



Challenges of Developing a Logistics Hub Case Study: Batu Ampar Port

Petrus Haryanto Wibowo¹, Al Husni²

^{1,2}Civil Engineering Department, Batam International University
ptr_hw@yahoo.com

Abstract

Batam as a region with leading sectors of marine, tourism, industry, fisheries and Batu Ampar as Main Port has the potential to be developed. One of the main centers of activity is large ports and international airports that have the potential to become national and international-scale economic gateways for logistics hubs. The aim of this research was to determine The Challenges of developing a logistics hub in Batu Ampar Port. This research uses descriptive qualitative approach and secondary data from the Batam port office and the Human Settlements and Spatial Planning Office. The results of this research are there are some challenges from the aspects of Geography, Infrastructure, Connectivity, Transportation costs and time, Trade movement requirements, Shipping dependability, Transport and trade regulations. Poor logistics performance is a major obstacle to trade growth in most cities in Indonesia. In this case there is an international shipping port but does not yet have adequate facilities and infrastructure to become a logistics hub.

Keywords : logistics, hub, port.

1. Introduction

International hub port which is the main port that serves national and international transshipment with the world scale of sea transportation services. The logistics hub is an important component of the trading network but not every location can become a hub. In planning international hub must pay attention to regional spatial planning, transportation systems, economic growth, sea patterns and lines, transportation services, environmental sustainability, cruise safety, national standardization, and criteria and norms.

Batam is located on the international shipping lane and the Indonesia - Malaysia - Singapore Growth Triangle. Batam as a region with leading sectors of marine, tourism, industry, fisheries and Batu Ampar as Main Port has the potential to be developed. One of the main centers of activity is large ports and international airports that have the potential to become national and international-scale economic gateways for logistics hubs. Batu Ampar Port is the largest loading and unloading port of the three loading and unloading ports in Batam and the largest port used by the company to supply goods for industrial purposes. This port has an important role in economic development in Batam City (Y A Sari and M Pamadi, 2019).

The Batu Ampar transportation network is an arterial road and the train network plan and its hubs are the Port, Terminal and Station which is potential become an international scale hub and support the development of the economic sector. There is a need for analysis to assess the challenges in which countries must invest in their logistics networks.

2. Literature Review

The globalization trend, companies need to expand their logistics coverage from domestic to international, integrate logistics networks, and increase the agility and efficiency of global operations (Charlesv. Trappey et.al, 2009). Developments and advances in the logistics sector have facilitated key business functions such as production, distribution and marketing. This provides a significant competitive advantage in international trade transactions. It is said that effective and accurate planning of the logistics sector can contribute to a country's economic growth (Engman, M., 2005).

Logistics does not only consist physical movement of goods but must be efficient in facilitating movement through document processing, coordination, monitoring and funding

activities. Thus, the development of logistics includes infrastructure, systems and stakeholder development (Abdul Aziz Zuraimi et.al, 2012). A rapidly changing market environment and fluctuating customer demand requires efficient logistics process operations (Kovacs Gy, Kot S, 2016). Multimodal transportation is defined as a shipping device that combines several different transportation variations modes (air, train, sea and road). Goods shipping companies, in determining the lowest possible cost to the manufacturer, will combining modes of transportation in the most cost-effective configuration (Diana Viljoen-Bezuidenhout, 2014)

The emergence of Panama as a global logistics center is a result of its natural geographical advantage, which was enhanced by institutional reform, public policy and infrastructure investment. Panama conventional role as a transit point for cargo using the Panama Canal has evolved with its role arrangements as the main transshipment hub. The current logistics policy aims to enable Panama to be regional logistics platforms through the development of port centric and better logistic zones coordination of trans-isthmus charge flow (Jean-Paul Rodrigue, 2017)

Several possible drivers for the selection of a logistics hub as a regional means development and growth (Mark GOH, 2008)

1. Demand side strengths such as increased accessibility, increased reliability, the benefits of intermodal transportation, increased connectivity between industry and consumers.
2. Supply-side strengths, which include reducing transportation costs, scale and economic coverage, upstream and downstream industry realizes the benefits of cooperation, risk reduction through consistent services.
3. Increased efficiency, service quality and production capacity.

Trade network performance drivers are geography, infrastructure, connectivity, transportation costs and time, trade movement requirements, shipping dependability, transport and trade regulation (H. Donald Ratliff, 2016).

