Developing the port of Belawan as a modern and international port

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Abstract. This study discusses the processes of government to pass the port development plan in Indonesia with the Port of Belawan and its port expansion as the study case. The study uses a descriptive approach by reviewing and analyzing some of relevant literature as the sources. It also reviews and examines the port development theoretical concepts and models giving attention to the international hub port models resulted from the previous studies. The international hub port aspects assessed to be further applied and compared to the actual situation of the Port of Belawan. This process draws the conclusion on which concept and model the port classified, followed by some recommendations concerning the necessary actions to be taken. The results show that: (1) The port planning regulated in port master plan is the guideline and foundation to implement the port development; (2) Spatial and zoning plan regulations are very important in the preparation, planning, and implementation of port development; (3) It has not provided the necessary facilities and criteria of the global hub port model has not been met completely. The port is strategic to be completely developed as the regional hub port to compete with the major ports of neighboring countries. Eventually, this study requires further analysis to examine the economic feasibility of the Port of Belawan in more comprehensive way functioning as an international hub port along with the ongoing development of Kuala Tanjung Port to achieve its ultimate objectives, among other things, the port effectiveness, efficiency, and competitiveness.

Keywords: international hub port, port development, port planning, Port of Belawan, port competitiveness

1. Introduction

Since the past two years, Indonesia has been emphasizing its ambitious goal to transform the nation into a global maritime fulcrum and have been developing some projects and initiatives to achieve it. The recent national policy document through the Presidential Regulation Number 16 of 2017 on Indonesia Maritime Policy passed on 23 February 2017. It is the blueprint to achieve global maritime fulcrum objective. It conveys that the Indonesian maritime economy shall no longer limitedly focus on natural resources, but also extended it to port logistics and targeted to lower down the logistics cost from 23.6% in 2015 to 19.2% in 2018.

Further, the development of maritime infrastructures, such as ports as a node of trade activities and the availability transport services with international standard has become the government focus. Nevertheless, the urgency of having an international hub port to utilize the world busiest international sea lane in the Malacca Strait, Singapore Strait, Phillips Strait and Sumatra East Coast remained as the challenges [1].
David Ray argued that despite being the largest archipelagic nation in the world, Indonesia does not have a port system which performs well from the perspective of its users and requires a well-developed and efficiently-run port sector [2]. He analyzed the new shipping law and Indonesian port reform, how the new law removed the state-sector monopoly on ports and opened the opportunity to private sector participation. Further, he argues that the Indonesian port transformation is a long and arduous process.

Port of Belawan is located on the northeastern coast of Sumatra in Indonesia. Its location is very strategic, which is only 13.5 kilometer away from one of the busiest international trade route, Malacca Strait (Figure 1.1). It lies on the peninsula, where estuary of Deli and Belawan rivers meet. Geographically, it lies on 03° 34’ 47’’ North Latitude and 98° 42’ 08’’ East Longitude. It connects to the territorial water of Malacca Strait. Administratively, it is part of North Sumatra province and Medan city. Medan city consists of 21 districts, and one of them is Medan Belawan district, where the Port of Belawan is located. It is 27 kilometers away north of Medan city. It is an old historic city with the port been a gateway of Medan and its surrounding cities. In 1938, Belawan was considered the most important port in the Dutch West Indies by cargo volume and the third largest port by cargo tonnage [3].

The Indonesian legal framework of port development embedded in an extensive number of hierarchical laws and regulations and leaves it as a complex and complicated matter to regulate and implement. Like an umbrella, the port is governed by Law Number 17 of 2008 (further called as Shipping Law) [4], came into force in 2011 and replaced the previous law number 21 of 1992 Shipping Law [5]. It introduced significant reform, which even accounted by as the latest reform-based legislation in Indonesia [6].

Figure 1. Map of Port of Belawan. Source: Ministry of Transport, Government of Indonesia.

