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Singapore International Hub-Port And Its Effects On The Smooth Running Of The Sea Freight Transportation System In Indonesia

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Abstract

The Port Singapore Authority (PSA) have a big role in sea transportation in Indonesia, whoever average 50 big vessels per day are tendered at the wharf of Singapore port for loading and unloading thousands of containers, so if Singapore port is congested for several hours the impact will make the crowded of sailing schedule for many vessels. Last week suddenly without any announcement Singapore port reported a problem with their port facilities and so their system, therefore many vessels were anchorages for several days about 4-6 days at the outer of the port for waiting time to tender. This accident makes the sea transport system by feeder service Indonesia-Singapore and vice versa re-scheduled. The impact for export-import activities from and to Indonesia was trouble because many can't call on time even omitted. For several years or starting in 1985 Indonesian Shipping lines depend on Singapore port as an international hub port that will through cargoes to the destination port. They chose Singapore port because there are complete port facilities and a container system, nobody knows that crisis so will come at Singapore as the biggest port in South East Asia. So now suggested to all of Indonesian shipping and Government to make a new big port as functions like Singapore port as an international hub port.

Keywords: Port, Sea Transportation, Container, Shipping.

1. Introduction

Singapore's success in stimulating foreign investors as an international business partner has resulted in increasing investment into revenue streams through Singapore's success as one of the world's trade hubs. Singapore can position itself as the country with the most competitive business costs globally. Countries with the best environment in the Asia Pacific. The country whose economy is the most

competitive, after America. A country that has the best workers in the world. The most attractive country for investment is Asia, after the Slovak Republic, Czech Republic and Ireland. A country with the best quality of transportation and air infrastructure in the world. A country that has the best quality of port infrastructure in the world. The best country to invest in the world after Switzerland. A country that has the best business environment in Asia. The country that gives the

most profit to investors. A country that has the best physical infrastructure in the world. Countries with the most multinational companies (MNCs) in the world [1].

News published by several media about congestion at the port of Singapore shocked many parties, especially commercial shipping entrepreneurs. However, e-port has become the choice of ship owners as a stopover and trans-shipment cargo to go to other major ports outside Indonesia. Feeder service is one of the shipping business fields that has been hanging punctuality with the central role of the port of Singapore. Has become a fog because almost all sailing schedules of ships that have been neatly arranged become messy. From the data that can be obtained information that in 2015, the port of Singapore unloaded/loaded containers as much as 30 million TEUS, compared to the port of Tanjung Priok Jakarta, the largest port in Indonesia in the same year, could only get 5 million TEUS, while in Tanjung Perak Surabaya 3 million TEUS and Tanjung Emas Semarang 650 thousand TEUS. The port of Singapore handles cargo, so if there is trouble with loading/unloading equipment, it will automatically affect the slow loading and unloading of containers from or on board. So far, loading and unloading equipment in Singapore using modern tools in the form of a

"Gentry Crane" operated with high technology can load and unload containers as many as 60 units/hour/crane, so that for "feeder" ships with a load capacity of 1000 TEUS can be completed in just 6 hours. So, when there is a repair due to damage to equipment and electrician systems, it will certainly greatly impact the slowness of the ship at the port to be addressed, as well as other ships that will lean will experience slowness due to congestion at the dock. This impact has a domino effect on the Windows system, which has been built well and regularly in various ports in Indonesia as feeder ports. How jammed the long queue of ships that will dock at the port of Singapore can be seen from a photo sourced detik.com published on November 11, 2020, below. The photo below is a view of the Singapore Port Master. It can be seen that all booms are raised, and the ship is fully loaded; Containers cannot be unloaded or loaded. This incident has yet to happen in Singapore for the past 20 years. What happened at the port port utilization was above 90%, and the ship waited up to 7 days to dock. This incident did not happen in Singapore only but in the United States or United Kingdom or India or China & Asia.



Fig.1. PSA (Port Singapore Authority) [2]

In the photo, it can be seen how the sophisticated "gentry crane" did not move at all, so there were several ships that were fully loaded but could not be unloaded, completely stuck at the dock. Singapore, the fulcrum port of thousands of containers daily that will be sent to and from ports in Indonesia, has

become a disaster after almost 20 years of significant disruption.

