

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

Mulia Pamadi¹, Yusra Aulia Sari^{1,2}

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

Keywords: Logistics, Hub, Port.

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 essential component of the trading network, but not every location can become a hub. Planning an 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 (Sari & Pamadi, 2019).

Batam is located on the international shipping lane and the Indonesia - Malaysia - Singapore Growth Triangle. As a region with leading sectors of marine, tourism, industry, fisheries, and Batu Ampar as its Main Port, Batam has the potential to be developed. One of the main centers of activity is large ports and international airports that can become national and international-scale economic gateways for logistics hubs. Batu Ampar Port is the most extensive loading and unloading port of the three loading and unloading ports in Batam and its largest port to supply goods for industrial purposes. This port has a vital role in Batam City's economic development.

The Batu Ampar transportation network is an arterial road. The train network plan and its hubs are the Port, Terminal, and Station, which is potentially becoming an international scale hub and supporting the development of the economic sector. There is a

¹ Civil Engineering Department, Batam International University

² Landscape Architecture Program, University Technology Malaysia

Correspondence: yusra@uib.ac.id

need for analysis to assess the challenges in which countries must invest in their logistics networks. With the globalization trend, companies need to expand their logistics coverage from domestic to international, integrate logistics networks, and increase global operations' agility and efficiency (Trappey et al., 2009). Developments and advances in the logistics sector have facilitated vital business functions such as production, distribution, and marketing. This provides a significant competitive advantage in international trade transactions. It is said that the logistics sector's effective and accurate planning can contribute to a country's economic growth (Engman, 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 (Zuraimi & Dahlan, 2013). A rapidly changing market environment and fluctuating customer demand require efficient logistics process operations (Kovács & Kot, 2016). Multimodal transportation is defined as a shipping device that combines several different transportation variations modes (air, train, sea, and road). In determining the lowest possible cost to the manufacturer, goods shipping companies will combine transportation modes in the most cost-effective configuration (Grobler & Viljoen, 2014).

The emergence of Panama as a global logistics center resulted from its natural geographical advantage, enhanced by institutional reform, public policy, and infrastructure investment. Panama's conventional role as a transit point for cargo using the Panama Canal has evolved with its role arrangements as the central transshipment hub. The current logistics policy aims to enable Panama to be a regional logistics platform by developing port-centric and better logistic zones to coordinate trans-isthmus charge flow (Rodrigue, 2018).

Several possible drivers for selecting a logistics hub as a regional means of development and growth (Goh, n.d.)

- Demand-side strengths include increased accessibility, increased reliability, intermodal transportation benefits, and increased connectivity between industry and consumers.
- Supply-side strengths, including reducing transportation costs, scale, and economic coverage, upstream and downstream industries realize the benefits of cooperation and risk reduction through consistent services.
- 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 (Ratliff, n.d.).

METHODOLOGY

This research uses a 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. The 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. This research was conducted to identify the challenges of developing a logistics hub.

RESULT AND DISCUSSION

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 is 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 location, but Batu Ampar port does not do too many maritime activities.

One of the existing maritime activities is the loading and unloading of goods at the port, even though many other naval activities can be developed to revive the port area. The government needs to review residential areas around the port that impact people's quality of life (Malik, 2019). 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.



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

Figure 1. Map of Batu Ampar

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, 1988). Infrastructure development territory can influence public access, resources, and productivity of resources that drive the economy's growth (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

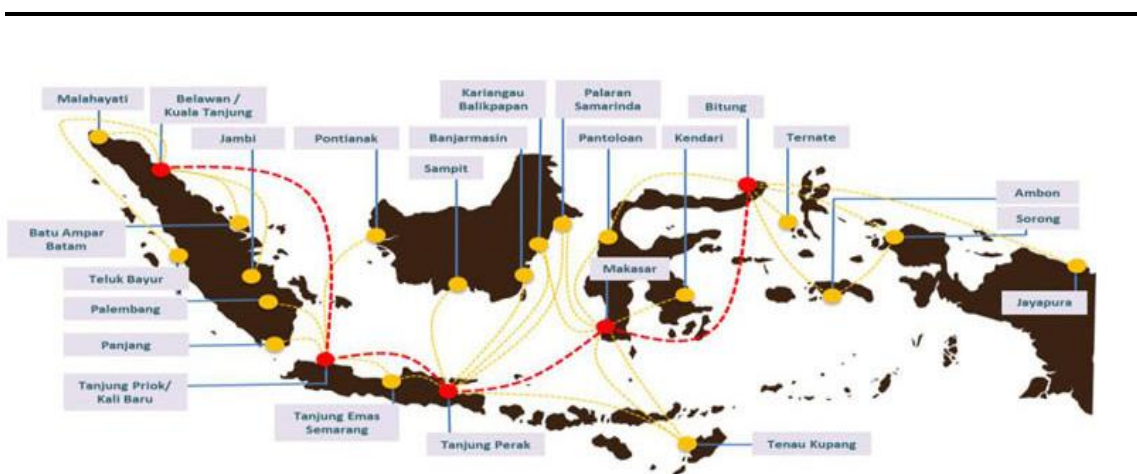
| No | Facilities | Existing |
|----|----------------|---|
| 1 | Berth Capacity | 35,000 DWT |
| 2 | Berth Length | 1,250 m (3,600 m) |
| 3 | Depth | 6-12m (14m) |
| 4 | Open Storage | 214,000 m ³ (230,950 TEUS) |
| 5 | Warehouse | 19,500 m ² (208,950 m ²) |

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, results in ships turning around the 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 contained preliminary drafts along the jetty and are efficient with inadequate handling equipment.

