Conference Paper

Potential for Transport in Asia Pacific Region

Taih-Cherng Lirn[1] and Ade Riusma Ariyana[2]

[1]Professor in Transportation and Logistic National Taiwan Ocean University (NTOU)
[2]Assistant Editor of AKTA Journal, Universitas Islam Sultan Agung Semarang, Indonesia

Abstract

Currently, the movement of goods between islands is mostly carried out using containers. This is because containers are more efficient and effective, and provide a guarantee of safety for the goods being transported. This advantage needs to be fostered with a planned transportation system to facilitate further efficiencies. The positive effects of this would include shippers receiving lower tariffs, and shipping lines getting guaranteed availability of goods. Tarakan Port, currently under the management of PT Pelindo IV, continues to improve as a port for cargo consolidation, especially in dealing with the Asia Pacific region. This study evaluates the improvement already displayed by the port administrators, collecting data through observations, opinions, and documentation which is then analyzed using a quantitative approach using the IPA (Importance Performance Analysis) method. The results are juxtaposed with the development of port operational performance data to see the conditions expected for the port to be able to provide services efficiently and effectively. The results of the analysis and evaluation show that there are still gaps that need to be corrected, especially in the aspects of facilities, infrastructure and human resources. Addressing these issues will increase the regional competitivity of the port and reduce logistics costs.

Keywords: Cargo Consolidation; Competition; Ports.

Corresponding Author:
Taih-Cherng Lirn
tedlirn@email.ntou.edu.tw

Published: 12 January 2021

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the IWPOSPA Conference Committee.

1. Introduction

Background The Provinces of North Kalimantan and Kalimantan are areas affected by the global economic turmoil, especially with the enactment of the Asean Economic Community (Asean Economic Community/MEA). In order to build a strong economy, it is necessary to develop an industry in accordance with the superior commodities in this region. North Kalimantan has strength in agro-industry, maritime and tourism. The fundamental strengthening of North Kalimantan's local industry which is capable of global competitiveness is in line with the development of the sea highway considering that geographically this area has sea space traversed by international shipping routes with a fairly high level of density.

The sea highway concept was created to strengthen shipping lane connectivity between the Western Region of Indonesia (KBI) and the Eastern Region of Indonesia (KTI) and to facilitate trade access with the countries of the South Pacific and East Asia. Therefore, it is necessary to increase the development of adequate transportation infrastructure in connecting agricultural, plantation and fishery producing areas with processing and industrial areas. (Yumantini, Wuri Anny. (2016). Acceleration of Indonesia's Economic Development Towards a Maritime Country. http://wuriannyyumantini.com/seminar-percSpeed-pembangunan-ekonomi-indonesiamenuju-negara-maritim/ accessed on 18 October, 2020)

For KTI, several port infrastructures that must be built include Jayapura, Sorong, Manokwari, Ambon, Bitung, Kendari, Makassar and Tarakan. The construction and improvement of existing port facilities is imperative so that the condition of sea transportation infrastructure is evenly distributed throughout Indonesia so that regular ships with the same capacity size can easily stop by. The results of the research conducted show that the performance of Indonesia's national port services cannot be separated from the availability of infrastructure and loading and unloading facilities. The current performance of Indonesian ports is measured by indicators of port services and utilities.

2. Research Methods

The population of this study were all business actors as respondents' assessment consisting of goods owners and shipping companies on the quality of port facilities services in the port environment of Tarakan and other stakeholders or related agencies. Sampling was carried out by stratified random sampling considering the relatively easy implementation and stratification which can increase the precision of the sample to the desired population. The number of samples in each stratum is taken proportionally according to the population of each stratum. (Sugiyono. (2013). Qualitative and Quantitative Research Methods R & D. Bandung: Alfabeta) Sampling is done using the Slovin formula where the notation n is the number of samples, N is the number of population, and e is the error tolerance limit.