Following the review of some laws and regulations, the paper discusses the port development as well as international hub port concepts and models. Specifically, regarding the Port of Belawan, Airries [7] argued that developing an international hub port does not merely focus on the infrastructures but it should also integrate with the inland connection to reduce the cost effectiveness. In term of the technological spread of containerization in Indonesia, exogenous development through penetration process between a port and its hinterland was established. Further, it is not only applicable to the Indonesian ports but also for other Southeast Asian countries and archipelagic nations.
Research results by Low et al. (2009) [8] using network-based hub port assessment (NHPA) model highlighted the global hub port status in Asia are Singapore, Hong Kong, Shanghai (China), Pusan (Korea) and Kaohsiung (Taiwan), where Port of Singapore and Hong Kong are the ports that have strong stability, while Jawaharlal Nehru (India), Laem Chabang (Thailand) and Tanjung Priok (Indonesia) serves as a regional hub ports. Port of Tanjung Priok, as one of the current largest hub port in Western Indonesia, may reflect the effectiveness and efficiency of logistics system of Indonesia which is still far behind other countries regarding its performance [9]. This is contrast to the other Indonesian hub port, namely the Port of Belawan, which lies in Indonesian side of Malacca Strait. Despite of its very strategic geographical location with direct access to international trade since its colonial time [10], it is still far lagged behind other Indonesian hub port ports, such as Tanjung Perak (Surabaya, East Java) and Makassar, (South Sulawesi) [11]

In section two, a conceptual framework is established, and an inductive methodology is described based on the concepts developed. The key elements as the results are analyzed through a review of the literature sources and further are discussed in part three. Finally, the conclusions are drawn in the last segment.

2. Theoretical Framework and Methodology

The previous study has examined the activities and operations of ports from three main perspectives: an economic approach, an engineering or operations approach, and an evolving logistics and supply chain management approach [12]. The study particularly focuses on the Indonesian policy regarding port development and expansion. This paper aims specifically to analyze the strategy of port development under the Indonesian law with study case of the Port of Belawan. There are two parts discussed and analyzed in this study. The first part covers the port policy embedded in the laws and regulations in the form of port master plan as well as spatial and zoning plan. In this part, some relevant laws and regulations are studied and assessed. The second part discusses the theoretical concepts and models of port development. This part discusses the previous findings of port development thus to be used to compare between the theories and models with the actual condition of the Port of Belawan.

The study begins with reviewing and analyzing all relevant source of regulations concerning the port development in terms of its planning and implementation in a hierarchical way, starting from the highest level, inter alia the laws, then government, presidential regulations and decrees, as well as ministerial at central government, then at provincial and municipality or city level. The lower level legislation shall not contradict the higher ones. This process will produce a systematic process to develop a national port development plan and each particular ports. The port here refers to the main Indonesian port.

Further, the theories and models of port developments from the earlier studies are examined and analyzed. At this stage, the paper reviews and discusses the theories and models, then applies as well as analyzes it to the actual conditions of Port of Belawan including its expansion plan. Moreover, it aims to conduct an analysis of the development of Port of Belawan and produces recommendations on what are the strategies and actions required to achieve the international hub port status and function effectively and efficiently.

The methodology for this study is carried out by reviewing the literature and discussing how the integration processed as defined within the port development concept. The key elements as the results are analyzed through an analysis of the literature sources further are discussed in section three.

The study defines the port development plan regarding the policy and regulations as well as the theoretical concepts and models and eventually to conclude the Port of Belawan categorized under which of them. This study follows an inductive methodology, based on an analysis of both existing primary research on cases and secondary theories and concepts before finally concluding it.
2.1. Laws and regulations review
All these laws and regulations are hierarchical in the manner having principles that the higher legislation is the guideline for the lower ones, while the lower level legislation shall not contradict and in conformity with the higher ones.

2.1.1. Port Master Plan. Shipping Law mandated the establishment of the Port Master Plan. It reflects the development of port sector to be a competitive international port, whereas its operation fulfilled the international standard, namely safety and protection of the maritime environment. It states that port planning should also anticipate the economic activities growth and integrated into the national transportation system, logistics system, regional spatial plan and engaging the local people. Therefore, it is in line with the National Port Master Plan [13].

The term “port planning” in this study covers both the planning of new ports as well as the expansion of the existing ports. The current national port master plan regulated by Transport Ministerial Decree Number 901 of 2016Earlier in the same year, Decree Number 745 of 2016 [14] and Decree Number 414 of 2013 were passed respectively [15].

As far as planning and implementation of the new ports development and existing port expansion are concerned, the spatial and zoning plan are two crucial components to achieve successful port development. This highlights port as an element of a town planning. The National Port Master Plan is comparatively dynamic, whereas, despite its validity for 20 years and subject to review in every five years, it was done once and had a minor revision in 2016. Further, each particular port is separately and specifically has its port master plan, regulated by a Transport Ministerial Regulation. The Port of Belawan Master Plan was governed by Regulation Number 21 of 2012 [16].

