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WORLD MARITIME UNIVERSITY

Malmö, Sweden

**KANDANGAN DRY PORT PROJECT:
AN OPTION OF SOLUTION FOR CONGESTION**

Case of Lamong Bay Terminal (Surabaya, Indonesia)

By

WARDHANI PUDJI RAHMANTO

Indonesia

A dissertation submitted to the World Maritime University in partial
Fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

In

MARITIME AFFAIRS

(PORT MANAGEMENT)

2016

DECLARATION

I certify that all the material in this dissertation that is not my work has been identified and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my personal views and are not necessarily endorsed by the University.

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WARDHANI PUDJI RAHMANTO
WMU, September 2016

Abstract

Title of Dissertation: **Kandangan Dry Port Project: An option of solution for congestion case of Lamong Bay Terminal (Surabaya, Indonesia)**

Degree: MSc

The increasing number of the container throughput and traffic has affected the availability of container yard in Lamong Bay Terminal (TTL). This was due to the development of industries in the hinterland. If TTL cannot handle this, TTL cannot improve their productivity for throughput and this can cause congestion. This study observes political, economic, social, technological, environmental, legal and ethical (PESTELE) factors that need to be considered by Kandangan Dry Port to optimize its purpose as an option of the solution to handle TTL Congestion. By using the 7-point Likert scale analysis tool, the previous data are collected in advance of the respondents who are directly involved with port operations such as container depot, terminal operators, port operators, shipping line, logistic providers. Moreover, by using the Importance-Performance Analysis (IPA) to analyze the gap between “The importance of the factors” and “The existing condition of Kandangan Dry Port” is based on the equal factors to determine the factors that need to be considered by Kandangan Dry Port.

The result of the questionnaires obtained three factors that can maximize its function and considered need to focus more on that. The three factors are (1) Value added services, (2) Government support, regulation and policy and (3) Implementation of Advanced Technologies. Based on research, the main important factors affecting the success of the implementation and the development Kandangan Dry Port are the active role and policies of the government. Finally, it was concluded that Kandangan Dry Port should pay attention to important key factors, namely the active part of the support, regulation, and policy of the government. It is advisable to conduct further in-depth research on how to support, regulate and make policy of the government in the port and shipping industry to improve Kandangan dry port performance for further studies.

Keywords: TTL, Kandangan Dry Port, considered a factor, Port Congestion, revitalization.

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List of Abbreviations

Coarri	Container Arrival message
Codeco	Container Departure Confirmation
Coparn	Container Pre-Arrival Notice
EDI	Electronic Data Interchange
GDP	Gross Domestic Product
ICT	Information, Communication and Technology
PESTELE	Political, Economy, Social, Technology, Environment, Legal and Ethics
TTL	Terminal Teluk Lamong (Lamong Bay Terminal)

Chapter 1 Introduction

1.1. Research Background

In the economic world, trading activities cannot be separated from export and import activities which are the main activities in the distribution of goods to get benefits and obtain the desired goods. Import and export trade worldwide is growing, including in Asia. From the year 2011 to 2014 imports and exports has increased from more than 15% year by year (UNESCAP, 2016). Asia is expected to grow in the import and export of containerized goods which became 56% and 68% in 2016 (UNESCAP, 2016). The development of the manufacturing industry in the world makes trade grew twice; it will have an impact on the increased demand for transportation, including the carriage by sea, which reached more than 90% of the volume of world trade (Stopford, 2008). Low cost of ocean transport due to cheaper vessel fuel costs and vessel size getting bigger because of economies of scale makes sea transportation become an important and significant part of world economic growth.

In Asia the container throughput increased and it was also followed by the increase in the size of container ships to minimize transportation costs (Nishimura, 2009). The biggest container ship today can bring up to 19,224 TEUs (ICS, 2016). To face the growing size of ships, the port or terminal operator should pay more attention to the handling of their capacity. Clarkson's Shipping Intelligence Network (2016) recorded that "World Seaborne Container Trade also grows from 139 million TEUs in 2010 to 181 million TEUs in 2016." Another problem, congestion at the port cannot be avoided, for example, like conditions in North America and Europe due to the high growth in container throughput (Visser et al., 2007). In response to this growth, the port or container terminal operators began expanding the area of their container capacity and even build a new container terminal. However, by broadening the capacity of the container yard will require many budgets and take a long time in development. Also, it was not enough time to pursue with the increasing number of trades (International Herald Tribune, 2016). Several other cases show that the lack of transport facilities and infrastructure at the container port made slow progress for itself (Cullinane, 2012).

Slack (1999) provides a solution to the problem of capacity and congestion of ports through a satellite terminal concept called a dry port. "It offers an inland port or inland terminal that has the same function, capabilities and services like a seaport and gives transportation network and connects the container movement between the hinterland and sea port" (Rodrigue et al., 2006). The dry port concept is suitable as a solution to overcome the problem of port

congestion that can be implemented and accepted in Europe, even in some ports in Europe began using the dry port to accommodate some container from China (Visser, 2007). Rodrigue et al. (2010) also mentioned that ports in North America had also successfully applied the dry port to move their container handling services to the hinterland. In Europe and North America it can be distinguished that the dry port in Europe is used as a transshipment and entrance for short and medium distances, while the North American dry port is used to serve the market in the hinterland that is connected with long-distance trains.

1.2. Problem Identification

Indonesia is a developing country whose economic growth reached a peak between the third fastest in G20 countries (The World Bank, 2016). From figure 1, it can be seen that Indonesia ranks third among G20 countries regarding the country with the fastest Gross Domestic Product (GDP) growth projections by the International Monetary Fund.

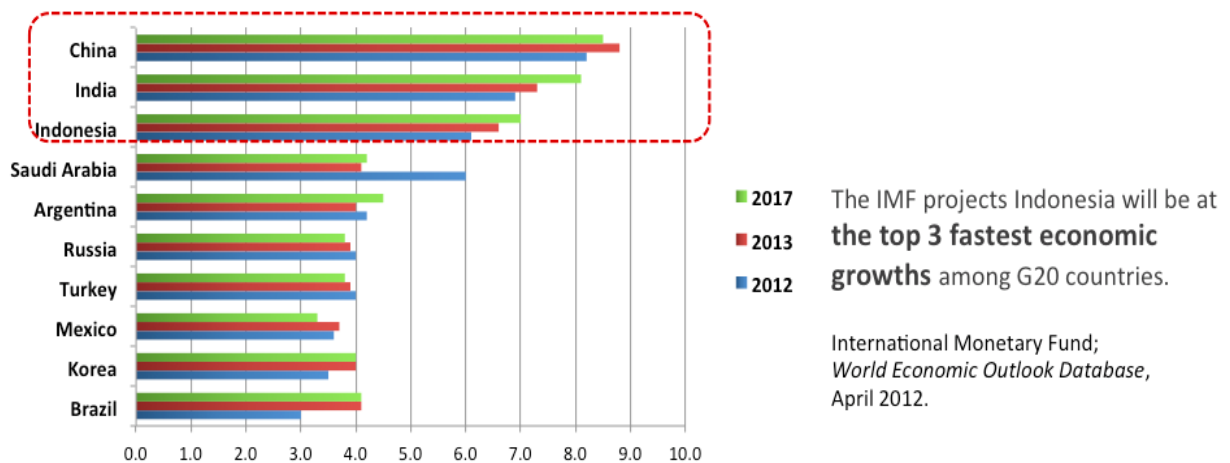


Figure 1. Growth Projection of GDP by IMF (The World Bank, 2016)