3. Results and Discussion

The Decree of the Minister of Transportation Number PK 414 of 2013 is an embodiment of Act No. 17 of 2008 mandating the need to formulate a National Port Master Plan (RIPN) as a policy framework to facilitate the achievement of the development vision

in the port sector, namely “An efficient, competitive and responsive port system that supports international trade. and domestic as well as encouraging economic growth and regional development. (Decree of the Minister of Transportation Number PK 414 of 2013 concerning Stipulation of the National Port Master Plan) The RIPN is prepared by integrating cross-sectoral plans, including the linkages between the national transportation system (Sistranas) and the economic corridor development plan and the national logistics system (Sislognas), investment plans and policy implementation, government and private participation, and the division of authority between the central and regional governments. The success of the port can be measured from its performance in serving inter-island and especially international ships. Port performance in providing services to port service users depends on the time the ship is serviced while at the port. A high port performance indicates that the port can provide good service (Triatmodjo, Bambang. (2010). Port Planning. Yogyakarta: Beta Offset. p. 98).

The government through the Decree of the Director General of Sea Transportation Number: UM.002/38/18/DJPL-11 dated December 15, 2011 concerning Port Operational Service Performance Standards, stipulates that operational service performance is the measured work achieved at the port in carrying out ship services, goods, utility facilities and tools in a certain time period and unit. (The government through the Decree of the Director General of Sea Transportation Number: UM.002/38/18/DJPL-11 dated December 15, 2011 regarding Port Operational Service Performance Standards)

The performance of Indonesia’s national ports in terms of efficiency indicators is measured by three indicators, namely: (Sutomo, Heru & Joewono Soemardjito. (2012). Assessment Model of the Port Effectiveness and Efficiency (Case Study: Western Indonesia Region))

1. fleet service,
2. goods services, and
3. port facility utilities.

On this basis, a port that is able to show the performance of these three things has great potential to become a hub port in supporting foreign trade and the national logistics system. (Azis, Abdul., Rahman Kadir & Syamsu Alam. (2017). Port Development Strategy from Conventional Systems to Full Terminal for Container Operators at Tarakan Port. http://pasca.unhas.ac.id/jurnal/files/86213c74bffe486cbe81d4219914d250.pdf acesses on 15 October, 2020) The operation of the sea highway is expected to be able to encourage inflation control in various regions, especially in Eastern Indonesia. Therefore, the government continues to strive to build infrastructure networks even to areas

that are difficult to reach by conventional shipping, so that the distribution of goods is evenly distributed and can reduce price disparities and reduce quite high logistics costs. This is also done in order to serve the growing number of vessels in line with the increasing share of domestic cargo. (Suryowati, Estu. (2016). Seen the Impact of the Sea Highway. http://businessfinance.kompas.com/read/2016/04/01/163904526/Start.Terlihat.Dampak.Tol.Laut accessed on 16 October, 2020)

Connectivity through the maritime highway program is starting to show positive results. According to BPS records, the volume of goods transported by ships for the period January-February 2016 reached 39.73 million tons, an increase of 9.01% compared to January-February 2015 which was recorded at 36.45 million tons. If the 2015 period is compared to the same period in 2014, it can be seen that the volume of freight transport only increased by 0.5 percent. Furthermore, transportation passengers for January-February 2016 were 2.91 million people, an increase of 48.44 percent compared to the same period in 2015 which only amounted to 1.96 million passengers. This increase was only occurred on four routes operating out of the six sea highway routes that have been announced, namely Tanjung Priok-Natuna, Tanjung Perak-Merauke, Tanjung Perak-Waingapu, and Tanjung Perak-Timika. Meanwhile, those that are still in process are the Tanjung Priok-Biak and Makassar-Ternate-Bacan routes.

The Minister of Transportation has explained that the marine toll program is a program that has a positive impact on the sustainability of the national economy. Especially on the certainty of the movement of goods and also the certainty of the price of the goods themselves. There have been many ports that were inaugurated by President Jokowi, equipped with adequate facilities, such as a large collection area or storage area. As part of the marine transportation system, port infrastructure plays an important role in trade and development by functioning as a gateway for goods and passengers to enter and exit the area where the port is located/hinterland.