Also, before its promulgation, both national and ports master plans shall be conform with the higher legislations. In this regard, Shipping law as an umbrella and other related regulations concerning the port, such as regulation of port affairs (Government Regulation Number 64 of 2015) [17], regulation of water transportation (Government Regulation Number 22 of 2011) [18], regulation of safety and security of navigation (Government Regulation Number 51 of 2010) [19] as well as regulation of protection of marine environment (Government Regulation Number 21 of 2010) [20] as well as Transport Ministry Regulation Number 146 of 2016 on port administering [21], which replaced the previous Ministry Regulation Number 51 of 2015 [22] and Regulation Number 52 of 2002 [23]. Figure 2 describes the laws and regulations in a more simple way.

2.1.2. Spatial plan concept. Under the Indonesian law, planning the port development is a quite long hierarchical process. The particular port, for instance, Port of Belawan, before being regulated in Medan City Regulation, it has to be conform with North Sumatra Provincial Spatial Plan, hence the Sumatra Island Spatial Plan, National Spatial Plan, as well as the Spatial Law. Regarding spatial planning, every city of the port location develops their own spatial plan which is more general and zoning plan, which is more detailed and specific. As far as the port development is concerned, these spatial and zoning plan regulate the spatial of the port surrounding area. The Law Number 26 of 2007 [24] on spatial plan has replaced the law, namely Law Number 24 of 1992 [25]. This umbrella law is the guideline to spatial planning for the individual ports. Moreover, it covers the national level, provincial level as well as district or municipalities levels of the port locations. It also includes the spatial plan for the particular island as well as strategic areas (if there are any). This process shows the direct integration of port development plan in town planning.
The spatial law covers land, sea, and air (and space) plan. Government Regulation (GR) Number 26 of 2008 on the National Spatial Planning to implement the law was passed [26]. As the North Sumatra province has the so-called strategic areas, which are Medan, Binjai and Deli Serdang and Karo, the spatial plan specifically regulates the areas was also passed through Presidential Regulation (PR) Number 62 of 2011 on Spatial Planning of Provincial Strategic Areas [27]. Furthermore, North Sumatra Provincial Regulation Number 7 of 2003 on Spatial Planning of Sumatra Island was passed [28]. Further, City Government Regulation Number 2 of 2015 which is more detail regulation of zoning for Medan City is regulated [29]. Figure 3 presents the laws and regulations regarding spatial and zoning plan.

2.2. Port development concept

There are several studies discussed the problematical process of port development by proposing different conceptual models. Early model primarily focuses more on spatial development and analysis rather than the actors due in part to the historical industry structure, but ports have developed in different ways. Following the process of containerization and the growing specialization of ships and terminals, ports became even more capital and technology intensive with sophisticated handling equipment and technological systems being deployed across modern ports and terminals. Through the years, the relationship between port-cities and their hinterlands has been influenced by many factors such as economic development, industry specialization, trading relations, expansion, social migration, family networks, and cultural exchange. More recently, new factors such as containerization, intermodal integration, shipping networks, logistics patterns, information technology, environmental sustainability, land use and policy have influenced the importance of ports and their corresponding hinterlands [29].

Dijk et al. (2015) argue that Indonesia’s maritime development focus on port infrastructure since most of the ports are underperforming compared to its regional competitors, like Port of Singapore of Port Klang [30]. There are several literature sources on how spatial plan shapes the development of international hub port.

Bird (1980) with his ‘any-port model’ is one of the first structured attempts and the earliest studies of port development [31]. He discusses that it can be based on different factors. It suggests a three-stage process of port development: setting, expansion, and specialization (Figure 4). Bird’s model may be still valid for some conventional ports, it neither explains the recent rise of transshipment and network type of ports and terminals, nor integrates the inland and spatial dimension of port development. Taaffe et al. (1963) follows the similar model [32]. He recommended to strengthen the level of port concentration as hinterland routes grow to significantly than others associated with the increased importance of particular urban centers. Moreover, he discussed that the geographical system
would evolve from an early pattern of scattered and poorly connected ports alongside the coastline to a main network consisting of corridors between gateway ports and major hinterland centers [33].

![Diagram](image)

**Figure 4.** The evolution phase of a port. *Source: Notteboom and Rodrigue (2007)*

Similarly, Rimmer (1967) and Hoyle (1968) and Hayuth, 1981 [34] developed the concept of dominant ports or load centers that increase their inland penetration and hinterland capture, and Barke, 1986 [35] focus on decentralization, whereby there are shift of some activities from the port to less congested areas.

