326	Mitra Saudara	99	27	5/4/2014	5/26/2014	22
327	Mitra Saudara	99	27	7/1/2014	7/20/2014	19
328	Mulya Utama	123	25	3/29/2014	4/28/2014	30
329	Mulya Utama	123	25	9/5/2014	10/10/2014	35
330	Mulya Utama	123	22	11/14/2014	12/18/2014	34
331	Mutiara Inti Permata	169	30	2/13/2014	2/21/2014	8
332	Mutiara Inti Permata	169	30	3/8/2014	3/21/2014	13
333	Mutiara Inti Permata	169	30	4/29/2014	5/16/2014	17
334	Mutiara Inti Permata	169	30	6/18/2014	7/11/2014	23
335	Mutiara Inti Permata	169	30	8/31/2014	9/22/2014	22
336	Mutiara Inti Permata	169	30	11/11/2014	11/21/2014	10
337	Nova - Novi	82	24	1/9/2014	2/7/2014	29
338	Nova - Novi	82	24	2/16/2014	2/27/2014	11
339	Nova - Novi	82	24	3/6/2014	3/23/2014	17
340	Nova - Novi	82	24	4/11/2014	4/30/2014	19
341	Nova - Novi	82	24	5/17/2014	6/4/2014	18
342	Nova - Novi	82	24	6/22/2014	7/10/2014	18
343	Nova - Novi	82	24	8/11/2014	8/28/2014	17
344	Nova - Novi	82	23	10/8/2014	10/19/2014	11
345	Nova - Novi	82	23	10/27/2014	11/8/2014	12
346	Nusa Berlian	147	26	2/12/2014	2/18/2014	6

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
347	Nusa Berlian	147	26	3/6/2014	3/16/2014	10
348	Nusa Berlian	147	26	3/31/2014	4/16/2014	16
349	Nusa Berlian	147	26	5/3/2014	5/12/2014	9
350	Nusa Berlian	147	26	5/28/2014	6/9/2014	12
351	Nusa Berlian	147	26	6/28/2014	7/8/2014	10
352	Nusa Berlian	147	26	7/21/2014	8/27/2014	37
353	Nusa Berlian	147	26	9/16/2014	9/27/2014	11
354	Nusa Berlian	147	26	10/18/2014	10/28/2014	10
355	Nusa Berlian	147	26	11/11/2014	11/21/2014	10
356	Nusa Berlian	147	26	12/12/2014	12/19/2014	7
357	Nusantara Indah	144	26	2/8/2014	2/18/2014	10
358	Nusantara Indah	144	26	3/9/2014	3/29/2014	20
359	Nusantara Indah	144	26	4/21/2014	5/6/2014	15
360	Nusantara Indah	144	26	5/21/2014	6/19/2014	29
361	Nusantara Indah	144	26	7/9/2014	7/17/2014	8
362	Nusantara Indah	144	26	8/21/2014	9/7/2014	17
363	Nusantara Indah	144	26	9/17/2014	9/30/2014	13
364	Nusantara Indah	144	29	10/16/2014	10/25/2014	9
365	Nusantara Indah	144	29	11/9/2014	11/25/2014	16
366	Nusantara Indah	144	29	12/16/2014	12/26/2014	10
367	Palae Kajuara	110	25	2/6/2014	2/28/2014	22
368	Palae Kajuara	110	25	4/22/2014	5/1/2014	9
369	Palae Kajuara	110	25	6/23/2014	7/24/2014	31
370	Palae Kajuara	110	25	8/21/2014	9/26/2014	36
371	Palae Kajuara	109	25	11/3/2014	12/3/2014	30
372	Pesona Bahari	161	28	3/29/2014	4/18/2014	20
373	Pesona Bahari	161	28	6/1/2014	6/30/2014	29
374	Pesona Bahari	161	28	8/28/2014	10/13/2014	46
375	Pesona Kharisma	77	21	4/9/2014	4/28/2014	19
376	Pesona Kharisma	77	21	6/3/2014	6/20/2014	17
377	Pesona Kharisma	77	21	8/6/2014	8/27/2014	21
378	Purnama Indah	144	24	1/21/2014	2/7/2014	17
379	Purnama Indah - I	100	20	3/22/2014	3/31/2014	9
380	Putra Dewi	78	21	11/22/2014	12/3/2014	11
381	Putramas	149	27	2/19/2014	3/8/2014	17