The Port of Tarakan is the main gateway for the flow of goods for North Kalimantan Province. However, the facilities owned and several other factors are inadequate and their role is not optimal resulting in high logistics costs. Therefore, the government wants to establish an Indonesia International Gateway whose route is like a pendulum. The complexity in port logistics is very much related to the internal management of port managers, service users, especially related to coordination and communication in one cycle of goods delivery, loading and unloading processes, process of ship flow activities and other port activities. In one technological process chain, (Son, Adris.A & Susanti Djalante. (2016). Port Infrastructure Development in Support of Sustainable

Development. Media Engineering Scientific Journal Vol.6 No.1, January 2016 (433-4) ISSN: 2087-9334. Accessed on 15 October, 2020) To support efforts towards the formation of gateways in support of the maritime axis program, the government is building transportation infrastructure starting from the border area so that it has easier access, especially to neighboring countries. (Jinca, M. Yamin. (2011). Indonesian maritime transport: Systems Analysis and Case Studies, Brilliant International. ISBN 6029802542, 9786029802542.Accessed on 19 October, 2020) Because Tarakan is included in the area directly adjacent to the Asean country, the transportation infrastructure is continuously improved so that it is able to serve foreign ships entering the province of North Kalimantan. Various facilities continue to be built and developed, including port infrastructure with adequate quality standards.

The port is located at coordinates 03◦16 ’52.65’ ’N and 117◦35’36 ” East Longitude. Inter-island commodities that pass through this port include rice, rattan, CPO crops, coal, some of which are exported to foreign countries such as Japan, Singapore, China, the Philippines, etc. The Port of Tarakan is located on the east coast of Sulawesi Kalimantan and faces the Makassar Strait. The condition of the beach around the port is generally sloping, the seabed is made up of mud and sand. The shipping channel to the port is 21 miles long with a width of $\pm$ 1.5 km, a depth of 9 - 15 meters. The port of Tarakan is naturally protected by the surrounding islands, and the maximum wave height is about 0.5 meters. Average speeds above 10 knots occur between October and December. The high wind speed generally occurs during the rainy season. Harbor pool: Minimum pool depth is 8 meters to 20 meters, into the pier 6 meters to 13 meters, pool area 121.30 Ha. Visits by ships at the port of Tarakan during 2010-2015 show that the movement of goods within the country or between islands still dominates loading and unloading activities at the port. This shows that there is still a need to increase the interest of the community to switch to container cargo considering that the large number of hinterland container terminals has a fairly large volume of commodities. The flow of goods entering/unloading for domestic trade is much greater than the flow of goods out/loading.

Regulations regarding port operational performance standards are intended to determine the level of operational service performance at the port, the smoothness and orderliness of services used as a basis for consideration for calculating port service rates. The structure of port performance indicators set based on the Decree of the Director General of Sea Transportation Number UM.002/38/18/DJPL11 can be classified into service performance, productivity performance and utility performance. ET, BT indicators, loading and unloading performance and equipment operating readiness are classified as good if the performance is above the standard, good enough if the

performance is 90-100%, and poor if the performance is less than 90%. The indicators of WT, AT, BOR, YOR, SOR, and container receiving/delivery are considered very good if the performance is lower than the standard, it is considered quite good if the results are 0 - 10% greater than the standard, and considered less good if the performance is greater than 10% of the standard. The service indicator assessment presented is the result of obtaining data for the last 5 years from the management of the Tarakan port. Assessment of service performance through goods traffic (traffic power) of port facilities within a certain time period can be measured through service time indicators such as WT, AT, and ET/BT. From the table above, it can be seen that the comparison of port operational performance service indicators for the last 5 years shows that the WT value of container terminals has started to improve with a continuous decline in waiting time. The ET/BT ratio for 5 years reached an average of 42.97%.

Matters that affect the performance of this service include the availability/number of guides and pilot boats to further reduce the value of WT, skill of scouts and skippers, in ship maneuvers. Shipping channel conditions, dock layout and weather affect AT. The number of loading and unloading equipment and supporting facilities, equipment readiness, labor competence, the effective number of gang workers working and smooth distribution of cargo including cargo receiving-delivery to and from container terminals greatly affect the ET/BT ratio. Assessment of utility indicators to see the capacity of dock facilities and supporting facilities to be used intensively. This assessment criteria includes an assessment of YOR, BOR, and equipment readiness. The performance of BOR and YOR at the container terminal shows a fairly good average score of 70 and 74%, respectively, over the past 5 years. However, during this period, there was a continuous decline of 2% and 4% per year, respectively. The BOR and YOR scores only improved in 2010, after which they continued to decline. This shows the need for efforts to increase service capacity if a port is to be developed as a center for goods consolidation. The loading and unloading performance of containers at the port of Tarakan is very low, namely for the period 2010-2015 an average of 10 containers per hour (B/C/H). Although the loading and unloading performance data is relatively low, other performance data shows little improvement, such as the berth occupancy rate (BOR) in 2010-2012. However, it still needs to be investigated further because it seems that there are still many containers in the dumping yard for quite a long time. In addition, it can be concluded that ships spend too much time not operating or waiting at the port, as evidenced by the high TRT time ranging from 70-75 hours. This shows that infrastructure support is still weak and this is a common phenomenon for many ports in East Indonesia. This is reinforced by the results of research conducted by Adris