Furthermore, according to the World Bank data, Indonesia's GDP per capita (in million USD) increased from 2003 until 2015. Indonesia's GDP experienced a sharp increase in the 3-year period from 2009 to 2011, wherein 2009 GDP was at 2272 and rose to 3471 in 2011, which makes Indonesia ranks in the world rise from rank 22 in 2003 and being ranked 16th in 2012; then ranking became stable in 16 until 2015. Figure 2 illustrates that according to the data, the world bank ranked that Indonesia's GDP increased steadily from 2003 to 2015.



Figure 2. Rank of Indonesian GDP 2003 – 2015 (The World Bank, 2016).

Moreover, the Java island was the province where the capital of Jakarta is located and several other big cities that became the center of a major economic activity in Indonesia. Lamong Bay Terminal or known as TTL, which is a domestic and international container terminal located in the northern city of Surabaya, is also a subsidiary of Indonesian Port Corporation III, Surabaya, East Java, Indonesia. The main business of TTL is to handle loading-unloading / export-import containers in East Java and another area in Indonesia. With a surface covering 114 hectares, which can accommodate approximately 5.5 million TEU, includes docks, container yards, warehouses and backup area. Thus, TTL becomes a fairly busy container terminal in eastern Java and plays the role in improving the economy. The yard occupancy ratio at this terminal has reached 60%, which became one of the causes of the problems of congestion. Furthermore, Figure 3 shows the growth in throughput increased significantly from 2014 to 2016.

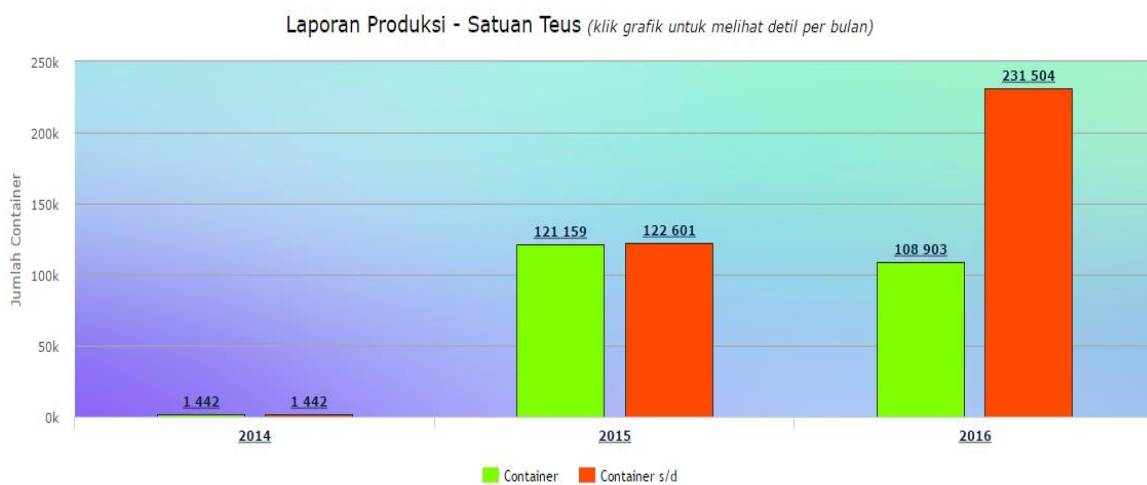


Figure 3. TTL Throughput in Teus (TTL a, 2016)

This research focuses on the factors that affect the implementation of developing Kandangan Dry Port as one of the solutions to reduce congestion in TTL. TTL plays an important role not only as a place where the loading and unloading of containers or consolidation cargoes take place but also acts as a chain of regional and national economic activity. Indonesia is an archipelago where most of the area is the sea; nearly 84% of domestic and 90% of export and import are a seaborne trade. Meanwhile, in line with economic growth and trade, in particular, the port is expected to be offset by developing additional services. As in the previous case study conducted by Cullinane et al. (2012), it was stated that the port can experience barriers to progress at its port because the infrastructure, superstructure and transport networks are lacking. Yard Occupancy Ratio of TTL climbed to 60%; this will cause congestion in the area around the port if it is not finding a solution. In fact it was found that the manufacturer along with the location of facilities for the storage of most of the manufacturers is in the area near the port (Rodrigue, 2006). To deal with the congestion problem, TTL requires the assistance and cooperation of stakeholders that can help reduce the risk of the consequences that might arise out of the congestion by taking independent action (risk sharing) (Gray, 1990). Certain parts of the seaport and dry port development, implementation have become a basic analysis of this study. The cost and time of construction of a new container yard are not too cheap and fast. Therefore, the best solution to avoid congestion must be found at the port as well as to improving performance at the port is most important and urgent. Therefore, seaports need to be supported by dry ports. Also, to reduce the lack of capacity of the container as well as addressing the problem of congestion in the port area, some previous research has been analyzed and identified to successfully implement the dry port concept as one of the solutions to these problems.

Kandangan dry port of Surabaya is located approximately 4.5 kilometers south of the city of Surabaya, which was formerly used as a dry port, but now does not work anymore or is untapped owned by private companies (Dephub, 2015). In collaboration with stakeholders regarding the regulation and finance, construction of dry port project Kandangan takes a lot of finances but time is expected to reduce congestion in the port area. As well as cooperation with the railway company and the opening up of new pathways in the port area of Tanjung Perak, TTL is expected to immediately address the congestion problems quickly and cheaply (Dephub, 2015). Therefore, to establish a real connection to the hinterland by revitalizing Kandangan dry port is one of the solutions that is expected to solve traffic congestion in the port area so as to improve the operational performance of the TTL.

Finally, the author will try to analyze PESTELE factors, which are obtained from Kandangan dry port, and in general, define and detail the PESTELE factors which could be considered to revitalize the Kandangan dry port to optimize its function as one option to a solution in dealing with congestion in the port area.

1.3. Research Question

The research questions will answered by these questions: “What factors need to be considered in revitalizing Kandangan Dry Port?”

1.4. Scope of work

In completing this dissertation, research into TTL as terminal operators and facilitators in Kandangan Dry Port has been done, in particular the container handling procedures of domestic and international cargoes. The underlying problem will be identified and analyzed.

1.5. Research Objectives

The research objectives are:

1. To analyze the PESTELE (Political, Economy, Social, Technology, Environment, Legal and Ethical) factors of dry ports in general.