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
382	Putramas	149	27	4/15/2014	5/12/2014	27
383	Putramas	149	27	6/23/2014	7/10/2014	17
384	Putramas	149	27	8/31/2014	9/27/2014	27
385	Putramas	149	27	11/1/2014	11/12/2014	11
386	Putri Ayu – II	85	22	4/10/2014	5/5/2014	25
387	Putri Ayu - II	85	22	6/10/2014	7/2/2014	22
388	Putri Ayu - II	85	22	8/25/2014	9/27/2014	33
389	Putri Ayu - II	85	22	11/18/2014	12/3/2014	15
390	Rahma Setia - O1	171	24	11/29/2014	12/19/2014	20
391	Rajawali	99	20	4/23/2014	4/28/2014	5
392	Rajawali	99	20	6/20/2014	7/10/2014	20
393	Rajawali	99	20	11/9/2014	11/19/2014	10
394	Rajawali - 1	100	20	2/11/2014	2/19/2014	8
395	Rajawali - 1	100	20	2/23/2014	3/2/2014	7
396	Rajawali - 1	100	20	4/13/2014	4/19/2014	6
397	Rajawali - 1	100	20	5/20/2014	6/13/2014	24
398	Rajawali - 1	100	20	9/11/2014	10/8/2014	27
399	Rajawali - 1	100	23	12/19/2014	12/25/2014	6
400	Rama Jaya 01	135	20	11/22/2014	12/3/2014	11
401	Ramadhani	98	30	2/5/2014	2/15/2014	10
402	Ramadhani	98	30	3/5/2014	3/20/2014	15
403	Ramadhani	98	30	4/22/2014	5/3/2014	11
404	Ramadhani	98	30	6/9/2014	7/16/2014	37
405	Ramadhani	98	30	8/12/2014	9/22/2014	41
406	Ramadhani	149	22	10/12/2014	10/23/2014	11
407	Ramadhani	149	22	11/13/2014	12/7/2014	24
408	Rukun Abadi	167	30	2/10/2014	3/18/2014	36
409	Rukun Abadi	167	30	6/7/2014	7/21/2014	44
410	Rukun Abadi	167	30	10/10/2014	11/4/2014	25
411	Sadar Wisata	123	23	9/19/2014	10/10/2014	21
412	Sari Setia-2	117	23	4/18/2014	4/28/2014	10
413	Sari Setia-2	117	23	6/28/2014	7/8/2014	10
414	Sari Setia-2	117	23	8/6/2014	8/25/2014	19
415	Sari Setia-2	117	23	9/30/2014	10/13/2014	13
416	Satria Palae 10	117	15	2/7/2014	3/5/2014	26

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
417	Satria Palae 10	117	15	3/19/2014	4/3/2014	15
418	Satria Palae 10	117	15	5/2/2014	5/31/2014	29
419	Satria Palae 10	117	15	6/12/2014	7/10/2014	28
420	Satria Palae 10	117	15	7/22/2014	8/27/2014	36
421	Satria Palae 10	117	21	9/9/2014	9/27/2014	18
422	Satria Palae 10	118	21	10/24/2014	11/4/2014	11
423	Satria Palae 10	118	21	11/17/2014	12/7/2014	20
424	Setia Tunggal	100	24	7/31/2014	8/28/2014	28
425	Sinar Purnama Jaya	141	22	2/24/2014	3/5/2014	9
426	Sinar Purnama Jaya	141	22	4/14/2014	4/27/2014	13
427	Sinar Purnama Jaya	141	22	6/14/2014	7/2/2014	18
428	Sri Muna	18	14	2/7/2014	2/18/2014	11
429	Sri Muna	18	14	3/6/2014	3/18/2014	12
430	Sri Muna	18	14	4/22/2014	5/4/2014	12
431	Sri Muna	18	14	6/10/2014	6/25/2014	15
432	Sri Muna	18	14	8/20/2014	8/29/2014	9
433	Sri Muna	18	14	9/21/2014	10/8/2014	17
434	Sri Muna	18	14	10/20/2014	10/28/2014	8
435	Sri Muna	18	14	11/11/2014	11/21/2014	10
436	Sri Muna	18	14	12/8/2014	12/31/2014	23
437	Subhanur Rohman I	80	22	5/7/2014	5/10/2014	3
438	Subhanur Rohman I	80	22	6/11/2014	7/10/2014	29
439	Subhanur Rohman I	80	22	11/8/2014	12/2/2014	24
440	Sumber Murni II	24	15	1/25/2014	2/6/2014	12
441	Sumber Murni II	24	15	2/19/2014	2/28/2014	9
442	Sumber Murni II	24	15	3/18/2014	4/4/2014	17
443	Sumber Murni II	24	15	4/19/2014	4/29/2014	10
444	Sumber Murni II	24	15	5/12/2014	5/26/2014	14
445	Sumber Murni II	24	15	6/10/2014	6/21/2014	11
446	Sumber Murni II	24	15	8/18/2014	8/28/2014	10
447	Sumber Murni II	24	15	9/12/2014	9/30/2014	18
448	Surya Indah I	147	26	1/26/2014	2/15/2014	20
449	Surya Indah I	147	26	3/1/2014	3/8/2014	7
450	Surya Indah I	147	26	3/24/2014	4/12/2014	19
451	Surya Indah I	147	26	4/24/2014	5/4/2014	10