3. Methodology

This research uses descriptive qualitative approach and secondary data from the Batam port office and the Human Settlements and Spatial Planning Office. Data is collected through interviews, observations, and documentation. There are seven points discussed and analyzed in this research are geography, infrastructure, connectivity, transportation costs and time, trade movement requirements, shipping dependability, transport and trade regulation. The aim of this research was conducted to identify the challenges of developing a logistics Hub.

4. Result and Discussion

4.1 Geography

Batu Ampar is located north of Batam City and is directly adjacent to the Malacca Strait Sea. Developed Area around 867.53 Ha or 78% of the total area with Altitude: 0-90 masl. Batu Ampar as the center of the port area, national scale industrial service center, residential area, military area, regional scale trade and service center, and national scale tourism service center. It has a strategic geographical area but Batu Ampar port does not do too much maritime activities.

One of the existing maritime activities is loading and unloading of goods at the port even though there are still many other maritime activities that can be developed to revive the port area. The government needs to review residential areas around the port that have an impact on the quality of life of the people. Transitional spaces between the port and the city must be in the spotlight such as exhibiting landmarks and views of the port city or making the green buffer areas.

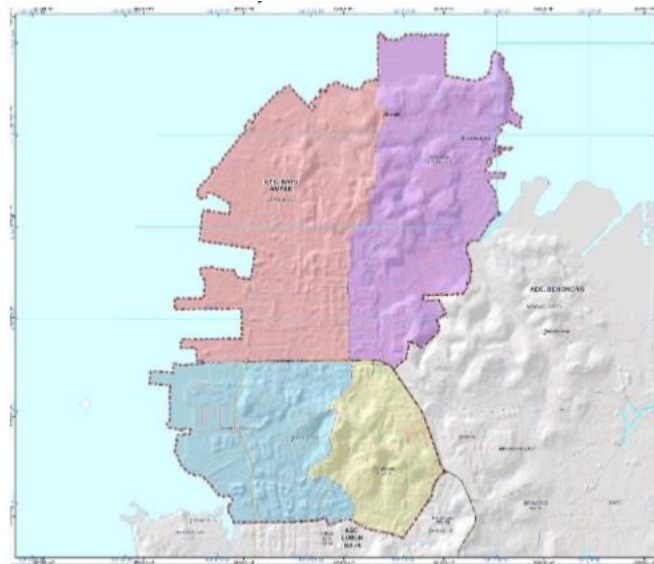


Figure 1: Map of Batu Ampar (2019)

Source: Batam City National Spatial and Regional Planning (2019)

4.2 Infrastructure

Infrastructure is a physical system that provides transportation, irrigation, drainage, buildings, and other public facilities, which are needed to meet basic human needs both social and economic needs (Grigg, N, 1988). Infrastructure development territory can have influence improve public access, resources, and productivity of resources that drive growth the economy (Sudaryadi, 2007). Batu Ampar Port is included in a class I mainland port with standard freight/container transport volumes > 20,000 TEU's/year, terminal area> 3 Ha, Stacking area> 8,000 m², stacking capacity> 1,000 TEU's, export warehouse> 450 m², imported warehouse> 450 m², mechanical hangar> 350 m², office building> 400 m², loading / unloading area and trailer / heavy equipment traffic> 6,000 m², gantry crane runway length> 250 m², length of railroad for loading and unloading.

Table 1: Ports and Terminal Facilities

Facilities	Existing
Berth Capacity	35,000 DWT
Berth Length	1,250 m (3,600 m)
Depth	6-12m (14m)
Open Storage	214,000 m ³ (230,950 TEUS)
Warehouse	19,500 m ² (208,950 m ²)

Source: Batam Indonesia Free Zone Authority (2019)

Based on the existing conditions from table 1 above the Batu Ampar Port infrastructure facilities still do not meet the standards. This is one of the challenges in developing international hub ports. Most Lack of proper port equipment and facilities, which results in ships turning around time such as a long waiting time for a ship before it is anchored, congestion due to excess port facilities in some cases, and under-used in others. Many ports have contrain designs such as inadequate drafts along the jetty and are efficient in adequate handling equipment.