3. Connectivity

Connectivity from a port is the ability of 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 use infrastructure to offer 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.

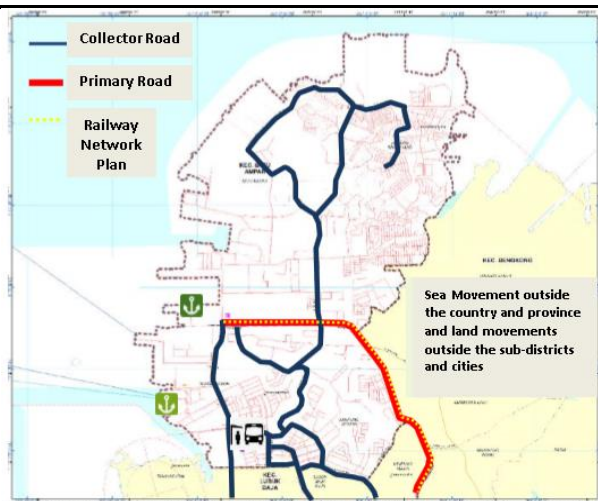


Source: BKPM, Ministry of National Development Planning (2016)

Figure 2. Ports to be Developed Under the Sea Toll Road Programme

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

The challenge of connectivity at the port is sea movement and distributing 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 create 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.



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

Figure 3. Transportation Network Plan

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 causes safety inventory. Global supply chains require cost-effective and reliable shipping schedules. Ports are often a significant obstacle to ensuring timely delivery. Domestically, inter-island trade will expand if costs allow the transportation of products from Eastern Indonesia to Java's processing facilities. Indonesia increasingly presents itself as a maritime economy. Ports and shipping are high on the agenda (Sandee, 2013).

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 not to be directly distributed, so they must be stored in warehouses that require sufficient capacity.



Source: Henry Sandee (2014)

Figure 4. Domestic Shipping Costs in Indonesia

5. Trade Movement Requirements

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

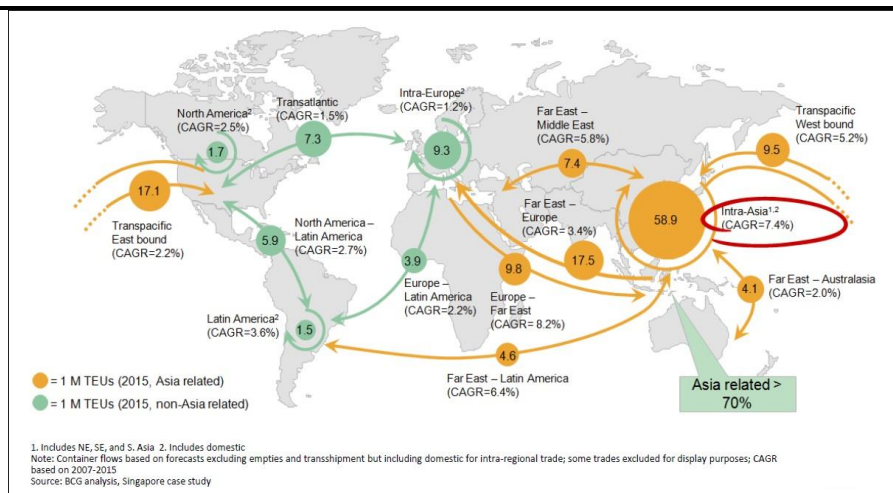
Directions for implementing service types and tariffs at the seaport office of the free trade zone and Batam free port concession are regulated in regulating the regional head of the free trade zone concession and Batam port number 17 of 2016. The scope of this regulation includes types of service tariffs, 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 ports organized by the Batam authority, consisting of public terminals for personal, unique, and barn harbor waters. The main challenge is that existing regulations are not fully implemented in port management.

6. Transportation cost and Time

The delivery point is critical because, ideally, the supply chain works like a conveyor belt. The dependence of each node and link in the trading network is significant 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 interference point.

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.



Source: BCG Analysis, Singapore Case Study (2019)

Figure 4. Batam and Its Strategic Position in the Malacca Strait

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% from Indonesia. Still, Indonesia itself does not have an appropriate transshipment business policy. 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 to produce cargo with shipping lines that require home-based transshipment in Batam.

7. Transport and Trade Regulations

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

- Customs

The problem that occurs in Batam is the authority of the Batam Executing Agency with the Customs and Excise apparatus. The equipment 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 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.

- Special economic zones

Decentralization has brought Batam to be fragile, 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, 2016). This leads to a lack of recognition of the central government to Batam. In this sense, the city has been considered "shrunken" as a "Free Trade Zone" port which was disconnected from the leading economic center connecting the line to reach all of Sumatra (Kumar, 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 to reduce high logistics costs.

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 shipping services' complexity, increase economies of scale, and provide more comprehensive shipping options. The development of hub ports is related to natural and strategic factors, including 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 port's place is on the route of world trade shipping lines which are international container traffic but still have significant 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 Hub port standards. 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, impacting loading and unloading productivity. The government's massive role in port development and management also has implications on simple service systems and procedures that facilitate business transactions.

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