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
452	Surya Indah I	147	26	5/22/2014	6/5/2014	14
453	Surya Indah I	147	26	6/18/2014	6/28/2014	10
454	Surya Indah I	147	26	7/19/2014	8/13/2014	25
455	Surya Indah I	147	26	8/28/2014	9/23/2014	26
456	Surya Indah I	147	26	10/12/2014	10/19/2014	7
457	Surya Indah I	147	26	11/3/2014	11/17/2014	14
458	Surya Indah I	147	26	12/5/2014	12/17/2014	12
459	Terka Abadi	149	27	1/8/2014	2/6/2014	29
460	Terka Abadi	149	27	2/19/2014	3/5/2014	14
461	Terka Abadi	149	27	3/23/2014	4/13/2014	21
462	Terka Abadi	149	27	4/27/2014	5/15/2014	18
463	Terka Abadi	149	27	6/1/2014	6/13/2014	12
464	Terka Abadi	149	27	6/30/2014	7/10/2014	10
465	Terka Abadi	149	27	8/13/2014	8/27/2014	14
466	Terka Abadi	149	27	9/25/2014	10/9/2014	14
467	Terka Abadi	149	27	10/25/2014	11/5/2014	11
468	Terka Abadi	149	27	11/21/2014	12/3/2014	12
469	Terka Abadi	149	27	12/17/2014	12/29/2014	12
470	Trisiendra Pratama	173	32	3/7/2014	4/3/2014	27
471	Trisiendra Pratama	173	32	5/1/2014	6/13/2014	43
472	Trisiendra Pratama	173	32	7/1/2014	7/24/2014	23
473	Trisiendra Pratama	173	32	8/23/2014	9/15/2014	23
474	Trisiendra Pratiwi	173	33	3/8/2014	4/3/2014	26
475	Trisiendra Pratiwi	173	33	5/3/2014	6/23/2014	51
476	Trisiendra Pratiwi	173	33	7/24/2014	8/29/2014	36
477	Trisiendra Pratiwi	173	33	9/16/2014	10/9/2014	23
478	Trisiendra Pratiwi	173	33	10/25/2014	11/14/2014	20
479	Trisiendra Pratiwi	173	33	11/29/2014	12/21/2014	22
480	Usaha Bersama	28	19	1/23/2014	2/9/2014	17
481	Usaha Bersama	140	26	2/13/2014	2/20/2014	7
482	Usaha Bersama	28	19	3/5/2014	3/17/2014	12
483	Usaha Bersama	140	26	3/6/2014	3/14/2014	8
484	Usaha Bersama	140	26	4/3/2014	4/11/2014	8
485	Usaha Bersama	28	19	4/12/2014	5/1/2014	19
486	Usaha Bersama	140	26	4/30/2014	5/17/2014	17

No.	Ship Name	GT	LOA (m)	Date of Arrival	Date of Departure	Duration (days)
487	Usaha Bersama	28	19	6/1/2014	6/19/2014	18
488	Usaha Bersama	140	26	6/2/2014	6/10/2014	8
489	Usaha Bersama	140	26	6/26/2014	7/8/2014	12
490	Usaha Bersama	28	19	7/8/2014	7/25/2014	17
491	Usaha Bersama	140	26	7/21/2014	8/13/2014	23
492	Usaha Bersama	28	20	8/24/2014	9/27/2014	34
493	Usaha Bersama	140	26	8/25/2014	9/4/2014	10
494	Usaha Bersama	140	26	9/18/2014	9/27/2014	9
495	Usaha Bersama	140	26	10/13/2014	10/19/2014	6
496	Usaha Bersama	28	20	10/28/2014	11/21/2014	24
497	Usaha Bersama	140	26	11/5/2014	11/14/2014	9
498	Usaha Bersama	140	26	11/27/2014	12/5/2014	8
499	Usaha Bersama	140	26	12/18/2014	12/29/2014	11
500	Yala Kencana	134	26	1/1/2014	2/7/2014	37
501	Yala Kencana	134	26	3/18/2014	4/18/2014	31
502	Yala Kencana	134	26	5/25/2014	6/18/2014	24
503	Yala Kencana	134	26	7/23/2014	8/25/2014	33
504	Yala Kencana	134	26	9/30/2014	10/19/2014	19
505	Yala Kencana	134	27	11/24/2014	12/10/2014	16
506	Zajira Arab	73	22	9/19/2014	10/10/2014	21
507	Zuika Sejahtera	174	25	1/28/2014	2/15/2014	18
508	Zuika Sejahtera	174	25	3/6/2014	3/29/2014	23
509	Zuika Sejahtera	174	25	4/13/2014	4/28/2014	15
510	Zuika Sejahtera	174	25	5/19/2014	5/31/2014	12
511	Zuika Sejahtera	174	25	6/9/2014	7/10/2014	31
512	Zuika Sejahtera	174	25	7/21/2014	8/27/2014	37
513	Zuika Sejahtera	149	22	9/18/2014	10/9/2014	21
514	Zuika Sejahtera	149	22	11/2/2014	11/22/2014	20
515	Zuika Sejahtera	149	22	12/5/2014	12/21/2014	16

Source: Author elaboration with data adopted from (Kalimas (DPC), 2016)