4.3 Connectivity

Connectivity from a port is the ability actually provided by shipping lines to move containers between ports and other ports. Ports and airports are very dependent on the operator for connectivity. For infrastructure to provide value, shipping lines must truly use infrastructure to provide transportation services. Batam is strategically positioned as a connectivity point between the "Indonesia Sea Toll Way" program and the international navigation lane in the Malacca Strait corridor.



Figure 2: Ports to be Developed under the Sea Toll Road Programme (2016)

Source: BKPM, Ministry of National Development Planning (2016)

Sea highway is a concept to improve connectivity between islands in Indonesia. The Indonesian government is building large infrastructure such as modernizing seaports to ensure the distribution of goods in Indonesia will become more effective and easier. One of the routes from the sea toll is Batu Ampar port, Batam.

The challenge of connectivity at the port is not only sea movement but how to distribute goods from sea movement outside the country and province and land movement outside the sub-district and city. Batu Ampar Port connectivity outside the sub-districts and inland still needs to be developed. The government has a program to develop a railway network plan to connected ports and cities but other challenges are land use and transportation that are not interconnected. Train network plans need to be considered to think about life and quality of life in the city.



Figure 3: Transportation Network Plan (2019)

Source: Batam City National Spatial and Regional Planning (2019)

4.4 Transportation cost and Time

Direct transportation costs and inventory costs caused by transportation such as transit time and transportation cause inventory on the way and variability in transit time cause safety inventory. Global supply chains require cost-effective and reliable shipping schedules. Ports are often a major obstacle for ensuring timely delivery. Domestically, inter-island trade will expand if costs allow the transportation of products from Eastern Indonesia to processing facilities in Java. Indonesia increasingly presents itself as a maritime economy. Ports and shipping are high on the agenda (Henry Sandee, 2014).

Domestic shipping costs in Indonesia are high. For example, it is cheaper to ship oranges from China to Jakarta than from Pontianak. One factor that affects transportation cost and time is port facilities and some regulations. Facilities that do not meet the standards such as the absence of a mobile crane will cause the removal of containers and goods to be long so the ship must stay at the port. The long process of moving goods also causes goods to not be directly distributed so they must be stored in warehouses that require sufficient capacity.



Figure 4: Domestic shipping costs in Indonesia (2014)
Source: Henry Sandee (2014)

4.5 Trade Movement Requirements

Trade flows are very sensitive to port efficiency. They link the efficiency of the port with regulations, organized and general crime infrastructure. Structured port costs are imposed, incentives to improve port efficiency can also be increased, which in turn can erase important trade barriers (Clark, et al, 2004). Trade has a large, significant amount, and strong positive effect on income (Jeffrey A et.al, 1999)

Directions for the implementation of service types and tariffs at the seaport office of the free trade zone and Batam free port concession are regulated in the regulation of the regional head of the free trade zone concession and Batam port number 17 of 2016. The scope of this regulation includes: types of service tariffs, implementation of ports and other service tariffs, operating hours, special rates, fines and reporting on billing and depositing.

Basic Tariff is the rate charged to service users port of Batam Business Entity which refers to the Regulation The Minister of Finance governs the Agency seaport service tariffs Batam business. Port tariff services are receipts obtained for ship services, goods, tools and supporting port at the port organized by the Batam authority, which consists of public terminals, for personal, special, and Batam harbor waters. The main challenge is that existing regulations are not fully implemented in port management.

4.6 Shipping Dependability

The delivery point is very important because ideally the supply chain works like a conveyor belt. The dependence of each node and link in the trading network is very important for the sender and operator. Variability in transit requires shippers to carry inventory to protect them from running out of products. Whenever there is interference in the network, the impact flows out of the point of interference.

Traffic in the Malacca Strait 54.3 million TEUs/yr around 15-20% comes from Indonesia. The Malacca Strait transshipment business is received by: Singapore Authority, Tanjung Pelepas Port, Klang Port, and Port Penang. Successful 80% of Indonesian cargoes have PSA & PTP.