Port

The Port as a sea transportation infrastructure has a very important and strategic role in the growth of industry and

trade. It is a business segment that can contribute to the economy and national development because it is part of the chain of transportation and logistics systems [3]. [4], A Port is a place consisting of land and waters with certain limits as a place of government activities and business activities used as a place for ships to rest, get on and off passengers and load and unload goods in the form of terminal and ship berths equipped with shipping safety and security facilities and port support activities as well as places for intra and intermodal transportation movements. According to [5], a Port or dock is a berth or mooring place for ships to raise and unload passengers, loading and unloading goods and animals. It is an area in the working environment of economic activities. Kinerjo port sector is needed to support producer competition in national and international markets by distributing inward efficiently, in addition to supporting the integration and integrity of the national economy. Singapore International Port is the center of world trade today as a country in its economic development is the most competitive in the world with strong economic indicators from several countries in Asia and among the highest in the world. Singapore also strengthens its success by cooperating with several multinational companies with a strategy known as "New Singapore," where all Singaporean businesses are invited to reach new markets in the country that can be reached by a seven-hour flight from Singapore, which is expected to be connected to all countries in the world, to build domestic capabilities and sharpen its strategic network with countries Regional.

While in Indonesia, Tanjung Priok Port in Jakarta is a major national and international port that is the gateway to national and international economic connectivity that serves as the backbone of national development, with a total volume of freight transportation of 60% to and from Indonesia. Tanjung Priok Port also has such an important position in the national transportation and logistics system that it demands that Tanjung Priok Port be able to facilitate Indonesia's economic and trade activities continuously, and in the end, it is hoped that Tanjung Priok Port can encourage the national trade and industry sector to face international free trade [6]

Sea Freight Transportation Indonesia and Singapore

The Port of Singapore, which now manages 536.6 million cargoes, is the second largest port in the world. Even in 2012, for the first time, as many as 30 million large trucks crossed the port. The port terminals are in Tanjong Pagar, Keppel, Brani, Pasir Panjang, Sembawang and Jurong. Just imagine that the port is a stopover for about 140 thousand freight ships every year and can connect as many as 600 ports in the world. One of Singapore's proud infrastructures is equipped with 204 docks with crane facilities for loading and unloading goods. The port of Singapore carries out the function of controlling maritime trade that connects many countries through water transportation routes. Now, the world-class port is expanding and will be completed in 2020. The following is a review and role of one of the world's trade centers, the Port of Singapore, as quoted from Ship Technology and PSA Singapore Terminals [7].

ASEAN China Free Trade Agreement (ACFTA) is one of the trade agreements carried out by Singapore under the ASEAN regional organization. One of the backgrounds of the establishment of this agreement is the confidence of ASEAN, which sees that there are opportunities from the increasingly advanced Chinese economy and is supported by the fact that China is the largest market destination because of its large population [8]. The purpose of the establishment of ACFTA itself is an effort to improve the economy, trade, and investment among its members [8].

[9], Singapore is a small country with just one city on the tip of Peninsular Malaysia with a population of 5.5 million. [10], Indonesia's trade balance with Singapore experienced a deficit of USD 1.63 billion in 2020. The deficit in this trade balance has decreased by 65.14% compared to the previous year's balance recorded (Darmawan, 2020) at US\$ -4,67 million. The improvement in the trade balance, according to Trademap data, was supported by the value of Indonesia's exports, which were able to penetrate US \$ 10.71 billion. However, Indonesia's import activities from Singapore in 2020 were recorded to have a higher value than exports, which amounted to US \$ 12.34 billion. Indonesia's export activities to Singapore, in the past year in a downtrend. The

previous year, Indonesia's export value was US\$ 12.92 billion. As for imports, according to Trademap data, there was a decrease of 29.84% compared to the previous year, which was recorded at US \$ 17.59 billion. Based on product type, there are 10 main mainstay products of Indonesian exports to Singapore, which have proven to be able to record a surplus during 2020. The total export value of this main product reached US \$ 3.57 billion.

Globally, the trade balance for all goods products, this time is better because there is an increase in several types of goods. The total value of Indonesia's trade balance was recorded at US\$ 21.68 billion, up 703.56%. In other words, Indonesia recorded a trade balance surplus. The previous year, Indonesia's trade balance with all countries was recorded at US\$ -3.59 billion. Based on data from [11], has an export development trend of 4.40% from 2015 to 2019. Indonesia still has to compete with other countries to increase its existence in export activities, one way besides cultivating natural resources, namely by improving transportation.