To break down or make details of PESTELE factors that should be considered by the Kandangan Dry Port.

1.6. Research Structure

The objective of this systematic writing is that discussions are conducted and linked between one chapter to another chapter, so that the result is organized and systematic and easily understood by the reader. Therefore, the final project is divided into five sections plus a discussion with several appendices and bibliography. The order of the presentation of this dissertation is as follows:

Chapter I describes the background, problem identification, research question, the scope of work, purpose, and objective of writing and systematics of writing or research structure.

Chapter II reviews literature describing the study of the theory of the framework for understanding logical thinking like Dry Port, and some reviews about the condition of Kandangan Dry Port.

Chapter III will describe and explain the general methodology, a description of the data obtained and analyze the problems related to the title of this dissertation.

Chapter IV will give the results of the exposure of the data already collected. After that, the correlation and the compatibility of the questionnaire results and from previous studies will be analyzed.

Chapter V will discuss the answered questions, conducting this research, then the author will conclude this dissertation and provide advice to the improved performance of Kandangan Dry Port, especially in improving the service.

Chapter 2 Literature Review

The research studies try to revitalize the Kandangan dry port from the other previous studies that believed could solve congestion problems that occur in Lamong Bay Terminal (TTL). Slack (1999) stated that to tackle congestion and anticipate problems is to use a dry port where several activities of loading and unloading of containers in the seaport area can be moved to the countryside. This chapter attempts to understand the role of the dry port to provide and explore some of the literature related to the dry port and can help troubleshoot problems that occur. The first section will discuss the growth of containers that occurs throughout the world. The next section will discuss the operational problems that occurred at the port and how to solve the operational problems that have been done by another researcher. By using this literature review, which would be directed to the role of Kandangan dry port as one of the solutions to overcome the problems of congestion in TTL.

2.1. Increasing Market of Containers

In 2012, the growth in container throughput volume in the world had increased by about 3.8 percent with 601.8 million TEUs (UNCTAD, 2013). Based on predictions from Drewry Shipping Consultants, container throughput growth in 2020 is expected to rise to 371 million TEUs of 287 million TEUs in 2016 (cited in Chen et al., 2012). In most developing countries, trade grew dramatically, in particular through the container trade. Figure 4 shows the top 5 developing countries for container port throughput. The development of container traffic has increased significantly. In most of those countries, the traffic has risen in the last three years (2010 – 2012).

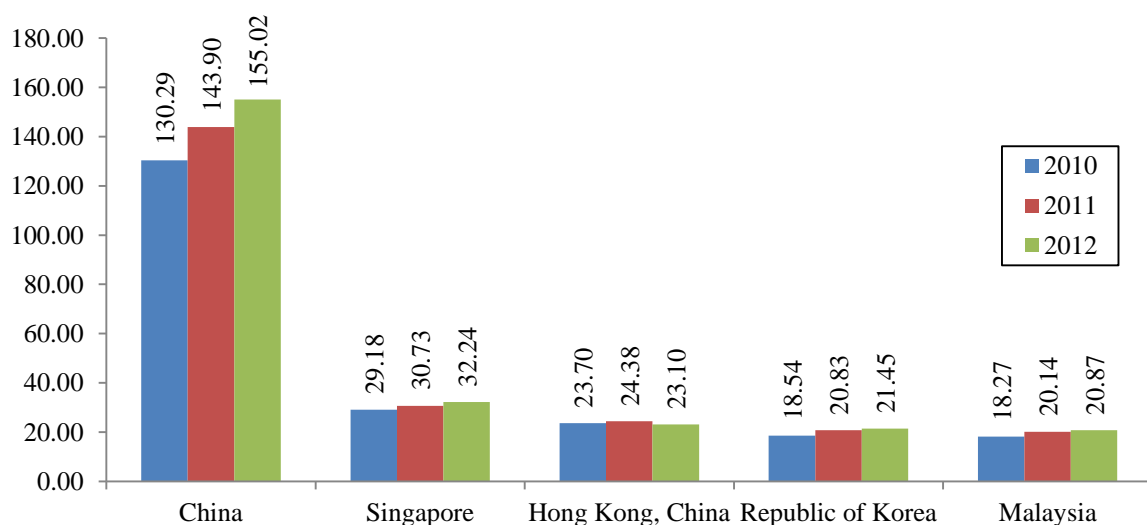


Figure 4. Top 5 developing countries for Container port throughput in million TEUs (UNCTAD, 2013)

Along with the growth in container throughput, an increase in the size of the vessel is followed, which aims to reduce the cost of transportation or logistics (economy of scale) (Nishimura et al., 2009). Figure 5 shows the top 5 container ports in the world in the growth of vessel capacity and growth of container throughput. To improve efficiency and optimize logistics networks, shipping lines should accelerate the transit time, reducing shipping routes and downsizing area coverage shipping (Paixao, 2002). Notteboom (2006) noted factors that determine the demand that is made up of the quality of service. Container ports now have to pay more attention to the handling capacity in line with the increasing size of ships. Container ports reconfigure their handling port operations with developing capacity in new locations, restructuring terminal or placing more equipment. However, it is not cheap to develop all of this. If the container port cannot handle the growth capacity of vessels, then they will not be able to increase throughput capacity and the worst is the big ships cannot berth at the port.

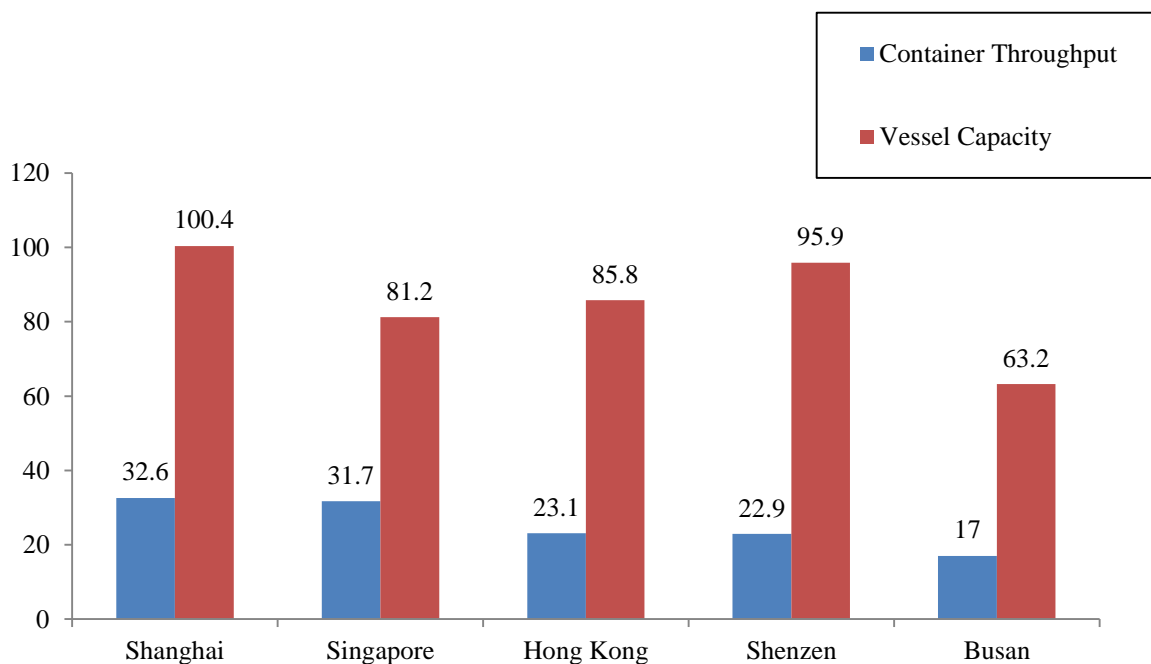


Figure 5. Comparison of vessel capacity and container throughput for top 5 container ports in million TEUs (World Shipping Council, 2013 and Informa UK Ltd, 2012)