A. Putra and Susanti Djalante (2016) which show that the operational performance of port services is still not good, the ratio between waiting time and service time is quite large and container transport services are very slow compared to needs.

1. Port Facilities

   Compared to general cargo loading and unloading activities, container service activities at the Tarakan Container Terminal seem to continue to experience a significant increase, so that to increase capacity and improve service quality, additional container loading and unloading equipment will be added in the form of 1 (one) container crane unit, 1 (one) unit Reach Steaker with a capacity of 35 tons, 2 (two) units of forklifts with a capacity of 7 tons as shown in table 3. Quadrant map of Figure 3 as an illustration of service performance in the aspect of facilities, showing that what needs to be improved is service variables, among others,

   (a) Availability of security facilities from criminal disturbance;

   (b) Availability of security aids (Patrol Car, CCTV, etc.);

   (c) Availability of reception facilities/facilities;

   (d) Adequacy of loading and unloading equipment capacity (gantry crane, forklift for CY) and

   (e) Ease of obtaining facilities/information related to handling goods/cargo documents.

2. Port Infrastructure

   Customer satisfaction has become a central concept in business and management discourse. Customers are the main focus in measuring the extent of satisfaction and quality of services provided to customers. Therefore, customers play an important role in measuring satisfaction with the products and services provided by the company.

Quality improvement and improvement are functions that are not sufficiently assigned to a particular division but rather are management functions that exist at all levels. In line with this, the Government through the Ministry of Transportation issued Regulation of the Minister of Transportation Number 23 of 2015 concerning Enhancing the Function of Port Operators at commercially operated ports, article 12 which emphasizes the need for port operators to improve the quality and competence of human resources through training and more education. intensive and sustainable in the fields of port management, sea transport management, and contractual or contract knowledge as

well as through other technical education and training. (Regulation of the Minister of Transportation Number 23 of 2015 concerning Enhancing the Function of Port Operators at commercially operated ports, article 12) The Potential of Cargo Consolidation An important aspect that needs to be taken into account is economic growth through an increase in the flow of general cargo and container goods and ships visiting in the future that are getting bigger and even able to reach remote, outermost islands so that it is time for port development to be increased. The demands of service users for loading and unloading services for containers and general cargo that are fast, safe, efficient and effective, of course, need to be implemented at the port of Tarakan. Economic growth which is supported by the development of the transportation industry certainly has strong reasons and therefore it is very reasonable that the government undertakes development based on the potential of its superior commodities.

Figure 1: The Map of Tarakan

The port of Tarakan is increasingly important so that its development needs to be directed to focus on several important things by following the canvas business model so that it can be described based on the business unit in more detail, especially on container services in the hope that it will optimize revenue from container activities

In the past administration era, the formation of a corridor for economic development in Indonesia was based on the fact that the spread of industry in Indonesia was still 75% in Java, 18.4% in Sumatra, 3.1% in Kalimantan and 2.16 respectively in Bali., NTT and NTB, Sulawesi and Maluku and Papua. With regard to the concentration of superior commodities, the acceleration and expansion of Indonesia's economic development is carried out based on the development approach of existing and new centers of economic growth. This approach is essentially an integration of sectoral and regional approaches. Each region develops products that are its advantages. Therefore, the

focus of the development of the Kalimantan region is on its function as a center for production and processing of mining products and a national energy storehouse.