Waters (1974) considers that there are three ways to develop the port activities in relation to cargo-space dimensions, which are: the attraction to water transportation otherwise moved by non-water transport modes (dominant hinterland), the attraction of its movement through other ports (competitive hinterland), and the development from industrial expansion in its dominant hinterland (uncompetitive hinterland). Wang [36] and Notteboom [37] have introduced modifications to the above models to reflect the uniqueness of some port regions.

UNCTAD’s port generations model is another widely quoted reference describing the evolution of world ports and terminals. The benefit of the UNCTAD model is that it explains port development from a functional and institutional perspective rather than a geographical or spatial one like most of the earlier studies. Not only port roles and function, but also institutional structuring, operational and management practices vary significantly from generation to generation. The first and second generation ports, relating to ship or shore and industrial interfaces, respectively, operate bulk and break bulk cargo in a traditional manner, and the second generation ports relying more on capital than labor [38].

Bird’s model neither provides a base to explain the emergence of hub terminals in “offshore” or inland locations with limited or no local hinterlands, nor includes the inland dimension as a driving factor in port development dynamics. Hence, Notteboom and Rodrigue (2005) added new phase in port development, namely port regionalization (Figure 4). Port regionalization proposes stronger links with the hinterland and foreland, as well as intermediary or transshipment ports.

Growing needs for logistic integration and the expansion of port areas, such as the foreland and the hinterland, have redefined and reshaped the functional role of ports in global supply chain. This phenomenon generates a new pattern of freight distribution, a new approach towards port development and urban planning [39].
Sir Bruce White and Widya Pertiwi have mentioned that the facilities at the port are no longer sufficient as gateway accommodating the commodities of the northern part of Sumatra Island. They urged the needs to develop the port so that it serves more facilities. Similarly, Sir William Halcrow argued the port shall be able to accommodate the export and import of commodities in Sumatra. Despite the research focused on the physical infrastructure of the port and especially from the engineering point of view, the urgency of port development has already identified ever since its establishment.

3. Results and Discussions

The current situation of port differs from the development stages based on previous studies regarding the models of port growth. The recent port development involves logistics integration into its system rather than merely focus on port spatial development. There are three findings resulted from the literature study discussed in this section, namely: Port development concept extends its focus beyond its area, port-city relations and port-hinterland relations and port terminal integration.

3.1. Port development concept extends its focus beyond the port area

According to the Shipping Law, the national port policy is the port system which contains role, function type, port hierarchy, National Port Master Plan, port location, inter-modal as well as integration with other sectors (Article 1 paragraph 15). It precisely concludes that port system has extended its scope beyond its traditional outlook. It also includes integration with port non-related sectors. If we relate this concept with Anyport of Bird (Figure 4), it is the third stage of evolution of port, namely specialization stage. In the first stage called setting, it only consists of general cargo as it is with a very small portion of city or urban area coverage, where in the second stage called expansion, it has more general cargos. In specialization phase, it has more facilities, such as bulk and containerized cargo with bigger coverage of urban or city area.

Where Bird (1963) focused on port installations, such as terminal locations which expanded into new deeper water sites and specialized into container and bulk terminals, Notteboom and Rodrigue (2005) incorporated transshipment hub and maritime forelands.

Medan City Regulation Number 2 of 2015 on Detail Plan of Spatial and Zoning of Medan City 2015-2035 mentions that Belawan district with 3.163,19 hectares of area, is exclusively functioning as the center of sea transportation service, transhipment, and export-import, defense-security, industry and fisheries activity. 34.68 as the coastal border along the coast. Further, out of 153.46 hectares area of Medan Belawan sub-district, 40 hectares is allocated as port area (Article 37). 28.7 for Belawan warehouse or storage area (Bagan Deli, Belawan Bahari, Belawan II). Further, it explains that 2 kilometers or around 294.9 hectares are for coastal reclamation towards Malacca Strait.

According to the Port of Belawan Master Plan, namely Transport Ministerial Regulation Number 21 of 2012 on Master Plan of Port of Belawan [40], the development plan requires 50 hectares of inland area in addition to 735 of the existing inland with 29.411,37 hectares sea area as regulated in Article paragraph (1). In addition to that, the Article 71 paragraph (1) mentions that the Master Plan is a guideline for determining the location, construction, operation, port development, and preparation of the Port Master Plan. Further, the paragraph (2) specifies that the preparation of Port Master Plan takes the National/Provincial/City Spatial Plan into account, as well as potential economic and social development of the region, natural resources, and development of the strategic environment. The National Port Master Plan covers national port policy and port location and hierarchy.