2. Materials and Methods

This study used descriptive research with a qualitative approach. According to Sugiyono 2016 [12], the method used is based on the philosophy of postpositivism, which is used to examine the natural conditions of objects. Where researchers who act as key instruments of data collection techniques are regulated or combined. This study also aims to describe, explain and explain in detail the problems to be studied by studying as much as possible an

event.

3. Results

Patterns of international sea freight systems

The international sea freight system, firmly built since 1985, is a feeder service pattern using Singapore as an international hub. Although nothing requires an international voyage to and from Indonesia to "transit" first in Singapore, in reality, almost 90% of export/import cargo from and port ports in Indonesia use Singapore as a place of "cargo transshipment". From Singapore, cargo to be sent to Indonesia is transferred (tranship) by "feeder" ships after being unloaded first from mother ships that load it from ports of origin in various countries: Europe, America, the Middle East, Far Esat (Japan, Korea, China) and Australia. Vice versa, almost all export cargo from Indonesia is transported first to the port of Singapore by "feeder" ships and then transferred to the "mother vessel," which will transport it further to various ports in the destination country. With this pattern, Singapore becomes the central transshipment of cargo, not only from and to Indonesia but also neighboring countries, such as cargo to the Philippines, Thailand, Myanmar, Vietnam and Malaysia. So, it is not surprising that in 2010, the volume of container loading and unloading in Singapore reached 28.4 million TEUS (Source: AAPA), compared to the volume from Tg. Priok port in the same year only reached around 4.7 million US TE. This systematic pattern of transporting goods can be illustrated in the following illustration [13]:

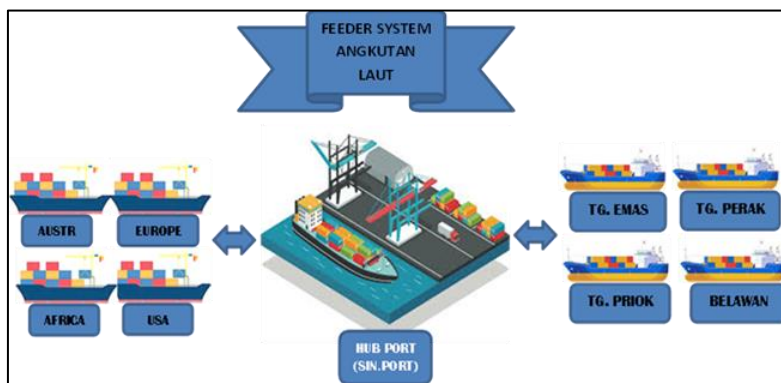


Fig.2. International Sea Freight Feeder System Illustration [13].

From this illustration, Singapore's role is very large in determining the smooth / not of

trade transportation from/to the Asean region. Based on our study, this transshipment pattern

via Singapore International hub port can run and last for decades because:

1. The port superstructure in Singapore always tries to adjust to users' needs, namely shipping companies that operate their ships and always update the size and technology of their ships. Cellular or container ships have grown rapidly since the first generation operated in the 1970s. Which still use ship cranes or semi-container ships with a capacity of around 1000 TEUS, then continue to switch generations by the development of the world of global trade until now it has entered the fourth generation with a capacity between 15 thousand to 20 thousand TEUS and of course requires a draught (depth of seawater) up to -16 to -18 meters. This kind of port superstructure that until now still cannot be found in ports in Indonesia, except in Tanjung Priok.
2. Other infrastructure as a support for the existence of international ports is loading/unloading equipment (equipment), including in the form of a "gantry crane" whose loading and unloading speed and capacity are always adjusted to the needs of ships as users. The gantry crane in Singapore, which is operated automatically, currently the loading/unloading capacity per hour/crane has reached 60 Teus, while at ports in Indonesia, including in Tanjung Emas only reached 25 Teus / Crane/hour.
3. The availability of cargo volume for several ports in Indonesia is considered very small compared to the loading capacity of mother vessels operated by MLOs (Main Line Operations). Currently, the loading capacity of mother vessel ships on European and American routes ranges from 10 thousand TEUS on average; some have even reached 20 thousand TEUS, compared to the average available cargo per week at Tanjung Emas port is only around 2 thousand TEUS for America, 2 thousand for Europe, 3 thousand for Australia, China, Japan and Korea so that the constraint of cargo volume prevents the "mother vessel" from direct-calling (coming directly) to ports in Indonesia, even though there have begun to be direct even then only to certain destination countries such as Korea and Japan.
4. Energy and technology support is very large

for the port of Singapore, so there is rarely a "power failure" or generator off that will interfere with the smooth loading and unloading activities. Likewise, technology contributes great thought to creating a system of container tracking, billing, and piloting electronically and automatically all day throughout the year. Ini is an advantage of Singapore that is very difficult for us to apply in various ports in Indonesia.