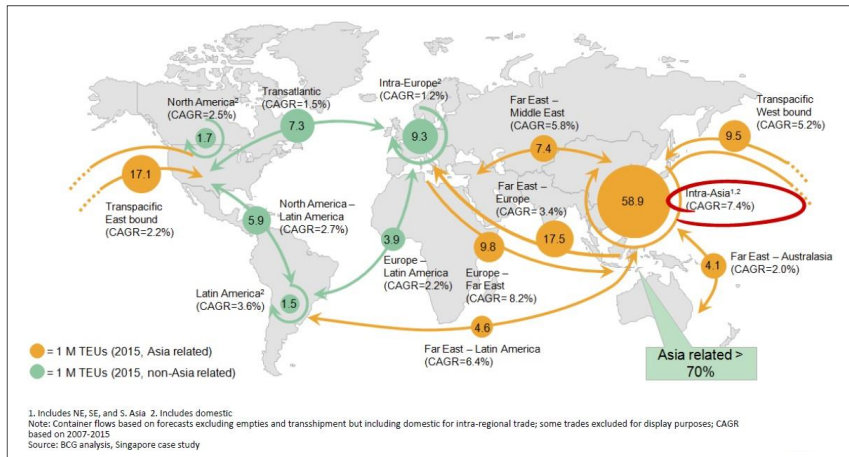


Figure 5: Batam and its strategic position in the Malacca Strait (2019)
 Source: BCG Analysis, Singapore case study (2019)

The challenge is the competition in the Transshipment port business in the Malacca Strait corridor, with a volume of 54.3 million TEUs / year, around 15-20% coming from Indonesia, but Indonesia itself does not have an appropriate policy for the Transshipment business. Traffic Forecast, container flow development, 80% of cargo transshipment in the Malacca Strait corridor by 15-20% (in 2015) will grow to 32-39% in 2030. Malacca Strait flow is calculated from the development of the average transshipment volume of 4 ports, in the 2012-2014 period, and the growth of each of the 2015-2030 port periods as a forecast of the Malacca Strait container traffic.

The remaining cargo overflow is not accommodated in 4 ports: PSA Singapore, Tanjung Pelepas Port, Klang Port, Port Penang, designated as "Cargo Over Flow". The projected volume of over-flow cargo is not considered to have met the minimum capacity for the transshipment business. Therefore, it is necessary to use the "Shipping Lines Driven" approach, namely to produce cargo with shipping lines that require home-base transshipment in Batam.

4.7 Transport and Trade Regulations

There are two points in transportation and trade regulations such as customs and special economic zones.

1 Customs

The problem that occurs in Batam is the authority of the Batam Executing Agency with the Customs and Excise apparatus. The equipment actually needed by the Customs and Excise apparatus is owned by the Batam Entrepreneurship Agency (BP) so that regulations overlap. Another problem is the x-ray scanner to detect cargo vehicle content that is still



owned by the port authority. The scanner is also often turned off when it rains for reasons submerged in water which causes trucks to be free to enter the port without inspection.

2 Special economic zones

Decentralization has brought Batam to be fragile condition with two unique statuses as a special economic zone within the City Batam and Batam restructuring Organizational structure of authority which causes administrative and regional conflicts pressure (Aritenang, A. F, 2016). This leads to a lack of recognition of central government to Batam. In this sense, the city has been considered "shrunken" as "Free Trade Zone" port which was disconnected from the main economic center connecting the line reach all of Sumatra (Kumar, S., & Siddique, S, 2013).

Batam gets the Free Trade Zone facility, which allows imported and exported goods in Batam not subject to tax and customs tariffs. However, Batam industrial products for domestic, are required to pay taxes and duties. The government made a new policy that is a special economic **zone** so that industrial products in Batam can be sold domestically without being taxed. Batuampar Port will be designed as a Sea Transportation Hub so that high logistics costs can be reduced.

5. Conclusion

A hub port is a port that serves large vessels and is a port of collection or distribution of cargo that aims to reduce the complexity of shipping services, increase economies of scale, and provide wider shipping options. The development of hub ports is related to natural and strategic factors which include infrastructure, service levels, customer orientation, costs, and connectivity. Batu Ampar Harbor has a strategic location because it is located on the Indonesia Sea Toll Way and directly accessible to the Malacca Strait. The location of the port is on the route of world trade shipping lines which are international container traffic but still have major challenges for infrastructure, connectivity, transportation costs and time, trade movement requirements, shipping dependability, transport and trade regulation.

One of the biggest challenges is the Batu Ampar port infrastructure facilities that do not meet the standards for the Hub port. Modern port facilities must have quality and quantity advantages, especially the provision of transit facilities for hinterland or other countries. Port facilities will also affect transportation costs and time which have an impact on loading and unloading productivity. The very large role of the government in port development and management also impacts on simple service systems and procedures that facilitate business transactions.

6. References

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