2.2. Container Port Problems

2.2.1 Road Congestion

A common problem that usually occurs as a result of an increase in the number of container throughput in the world, especially in America and Europe, is the problem of congestion at the port. The congestion problem does not only affect to the port, but also the consignee and shipper (Visser et al., 2007). Congestion at the port has a big domino effect on transport costs and logistics costs in general which usually occurs in the transport of using land transport modes such as trucks. Congestion on highways could indirectly make the price of goods increase as more fuel is used during traffic jams, lost time, vehicle maintenance more due to the duration of use, as well as the bad consequences for the environment caused by air pollution resulting from vehicles. (Roso, 2006). Therefore, to reduce congestion, it is necessary to shift modes of transportation and the location. This is expected to reduce transportation costs by using modes other than trucks capable and always available to connect and access to and from the hinterland (UNCTAD, 2013).

For example, freight costs from Shanghai, China to Rhine-Scheldt Delta is about 0.12 € per FEU-km, whereas transportation costs to send the goods from ports in northern Europe by truck is 1.5-4 € per FEU-km (Notteboom, 2008). Using rail and waterway systems (short-sea and river) is expected to provide benefits and solutions for the congestion problems (Roso, 2006).

2.2.2 Port Capacity Problem

Increasing container throughput not only causes congestion around the port area, but will also have an impact on congestion on the roads all over the place which are connected to the port. Besides in some container ports there are problems regarding port capacity, which means lack of efficiency. The main causes of congestion on the road, come from the lack of hinterland access, gates, and terminals (Meersman et al., 2012). Industry players recommend and found by expanding the capacity of the terminal will reduce the congestion caused by the increased throughput of goods. However, to expand the terminal capacity requires considerable time and sometimes there is not enough time to catch up with the cargoes throughput growth. One of the easiest ways to increase port capacity issues regarding intermodal connection is to expand capacity by an additional area of water transport modes. However, sometimes it is not always possible to solve the causes of the problem of congestion by only expanding the area

of capacity with other ways of transport water due to the large amounts of money and considerable time.

Port capacity problems have been experienced by some European countries because of the increasing flow of container traffic and goods. Inefficiency and congestion is the biggest problem faced by a large port, while the second-class port is now easier to grow and have a better perspective. In Rotterdam, which is the largest port in Europe can handle a standstill up to 48 hours in the Delta terminal since mid-April (Loadstar, 2014). Because of lack of space due to congestion that resulted in some port operations services about 50% of all movements become ineffective (Schonknecht, 2009). To solve this it is better to build an additional port residing in remote areas with the help of trains that can transport the commodity goods in containers.

2.3. Concept of Dry Port

2.3.1 Dry Port Definitions

Extension function seaport located in the hinterland has been referred to as inland freight villages, inland logistics, inland hubs, inland ports, inland terminals, and dry ports. Cardebring (1995), Roso (2005), Roso (2006), Roso et al. (2009), Vasiliauskas (2007), Wiegman (1999) make a distinction, a proposed classification and various definitions of inland nodes. (See Table 1).

Table 1. Dry port definition

Definition	Term	Source
“An inland terminal to which shipping lines issue their own bills of lading for import cargoes, assuming full responsibility for costs and conditions, and from which shipping companies issue their own bills of lading for export cargoes.”	Inland Terminal	UNCTAD (1991)
“A customs clearance depot located inland away from seaport(s)”	Dry port	UNCTAD (1991)
“A terminal located in the hinterland of a gateway port and serving as a dry port for customs examination and clearance of cargoes, thereby	Inland clearance depot (or	UNCTAD (1991)

eliminating customs formalities at the seaport.”	inland customs depot)	
“A common user inland facility with public authority status, which is equipped with fixed installations and offers services for the handling and temporary storage of any kind of goods (including container) carried under customs transit by any applicable mode of inland surface transport, placed under customs control to clear goods for home use, warehousing, temporary admission, reexport, temporary storage for onward transit and outright export.”	Inland clearance depot	Economic Commission for Europe (1998), Roso (2005), Jaržemskis and Vasiliauskas (2007), Roso et al. (2009)
“A common user facility with public authority status, which is equipped with fixed installations and offers services for the handling and temporary storage of import/export loaded and empty containers.”	Inland container depot	Roso (2005), Jaržemskis and Vasiliauskas (2007), Roso et al. (2009)
“A concentration of independent companies working in freight transport and supplementing services in a designated area where a change of transport units between traffic modes can take place.”	Intermodal freight center	Cardebring and Warnecke (1995), Roso et al. (2009)
“Any facility, other than a seaport or an airport, operated on a common user basis, at which cargo in international trade is received or dispatched.”	Inland freight terminal	Economic Commission for Europe (1998), Jaržemskis & Vasiliauskas (2007), Roso et al. (2009)

<p>“A port that is located inland, generally far from seaport terminals, and that supply regions with an intermodal terminal or a merging point for traffic modes—rail, air and truck routes— involved in distributing merchandise that comes from seaports; an inland port usually provides international logistics and distribution services, including freight forwarding, customs brokerages, integrated logistics and information systems.”</p>	<p>Inland port</p>	<p>Economic Commission for Europe (2001), Jaržemskis and Vasiliauskas (2007), Roso et al. (2009)</p>
<p>“An inland intermodal terminal that is directly connected to seaport(s) with high capacity transport mean(s), where customers can leave/pick up their standardized units as if directly to a seaport.”</p>	<p>Dry port</p>	<p>Leveque (2002), Roso (2005), Roso et al. (2009)</p>
<p>“A dry port can be understood as an inland setting with cargo-handling facilities to allow several functions to be carried out—for example, consolidation and distribution, temporary storage, customs clearance and connections between transport modes— allowing for the agglomeration of institutions (both private and public), which facilitates the interactions between different stakeholders along the supply chain.”</p>	<p>Dry port</p>	<p>Ng and Gujar (2009)</p>
<p>“This type of terminal is almost exclusively aimed at trans-shipping continental freight. There are almost no collection and distribution in the region where the terminal is located. The freight arrives at and departs from the terminal in huge flows. The terminal is characterized by large areas that enable direct transshipments between trains and/or barges. The corresponding bundling model is the hub-and-spoke network.”</p>	<p>Transfer terminal</p>	<p>Wiegmans et al. (1999)</p>