Article 73 mentions that every port has its individual master plan. The development of all ports is in line with the National Port Master Plan, Provincial and District or City Spatial Plan, harmony and balance with other related activities in the port location, technical feasibility, economic, security and safety of vessel traffic. The individual Port Master Plan shall include the plan of land and water use.

Further, it mentions that the port has been maximizing its effort to optimize the facilities by improving the port facilities and the accessibility. Nevertheless, space limitation and accessibility to hinterlands, the current spatial can only accommodate port development up to certain capacity. It also
mean that the demand for port service from the hinterlands will increase in the future. Therefore, the alternative paradigm of port expansion has to be developed, of which the development is extending beyond the port area itself. In this regard, the development of Kuala Tanjung Port [41] as an integral part of Port of Belawan remains significant. It is done parallel by optimizing the port limited spatial and space. Then, it confirms that the Indonesian port development system focuses beyond the port areas. It proves the existence of port system development in Indonesia, where a development of a particular port considered as an integral part of the other port development in the region.

Such perspective is in line with the hinterland development plan stipulated by the Government as corridor 1 economy development, where Sumatra as a center of production and processing of commodities and national energy reserved [42]. The document says that Sei Mangkei has been being developed for the palm plantation based-industrial region and now declared as a Special Economic Zone (SEZ). By having this scenario, the high demand of Port of Belawan service can be shared with Kuala Tanjung Port. The study case in this paper is Port of Belawan, but the development of Kuala Tanjung Port is slightly also taken into account to achieve the integrated port system as regulated in the port master plan, both the national and the individual ones.

According to Lee et al. (2008) limitation through dynamic growth an international hub port should function as both global urban and port systems by overcoming traffic congestion and space limitations through dynamic growth, over a short period. He further narrated that a city and a port interplay with each other as a single node regarding the economic and spatial structure. Appropriate port policy inside the port and urban policy outside of the port can help to overcome space limitations by maximizing port facilities and compacting land use. The development of new ports in their vicinity appears to be the complement rather than a threat to the continuous prosperity of hub port cities.

So, both individual port master plans of Belawan and Kuala Tanjung show the inter-connection as a port system. As Belawan is facing challenges to extend its area so that in such a way can accommodate the international and regional cargo and container demand in addition to its spatial constraint as it does not have sufficient space to be developed in a tremendous way. Kuala Tanjung Port was prepared to be upgraded from the current status of national collector port to an international hub port to support the Port of Belawan.

3.2. Port-city relations and Port-hinterland relations

The existence of the port has shaped the town planning of Medan City in general. The industry obviously needs the port, where the commodities of the agricultural industry, such as rubber, crude palm oil, cocoa, coffee and other forest products from hinterland in North Sumatra province as well as the neighboring province, like Aceh and Riau, materials and equipment shipped for process, and export-import took place. All these regulations utilized as platform to increase the economic growth from the seaborne transport sector in a way that will affect the port efficiency, effectiveness, and competitiveness.

In 1987, improved hinterland connections emerged with the opening of three, rail-centered inland container depots or terminals (ICDs). Palletized estate products are trucked to nearby ICDs, stuffed into containers and shipped by rail to Belawan on particular container railcars at one-fourth of the cost of the hinterland. Once established, these ICDs begin to function as inland or “dry” ports by usurping many functions traditionally located within the area; customs, shipping lines, and freight forwarding agents, and trucking companies being just a few (Hayuth, 1980). Requiring policy and planning coordination among the state-owned railway, port administration and shipping firms, a main link in the long distance container transport chain was set in place, allowing consignments to remain unbroken from buyer to seller. Airriess (1989) highlights that the container terminal and ICDs assume critical roles in the efficient spread of container technology, but do not function as catalysts for extension of Belawan’s traditional hinterland. The extension of a port’s influence into the hinterlands is one opportunity for port authorities to intervene and to create better impact in the future, but hierarchies in the transport chain are changing. Port, therefore need to be active in extending or even maintain their hinterlands (Van Klink and van den Berg, 1998; Mc Calla, 1999; Notteboom and Rodrigue, 2005).
The hinterland of Port of Belawan consists of plantation area, forestry, fishery, agriculture in North Sumatera, Riau, Nanggoe Aceh Darussalam and industrial area around Medan. The export commodities from the port such as rubber, wooden product, chemical, betel nuts, molding, coffee, and gloves, whereas imported ones consist of wheat flour, ground nut, kernel, chemical, corn, animal feed, steel, spare parts, engine, and white sugar [43].