In 2022, the Port of Singapore will remain the world's largest transshipment port in handling the highest number of containers despite the declining global container trade. In 2022, 37.3 million TEU of containers passed through Singapore's ports in 2022, a decrease of about 0.7 percent from 37.6 million in 2021 [14]. Despite the decline, Singapore's ports remained at the top despite a slowdown in trade and retail volumes in terms of production and consumption in the economy. The port of Singapore during the Covid 19 pandemic continues to maintain Singapore's connectivity, continues to strengthen its port position and always contributes to the resilience of global supply chains. So, in 2022, according to the Maritime and Port Authority of Singapore (MPA), the Singapore terminal handled 577.7 million tons. It is also supported by providing alternative fuels with biofuel types to support maritime decarbonization.

4. Discussion

Singapore's port in bunker sales 2022 fell by 4.3 percent from 2021. Sales of these bunkers amounted to 140,000 tons consisting of biofuel blends, which exceeded 16,000 tons of sales of liquefied natural gas bunkers. Bunkering is the process of providing ship fuel, which can later be used alone. Commercial sales of biofuel blends up to B24 mean that biofuel blends make up 24% of marine fuels. In December 2022, the Port of Singapore proposed building and operating low ammonia (0 carbon) power plants.

Table 1. Xinhua-Baltic International Shipping Centre Development Index Report 2022 [15].

No	Country	City	Score
1	Singapore	Singapore	94.88
2	UK	London	83.04
3	China	Shanghai	82.79
4	Hongkong SAR China	Hongkong	79.15
5	UAE	Dubai	75.74
6	Netherlands	Rotterdam	73.85
7	Germany	Hamburg	73.07
8	USA	New York / mew Jersey	72.58
9	Greece	Athens / Piraeus	68.67
10	China	Ningbo-Zhoushan	66.12
11	Japan	Tokyo	65.96
12	USA	Houston	65.90
13	China	Guangzhou	64.41
14	Belgium	Antwerp	64.26
15	China	Qingdao	64.08
16	Korea	Busan	63.61
17	China	Shenzhen	59.14
18	Denmark	Copenhagen	58.33
19	USA	Los Angeles	57.81
20	Australia	Melbourne	57.60

The picture shows countries with international shipping in 2022, namely Singapore, London, Shanghai, Hong Kong, Dubai, Rotterdam, Hamburg, New York/New Jersey, Athens/Piraeus, and Ningbo-Zhoushan. The Port of Singapore (MPA) is still a true reflection of strong partnerships with Singapore's maritime partners, industry players and trade unions. The main factors to consider in the assessment are [15]:

1. Port infrastructure, including cargo throughput, number of cranes, container dock length and port draft
2. Soft power shipping services, consisting of ship brokerage, ship management, ship finance, insurance and legal, as well as the number of participants in special maritime support operations such as hull insurance premiums
3. Business environments, such as tariffs, e-government service coverage and logistics performance

With a program supported by the Maritime and Port Authority of Singapore (MPA), more

than 30 companies will be established and operating in Singapore by 2022. With that, the goal to launch 150 Marinetechn Start-Ups by 2025 is getting closer.

Port Innovation Ecosystem Reimagined has grown from 17 in 2018 to 100 in 2022. With Singapore as an international transshipment hub, cargo shipments at the Port of Singapore are also influenced by external factors such as economic performance and global trade. The Port of Singapore remains optimistic about the prospects of the maritime industry and persists in the first half of 2023 due to the development of Tuas Port and the collaboration between the government and industry in the development of maritime talent.

Lloyd's List released 10 major container terminals globally in 2022. Lloyd's List was a media that informed news about weekly shipping in London since 1734. This ranking is based on container throughput, growth and opening of new projects. In 2021, it ranked first, namely the Port of Singapore International (PSA), followed by APM Terminal and China COSCO in second and third positions.