<p>“At this terminal, added value is created in the form of an extra service provided by the terminal operator. From locations A, B, and C, continental freight arrives at the terminal and is consolidated into shipments for customers X, Y and Z. One or more terminal services are added by the terminal operator to the shipments at the terminal. The corresponding bundling model is the line network.”</p>	<p>Distribution terminal</p>	<p>Wiegmanns et al. (1999)</p>
<p>“Small continental cargo shipments are brought to the hinterland terminal and consolidated into bigger freight flows. These bigger freight flows are further transported by larger transport means, such as trains or barges. The corresponding bundling model is the trunk line with a collection and distribution network.”</p>	<p>Hinterland terminal</p>	<p>Wiegmanns et al. (1999)</p>

Source: Compiled by the author.

2.3.2 Dry Port Functions

Increasing container throughput is beneficial for both economic growth in the surrounding area and get more customers, UNESCAP (2006) suggests that dry port or inland terminals have to be focused on regarding their functions for development. Basic functions of the dry port should be able to provide handling services, custom control and a temporary area for loading and unloading of an empty container. After that, the dry port can extend more functions by providing value-added services, giving full export/import processes and expand the place in industrial parks or special economic zones (UNESCAP, 2006).

A logistic chain can be performed by using the dry port for the goods while giving value-added services. Panayides and Song (2007) stated that by giving value-added services in a dry port area in different stages, together with third-party logistics, to provide tailor-made services such as deliver requested service to segmented market, delivery goods on time, to adjust different schedules of various intermodal operations services and to handle various goods like dangerous goods.

According above explanation, it can be concluded that the concept of value-added services means providing added value to the services required by the customer of a dry port. Presently, Kandangan, which as dry port has the function and role of the principal port is very influential on various aspects of economic activities, among others:

- Part of a chain of regional and national economic activities.
- Regions where export / imports goods are consolidated.
- Points of completion of administrative and port procedures on import export documents also related to customs, facilitating exporters and importers (customer) in the processing of documents.
- Assist the trade turnover and industrial development in the surrounding the area.
- Help to reduce the factors high-cost economy or high economic costs, resulting in a rise in the price of products purchased by consumers because the cost of transportation as part of the pricing of such products is quite high.
- Expand business opportunities and employment.
- Encourage the establishment of management systems and handling of goods exports and imports are more effective and efficient.

2.3.3 Dry Port Operational Procedures

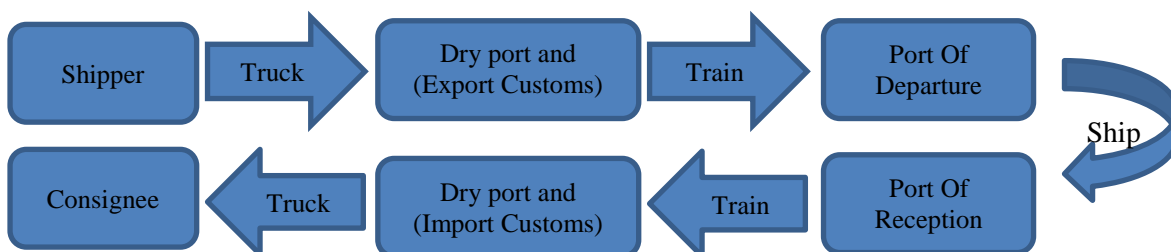


Figure 6. Operational procedures of dry port (UNCTAD, 1991 - draw by author)

According to UNCTAD (1991), the workflow operation of a dry port is like the following scheme. For export activities, shippers send and retrieve goods from the warehouse and then transport them to the dry port by trucks. When the goods are still in palletized condition, the item will be put in a container in the dry port. Checking by customs should be done and completed in the dry port area, so the exporters do not need to do anything at the seaport and after that, the container will be transported to the seaport by rail. Goods are then shipped on the sea by ship from the shipping company. When the goods have arrived at the destination port or receiver port, then the goods continue and are transported by train to the dry port.

After arriving at the dry port and checked by the customs, the goods are sent from the dry port heading to the recipient by truck.

Integrating Logistics Centre Networks in the Baltic Sea Region (INLOC) (2007) groups dry port into several category groups: billing and cash collection, data storage/exchange and communication, cargo storage, gate in/out security, customs clearance, cargo loading/unloading to and from train, truck operations, cargo receipt and dispatch.

2.3.4 Dry Port Location

There is still no agreement for minimum distance in determining the criteria as a dry port which makes the transportation costs to be efficient. The problem of distance is determined by each case based on the operational implementation. Dry port development is highly dependent on the location and good connections with the railway, so the dry port location can be evaluated based on economic, technical and theoretically aspects (Rutten, 1998).

A dry port site selection has an effect that is of particular importance when using a connection via rail. In addition, in the implementation of a dry port external costs should be paid because of differences in modes of the transport system, so it must receive more attention, especially in the economic value and also have an effect on the environment. The use of intermodal transport to make total transportation costs is small compared to only using the mode of land, so that it can provide value and the shipper can take advantage of the dry port as a substitute for a seaport.

As an example, in India, the shipper has been utilizing a nearby dry ports, but the shipper still cannot minimize transportation costs. This is due to lack of value added services provided by the dry port and a lack of support from the government regulations and policies (Ng, 2006). Based on the research that has been made by Roso, et al. (2006) and Woxenius et al. (2004) there are three types of dry ports based on location, i.e., distant, midrange and close dry port.

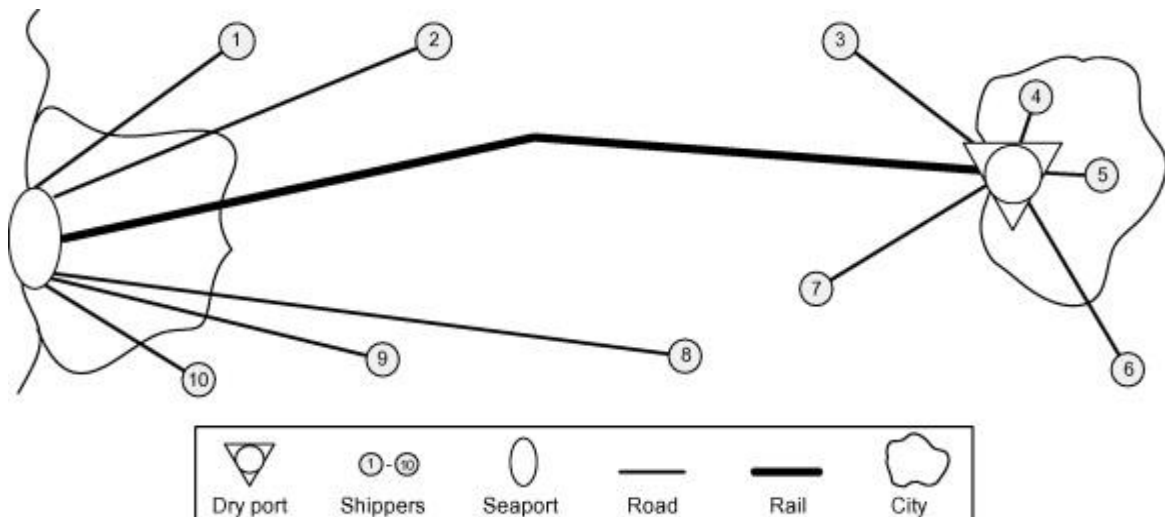


Figure 7. Distant dry port location (Roso et al., 2006).