The development of this cargo prediction indicates that the transformation of the port of Tarakan needs to be supported so that it is equal to the development of other ports considering that this area is a newly formed province. To help accelerate productivity, this port still needs to be a “feeder” of the Tanjung Perak port in Surabaya. In Indonesia, the port of Tanjung Perak in Surabaya is used as the main connecting port for Eastern Indonesia (from Kalimantan to Papua). However, the weakness is the same as other ports in KTI, time delay is a problem for sea transport entrepreneurs. Therefore, repairing the pier facilities (Loc. Cit). The performance of port operational services for the period 2010-2015 shows that WT, ET, BT, TRT have started to improve due to a fairly good decline in value. Even so, the ET/BT ratio for 5 years reached an average of 42.97% so that this achievement has not been able to fully satisfy service users due to the low effective working time while the ship is in port.

Regarding the respondent’s opinion, it can be shown that there is a gap between expectations and the current performance of the port management facilities, infrastructure and human resources. The aspects of facilities that still need improvement are the things

1. adequacy of loading and unloading equipment capacity;
2. availability of reception facilities/facilities;
3. availability of safety and security facilities;
4. ease of obtaining information on handling cargo documents. For the infrastructure aspect includes:
    (a) comfort/cleanliness of the document processing room
    (b) adequacy of stockpiling field provision;
    (c) adequacy of loading and unloading equipment in the stacking yard;
    (d) availability and quality of lighting;
    (e) quality of port entrances and hinterland access. For aspects

HR includes

1. the adequacy and quality of custom services at ports;
2. the adequacy and quality of the cargo service apparatus

3. the quality of information services for cargo and ships docked at the port. In addition, it is also necessary to strive for the port of Tarakan to be a port with a fully terminal container system because it has a positive impact not only on increasing the flow of container traffic but also on the performance of container services in terms of facilities, infrastructure and human resources. This effort is supported by predictions that give hope that the port will develop into a center for goods consolidation for the North Kalimantan region and its surroundings. It is suggested to port managers that the loading and unloading productivity can be increased again, there is still a chance for a two-fold increase so that it can be equal to the quality of other ports in KTI by increasing the operator's ability and equipment capacity.

4. Conclusion

The achievement of this ratio is not yet fully able to provide satisfaction to service users because of the low effective working time for ships in port. Therefore, it is necessary to make efforts to increase the effectiveness of work at the port.

References

[1] Azis, A. A., Kadir, R. and Alam, S. (2017). *Port Development Strategy from Conventional Systems to Full Terminal for Container Operators at Tarakan Port.* Jakarta: MTPDI org.

[2] Jinca, M. Y. (2011). *Indonesian maritime transport: Systems Analysis and Case Studies, Brilliant International.* Surabaya: Brilliant International.

[3] Son, A. A. and Djalante, S. (2016). Port Infrastructure Development in Support of Sustainable Development. *Media Engineering Scientific Journal*, vol. 6, issue 1, p.1-6.

[4] Sugiyono. (2013). *Qualitative and Quantitative Research Methods R & D*. Bandung: Alfabeta.

[5] *Business finance.kompas*. (2016, April). Retrieved from July 18, 2020, http://businessfinance.kompas.com/read/2016/04/01/163904526/Start.

[6] Sutomo, H. and Soemardjito, J. (2012). *Assessment Model of the Port Effectiveness and Efficiency (Case Study: Western Indonesia Region).* Jogjakarta: Universitas Gadjah Mada.

[7] Triatmodjo, B. (2010). *Port Planning*. Yogyakarta: Beta Offset.

[8] *Wuriannyyumantini*. (2016). February 2016, Retrieved from April 18, 2020, http://wuriannyyumantini.com/seminar-percepat-pembangunan-ekonomi-indonesiamenuju-negara-maritim/.

[9] Decree of the Minister of Transportation Number PK 414 of 2013 *concerning Stipulation of the National Port Master Plan*.

[10] Regulation of the Minister of Transportation Number 23 of 2015 *concerning Enhancing the Function of Port Operators at commercially operated ports*, article 12.

[11] The government through the Decree of the Director General of Sea Transportation Number: UM.002/38/18/DJPL-11 dated December 15, 2011 *regarding Port Operational Service Performance Standards*.

[12] Dang, V. L. and Yeo, G. T. (2017). A Competitive Strategic Position Analysis of Major Container Ports in Southeast Asia. *The Asian Journal of Shipping and Logistics*, vol. 33, issue 1, p. 19- 25.