Global terminal operators' equity-based throughput league table, 2021

Ranking 2022	Operator	Volumes 2021 (teu)
1	PSA International	63.4m
2	APM Terminals	50.4m
3	China Cosco Shipping	49m
4	China Merchants Ports	48m
5	DP World	47.9m
6	Hutchison Ports	47m
7	Terminal Investment Limited (TIL)	33.7m
8	ICTSI	11m
9	SSA Marine	8.8m
10	Evergreen	7.7m

Fig.3. 10 Major Container Terminals Globally In 2022 [15].

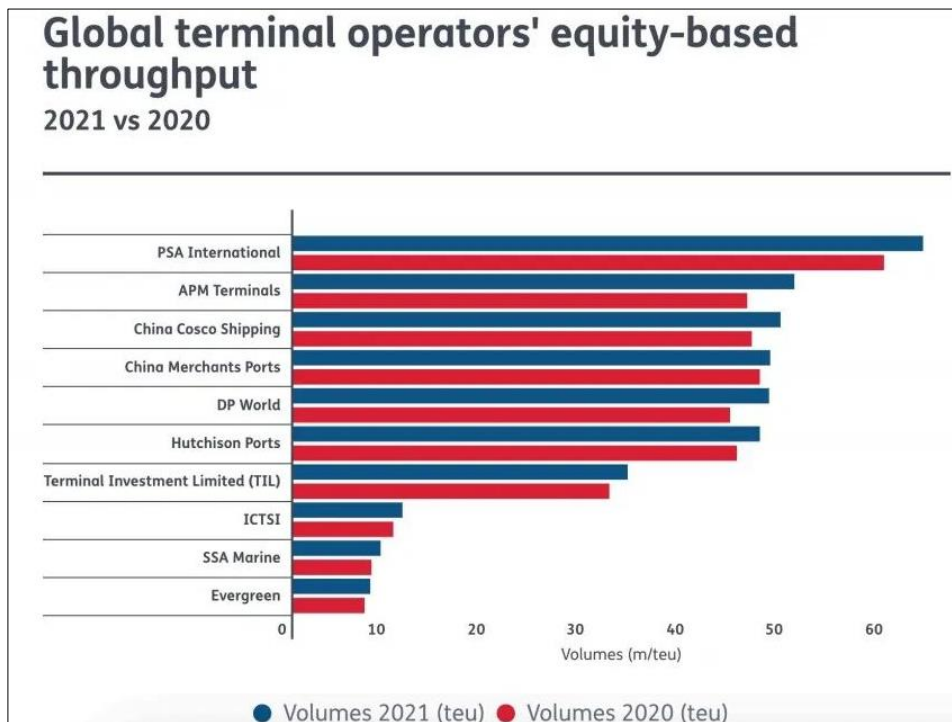


Fig. 4. Global Terminal Operator [16]

[16], PSA's container throughput in 2021 was 63 million TEU, 10 million TEU more than the second-ranked APM Terminal and a 6.5% year-on-year increase. This number will continue to grow and increase with the launch of a flagship port in Singapore. In September 2022, 3 piers have been used in the first phase and will be completed in 2024, handling capacity of up to 65 million TEUs. Of course, the existence of the Singapore International Hub-Port impacts the smooth running of the sea transportation system in Indonesia, as follows.

Advantages of Singapore International Hub-Port

1. Goods will be immediately transported on board at "POL" => L/C Disbursement and Efficiency in Storage/Warehousing
2. Goods will arrive faster at the destination port => effect + markets and commodities

Disadvantages of the Singapore International Hub-Port

1. Dependence on the existence of "T/S Port and "Mother Vessel" is very large => strict "Sailing Schedule"

- Freight paid by the user is more expensive than the 'Direct Vessel' => there are surcharges/fees at the T/S Port (On/Off Fee)

Reasons for Using a Feeder System;

- At the Trans-shipment Port, ship berthing facilities are available (channel and depth of the port pool > 14 m) and loading and unloading equipment for goods that are more complete, and crowded.
- While at the Port of Loading, there is not enough cargo volume to be transported

with 1 unit of "Mother Vessel" around 2500 Container/Voyage.

- At the Port of Loading, there needs to be more berthing facilities available, and the number of loading and unloading equipment still needs to be increased.
- In Trans-shipment Port, the infrastructure and software are more guaranteed both from a technical and non-technical point of view.