The dry port location is said to be far if the distance between the dry port and sea port is more than 500 km and is surrounded by a manufacturer or factories as well as being a large area. In addition to having potential as a place to receive a number of goods, the dry port could also serve as a consolidation and distribution center as well as extra services for logistics. From Figure 7 it is demonstrated that all goods shipped from the seaport to the dry port or vice versa, are transported by rail instead of trucks. Besides reducing air pollution caused by trucks, congestion in a seaport can be reduced. As the case in Europe, the use of railway transportation mode between the seaport and dry port can provide benefits of efficiency and effectiveness of the logistics transportation system, for the comparison of the one long train are proportional to the number of 40 trucks (Roso, 2006). Therefore, as shown in Figure 7 the significant benefits of the dry port are that shipper who is far away from the seaport can still continue to send the goods by utilizing a dry port.

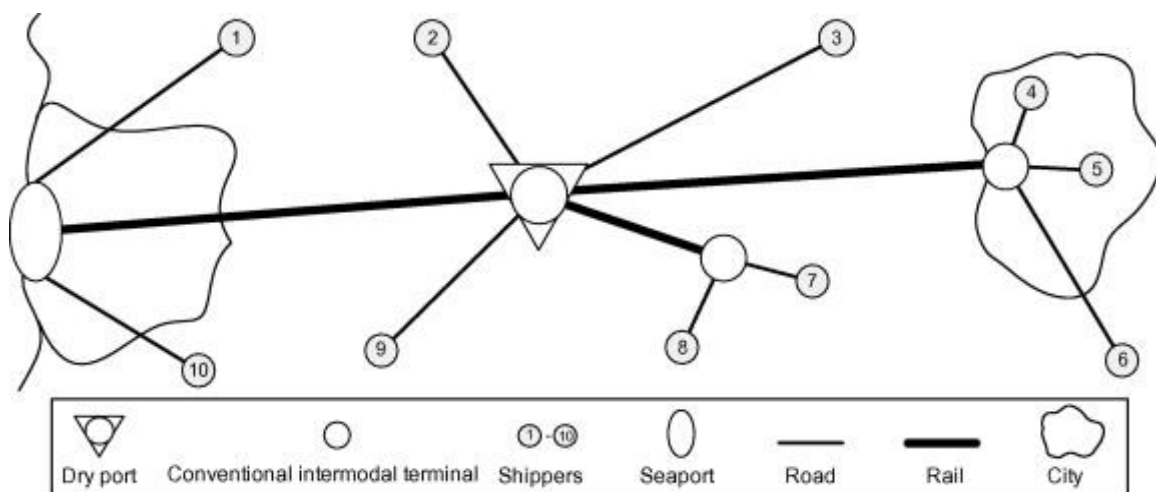


Figure 8. Midrange dry port location (Roso et al., 2006).

Furthermore, the use of mid-range dry port and close dry port should be considered when a sea port cannot accommodate the goods due to capacity constraints at the seaport as well as a storage area or warehouse. The port is not allowed to expand capacity because of limited land that has been used for the benefit of other parties or due to environmental aspects. This is illustrated in Figure 8 where the mid-range dry port has a range of about 70-500 km from the sea port. In the mid-range dry port, some shippers are served directly from the dry port when using the dry port while others are still served by conventional intermodal services because the shipper has limited distance. The combination of mid-range and the close dry port has benefits for the shipper because shippers can choose nearby a terminal from the shipper location, dry ports or sea ports.

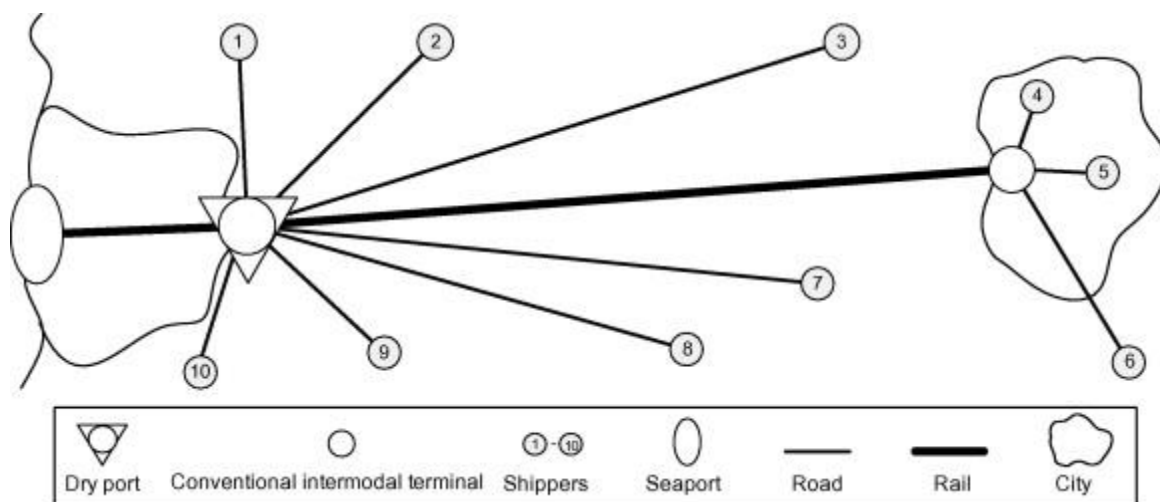


Figure 9. Close dry port location (Roso et al., 2006)

Figure 9 shows a schematic of a close dry port within approximately less than 50 km. The closest port does not cause congestion in the seaport area although it is close to the seaport even for the long distance and middle distance shipper. The long-distance shipper must send the goods to the conventional terminal by a truck before it can continue to be sent to the dry port by train. This requires reliable transport modes to maintain the schedule for loading onto the ship in a seaport on time.