For better connectivity purpose, Kereta Api Logistik (logistics railway), a state-owned enterprise company established a route from and to Belawan - Sei Mangke (a special economic zone). It operates every alternate day with the capacity of 30 TEUs. The same company runs the similar facility between Tanjung Priok Port (JICT) and Cikarang Dry Port with capacity of 1000 TEUs per day. This facility cuts the travel time of 139 kilometers of distance by road or trucks from 7 to 8 hours to 4 hours. Thus, it is more economically efficient.

3.3. Port terminal integration

The Port of Belawan established its first container terminal in 1985 and rapidly increase its handling capacity and became a fifth of all containerized exports from Indonesia [44]. So, since the inception of Belawan International Container Terminal or BICT, the overall throughput of BICT has increased but not in a very significant manner.

The ongoing expansion of container terminal of BICT consists of phase 1 and phase 2 of 700 meter wharf, 10th floor office tower, car terminal, dry bulk terminal, Crude Palm Oil (CPO) tank, container yard, multipurpose terminal, sport center, cold storage, 12 kilometer road construction inside and outside port area, the passenger terminal of Bandar Deli which has already been in function, as well as utilities, equipment as well as Information Technology installation as seen in Figure 5 and 6 [45]. The container yard has the capacity of 400,000 TEUs annually. The Indonesian government prepared the port to compete with the neighboring ports, such as Singapore Port, Port Klang, and Tanjung Pelepas Port.

While the globalization and world dynamic economic development had changed the trends of port development, port development in Indonesia in general and Port of Belawan in particular still have not integrated the necessary functionalities. The improvement of facilities and services so that it will increase the containerized goods volume and cost efficiency as well as to lower down dwelling time.
remain crucial. The ongoing development of Kuala Tanjung Port is very potential to build a port system shortly so that it can create effective and efficient port system in region, especially in Sumatra corridor.

Indonesian Logistics Performance is still low. According to the World Bank’s Logistic Performance Index on international supply chain efficiency, in 2016, Indonesia is on 63th out of 160 countries [46]. This rate was lower than 2014, where Indonesia was in the 53rd and even lower than in 2012, where Indonesia was ranked the 59th. Indonesia ranked much lower than other neighboring countries, like Singapore (5th), Malaysia (32nd) or Thailand (45th). By expanding the container terminal of Port of Belawan and integrating logistics into the port system, the logistics performance will increase in the future.

4. Conclusions
Administering, operating and managing port is a complex task which requires coordination of inter-sectoral institution and comprehensive concept, planning, and strategy [47]. It has both spatial and institutional aspects. Spatially refers to physical developments such as terminals and rail/barge corridors [48]. However, an essential component is market capture which based on the institutional relationships, not the physical development, where in most cases, the infrastructure is common-user so the port authority of terminal cannot control the physical corridors but rather focuses on making agreements for the traffic to come through its port, regardless who the transport operator is, what mode they use and which corridor they follow. It is thus the shipping line and the shipper’s selection of carrier or merchant haulage that exerts significant influence on hinterland cargo flows.

Being a gateway to and from the international shipping route, geographically speaking, the Port of Belawan is very strategic. The expectation is the current terminal expansion will significantly improve the port services which lacked till date, as well as will lower down dwelling time, increase the traffic, the export volume and eventually lower down the logistic cost.

This paper supports Sciascia (2013) that all Java’s ports are located at a considerable distance from the main sea lines of communication (SLOC), while the Indonesian ports along the Straits of Malacca are in a strategically significant area and should consequently receive more attention from the Indonesian government. Therefore, this study strongly recommends that the stipulation of the status of Kuala Tanjung Port as an international hub port and not only as an international port remains crucial so that it can interconnect with Port of Belawan.

In summation, it confirms that the current expansion of Port of Belawan still falls under the traditional port concept. Therefore, the author recommends to undertake further research which are empirical and inter-disciplinary researches on port system so that it is an useful framework to explain about the necessary action to take in developing the port of Belawan as an international hub port.

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