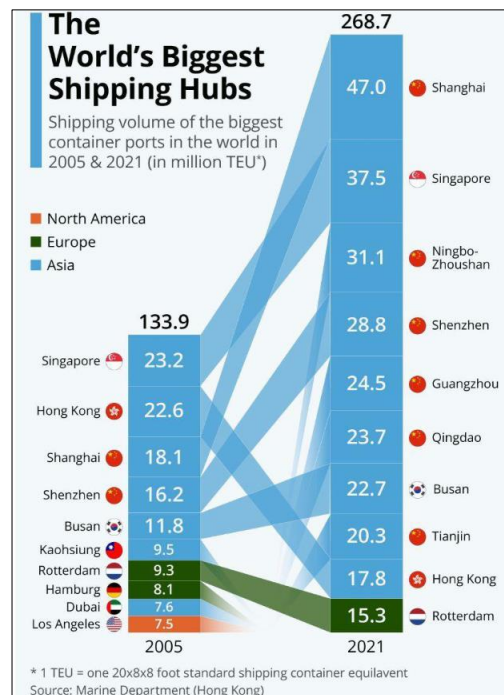


Fig.5. The world's Biggest Shipping Hubs [17]

From the picture above, it is explained that there has been a large increase in the volume of shipments. Singapore and Busan, for example, have seen growth rates of over 50% in container throughput since 2005. This shipment has made Singapore's international port the backbone of the global supply chain by 90%, with world trade using sea transportation modes. It impacts an efficient and cost-effective way to transport goods long distances, with many of these networks also making the delivery model a 'hub and spoke'. However, with the growth in throughput, there will also be problems that occur; for example, in May 2021, there was a disruption in operating facilities and systems from the port of Singapore. As a result, container ships are stranded inside and outside the port, causing a domino effect of disruption to global shipping.

The existence of economic agreements made by Singapore with other countries directly increases trade activities at the Singapore PSA port. This is due to the nature of Singapore it self as a small country that concentrates international trade activities at the Singapore PSA port. Singapore PSA is the main port owned by Singapore by focuses its trading activities there. Since it was first established in 1964, the port has continued to improve facilities to create safe and adequate trading activities PSA Singapore. PSA Singapore operates under The Maritime and Port Authority of Singapore (MPA) as the state body representing the Government of Singapore in maritime affairs. The number of incoming cargoes continued to increase from 2009 to 2014. A total of 472,300,000 tonnages were recorded entering the Singapore PSA Port, with

the distribution of general type cargo of 280,349,000 tonnes and bulk type cargo of 191,951,000 tonnes. The increase continued until 2014, with a total cargo of 581,269,000 tonnage, with a distribution of 384,418,000 for general cargo and 196,850,000 tonnage for bulk cargo Statistic Singapore. The total trade value has followed the increase in loading and unloading activities at the Singapore PSA Port carried out at the Singapore PSA Port.

In addition, the value of trades conducted in PSA Singapore in 2009 amounted to 747,417.4 million dollars. The increase occurred in 2010 with an escalation of 20.6% with a trade value of 902,062.6 million dollars. The value of trade continued to increase until 2013 to 975,945.6 million dollars. Singapore's participation in the ACFTA multilateral agreement with China under ASEAN is one of the reasons for the increase in trade activity at the port. However, the increase in activity is inseparable from the economic threats that can occur through the Singapore PSA port. PSA Singapore does not only focus on remembering operational effectiveness but also strives to balance it with its security facilities [18]. On PSA Singapore's official website, it is written that there are five main aspects in its efforts to improve PSA Singapore's security facilities. These aspects are the maximum use of technology, cooperation with the government or authorities both domestically and abroad based on a 3-level regulatory framework, integration with operational systems, and changes in mindset. Collaboration with industry. With these five main aspects, PSA Singapore has adequate port security systems and facilities.

5. Conclusions

Singapore is one of the city-states in the world with an area of less than 700 km², relying on international trade as one of the efforts to meet basic needs. It is due to the absence of natural resources contained in the territory of Singapore. To overcome this, it is necessary to have an international trade agreement agreement carried out by Singapore to meet basic needs. Singapore entered into economic agreements with other countries to increase trade activities at the Singapore PSA port by concentrating international trade activities there. The Port of Singapore has also

experienced increased facilities for creating safe and adequate trading activities. With a busy schedule and supported by such large facilities and systems, Singapore has experienced catastrophic disruptions that impact export-import activities, namely congestion at the port of Singapore, which surprised many parties, especially commercial shipping entrepreneurs. This incident, of course, there is an impact given to the smooth running of the sea transportation system in Indonesia. This kind of port superstructure that until now still cannot be found in ports in Indonesia, except in Tanjung Priok.

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