2.3.5 Advantages of Dry Port

Congestion at the port affects consignees, shippers, hinterland operators, stevedores, carriers, and terminal operators (Visser et al., 2007, Meersman et al., 2012). Congestion at the port gives rise to environmental pollution, especially air pollution. Moreover, congestion can reduce the efficiency of the delivery or the flow of goods. There must be real action now to reduce air pollution in various ways due to congestion. When a seaport faces problems of efficiency and congestion, the easiest solution is to expand the capacity of the port area

despite spending considerable money. The logistics transport chain and the dry port concept may bring a valuable solution. The coverage area of seaports can be expanded for their operations until deep into the hinterland, though far from the sea, but could provide added value for the transport and logistics system. A seaport can help send the goods directly from the shipper yard and can accept new items or containers that come to the empty space.

For example, as in the Netherlands, Slack (1999) reported that the public policies implemented in the Netherlands did not support the port to expand the terminal areas on a large scale. Therefore, some port operations, mainly operational storage and handling the capacity of the port of Rotterdam, moved into the hinterland and eventually many inland terminals were built in Venlo (Slack, 1999). A logistics and distribution company involved in building a distribution center in Venlo has provided facilities and tools of transportation connecting by train from the port of Rotterdam (Slack, 1999).

From the previous survey in northern Europe, research has been done about the benefits of the implementation of dry port. The benefits of the dry port are avoiding road and port congestion, reducing environment pollution, reducing the used of sea ports, firming multi-modal transport, firming the transport chains and reducing transportation costs (INLOC, 2007).

2.3.6 Governance of Dry Port

Dry port management varies greatly depending on the circumstances of each project initiator. Rodrigue et al. (2006) state that the terminal has been split into two main groups which are execution operations and ownership.

1. Operational Executor: describes the execution that happens in the terminal. This type of operation is usually done by the owner or other persons appointed or can also be both:

- Private companies: A dry port can be owned by an individual person, so capital and operation are managed and operated by private companies or they use the concession contract from the government to be able to use public facilities (Rodrigue et al., 2006).
- Public control: Dry port operations, employees and operational equipment are provided by public authorities.

2. Ownership: States owners, equipment, facilities and the terminal. There are two types of dry port ownership which are:

- Private ownership: The terminal owner is private funding who gives funds for investment in the infrastructure of the terminal. It can be found in the United Kingdom and New Zealand (Rodrigue et al., 2006).
- Public ownership: The owner of the terminal is public authorities, who give funds for investment in the future expansion, planning, and infrastructure.

Furthermore, the dry port governance body is also highly dependent on operating management and initiator of the dry port. Governance in the dry port is usually a combination of:

1. Public governance

The ownership is the government or public sector organization or state that can be funded for the terminal transport development, such as the railway or a port. The government controls the transport modes, revenue, and operations. The government must be fair, must be adhered to equality for all users and ability to guarantee justice and security for other organizations to minimize shipping negligence, for example, discrimination between customer companies and determination of reasonable rates. (UNCTAD, 1991).

2. Private.

Private management can be implemented on private investment. The private sector is expected to provide much better service and quick response in terminal operations, including regarding changes in the tariff structure. A quick response can affect and change the pattern and special supply needs each day (UNCTAD, 1991).

3. Public-private partnership (PPP).

Public-private partnership provides greater flexibility at the time of the initial development partnership agreement or contract compared with that of the government. This provides an opportunity and the possibility to change the form of cooperation relations. It will also provide an opportunity to regulate the development of new projects, including the implementation of a network of terminals and infrastructure. Moreover, the financial factors, which are crucial for the public sector, should be able to choose the best investment and the private sector should be able to recover the investment that has been obtained (UNCTAD, 1991).

2.4. Implementation of Dry Port Factor

To help understand and analyze the external factors affecting the company's performance and implementation of dry port action, much of the literature focuses and highlights PESTELE

(Politics, Economic, Social, Technology, Environment, Legal, and Ethics) analysis (Thompson et al., 2010). This research is expected to focus more on PESTELE factors needed to be analyzed more deeply because it will affect good business for the company. According to Grigoriu (2006), the PESTELE includes seven aspects there are political, economic, social, technology, environment, legal and ethics. These PESTELE factors will be analyzed using a macro-environmental framework to better suited to answer questions from this study, “What factors need to be considered in revitalizing Kandangan Dry Port?”

1. Politic factor

The previous studies suggest that the relationship is good and close cooperation between government and the private sector or other stakeholders, such as logistics providers, shipping lines, terminal operators, container depot, port operators and railroad company which are urgently needed (Visser et al., 2007). Both local and central government plays an important role in the development and implementation of the dry port, such as tax regulation, inland customs clearance procedures, concession contracts, operational authorizing, land arrangements, and investment regulations (Beresford et al., 2012). For example, in China, the government also helps regarding coordination and promotion (Hanaoka and Regmi, 2011). However, other previous studies found that in China in which the Shijiazhuang dry port there were incompatibility and less harmony in customs policy issues, which could indicate a lack of coordination between institutions concerned with the government (Hanaoka and Regmi, 2011). The same thing happened in Brazil, where there was less government support for the development of the dry port in Brazil. Eventually, it took about 20 years of development, as construction began in 1970 and was finally completed in 1990 (Padilha and Ng, 2012). From the examples above, it can be concluded that the bureaucracy of the government support could influence the development and implementation of a dry port.

However, a good relationship or collaboration between the private sector to the public sector or the government cannot be separated in the development and implementation of a dry port (Beresford et al., 2012). The government could also help regarding an investment that requires a lot of money to help alleviate financial problems (Rodrigue et al., 2010). The partnership between the private and public sectors which shares obligations, risks, and investments have been applied to various ports but that strategy is not always the same in every country (UNESCAP, 2008; UNESCAP, 2009). For example, in North America, where the dry port is fully operated and owned by private parties, but not in Europe who use the strategy of Public Private Partnership (PPP) which is a combination of public and private

ownership. However, in China strategic planning and good policy exist at an early stage of development where it involves the central government and other relevant government agencies and stakeholders, such as industry, port operators, terminal operators, quarantine, and customs. Moreover, in the operational phase following the completion of planning, the dry port will involve many stakeholder parties, such as railway companies, container freight stations, logistics forwarders, shipping lines. From the example mentioned above, for the successful development and implementation of a dry port collaboration between the government and all stakeholders of the dry port is required.

2. Economic factor

UNECE (1998) explains the definition of a dry port as a place to provide temporary services including handling and storage services to offer every kind of goods and container. Nowadays, for the successful development and implementation of the dry port, warehousing and customs that can be used as the main services from existing services need to be included. Some previous studies also stated the importance of the infrastructure, facilities, capacity, and size of the dry port (Crainic et al., 2013; Gujar and Haralambides, 2012). To improve cost efficiency, several research studies suggest planning location to create improved access to seaports and dry ports as service planning and operational dry port (Ka, B., 2011; Zhong et al., 2010).

The rapid development in the shipping and maritime industry, providing value-added services greatly affect the implementation of the dry port, such as container freight station (CFS), container maintenance, stuffing and stripping and also customs clearance (Crainic et al., 2013; Roso et al., 2009; Woxenius et al., 2004). value-added services are important, especially if the dry port acts as a consolidation and distribution center (The South East of Scotland Transport Partnership, 2012). Customers will be able to feel the economic benefits if the dry port could successfully carry out value-added services.

Robinson, A.E. (1999), cited in Harrison (2011) defining a mode of transportation that connects the dry port with the seaport and hinterland is critical to use deep water access, highway, rail, and air. In addition, the direct connection via train is also crucial, according to some stakeholders (Crainic et al., 2013). Meanwhile, the performance of the dry port is determined by the availability of good access from and to the dry port (Roso, 2007). Available modes of transportation are not only used for connections from and to the dry port, but can also be used to support the hinterland to get the potential market in distant areas.

Furthermore, to reduce traffic congestion due to the increased flow of containers and to reduce transport costs, the ports in Europe combine ground transportation and waterway transportation (Fremont & Franc, 2010). In addition to the connections using a railway, transportation mode can also reduce logistics costs due to the increased volume of the container (Lumsden, 2009; Woxenius et al., 2004). With a combination of modes of transport can reduce the number of congestion at ports in northern Europe and also make the growth of container traffic.

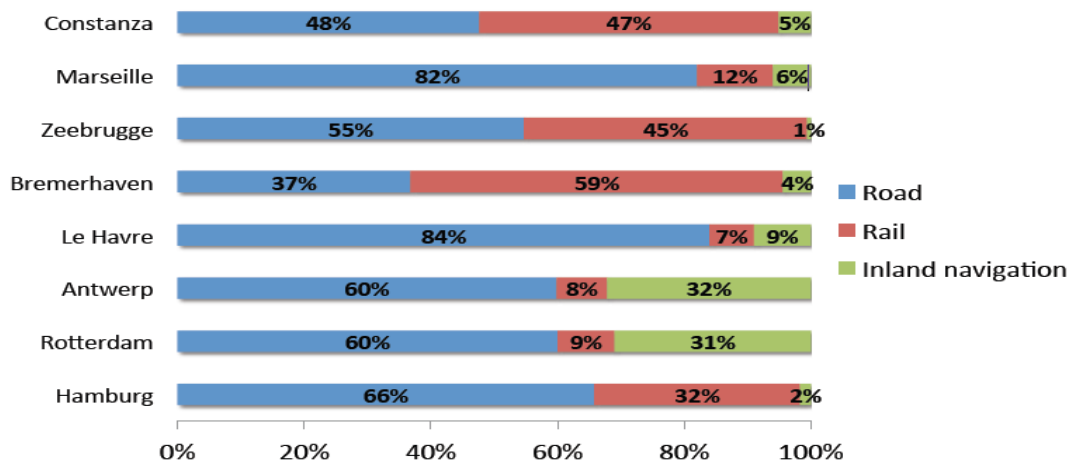


Figure 10. Split of modal at EU Container Ports (Rodrigue et al., 2010)

Transportation capacity should also be taken into consideration in the development and implementation of a dry port in addition to only considering the major services and access to hinterland (The South East of Scotland Transport Partnership, 2012). Large transport capacity will have a positive impact because logistics transportation costs will decrease. To examine the transport cost of the economy of scale should also be considered (Toh et al., 2008; Wang and Wang, 2012).

3. Social factor

Social factors here are one of the aspects that is related to management. Although management does not have a direct relationship in the operational process, it still has a very important role in the revitalization of the dry port. From previous studies resulting in getting good performance, the dry port should be run by an efficient management who can provide facilities for planning and marketing, so the management plays an important factor (Slack, 1999; Padilha and Ng, 2012). Good management requires communication and reliable human resources (Robinson, 1999).

Also, based on previous studies, to expand its market share up to the hinterland and attract more customers, proper strategic planning of management for the dry port is needed (Ng and Padilha, 2012; The South East of Scotland Transport Partnership, 2012; Toh et al., 2008). Also, Harrison (2011) stated that to attract new business in the hinterland, the dry port should gain public support by making a more aggressive marketing. Therefore, in addition to having short dwelling time, compared to the seaport and other benefits for the implementation of marketing strategies to approach good communication with the customer will be able to attract more customers (Slack, 1999).

Factors other than management, such as social factors, will also be discussed on the subject of the location of a dry port itself. One of the goals to determine the right location of a dry port is to consider the labor and transportation costs. Strategic location is close to the center of the industry or business as well as close to the center of the residence. However, it should be kept in mind that the implications of these locations could create new problems, for example accessibility and territorial conditions, environmental acceptability, social welfare and levels of economic growth.

4. Technology Factor

Implementation of advanced technology cannot be separated from the dry port implementation. From previous studies it was found that with the application of advanced technology in the dry port operations can further optimize operational performance and help maintain safety procedures for the dry port (Crainic et al., 2013, Visser et al., 2007). Factors Information and Communication Technology (ICT) should also be considered in the construction of the dry port. Data exchange between customs, dry port and seaport can help prevent the illegal import and export (Harrison, 2011; Robinson, 1999).

The electric window is a system that could help change the manual process towards an automated paperless process. Using an electronic gateway linking the trade users to port / terminal operators, customs department, ports authorities and other government agencies and obtain approvals electronically makes this feature have many benefits, such as:

1. Sharing information can help improve and smoothen the interaction and the level of collaboration and coordination between the many stakeholders.
2. Enhancing public services, responsiveness, and productivity, efficiency, accountability, accuracy, increased transparency, improve monitoring and control of the processes information.

3. Increasing the speed of port services, reduce cycle time from error data entry because of accessible 24/7 from anywhere
4. Supporting and linking with the government system to implement the single window system such as e-government, portnet, e-trade.
5. Re-engineering the import and export processes to increase competitiveness and image in the global marketplace.

By using an integrated electronic windows system that can integrate and connect all kinds of information can be exchanged among all stakeholders in port. To succeed in the implementation of the electronic windows system, the people concerned need to get used to running a new more innovative culture to the public, such as:

1. Increasing End-Users and client's knowledge and skills by conducting some training, seminars related Electronic Windows System and IT literacy and also collecting feedback.
2. Cooperating and collecting the full support of the stakeholders at various levels.
3. Upgrading internet and telecom or hardware infrastructure services.
4. Recruiting and building a committed and competent team.
5. Doing an aggressive strategic marketing.
6. Implementing change management, including changing method, tools, work processes until mindsets.

Therefore, one of the requirements for the revitalization of the dry port is to apply advanced technology in both hardware and software (ICT) (Wang & Wang, 2012).

5. Environment factors

As a result of globalization forcing the port, especially in the operational processes and infrastructure, it may be less safe for the environment because of interference of hydrological processes and water system changes that could potentially damage the environment. (Michail, 2006; Robinson, 2002). The dry port could also benefit the environment if it could implement a system that is environmentally friendly (Hanaoka and Regmi, 2011). Previous research, conducted by Liao et al. (2009), which found that Taiwan was able to reduce emissions from port activities, cleaning them up to 60% based on modeling activity emissions. Furthermore, research is also conducted in London which got the result that emissions of Freight Construction Consolidation was reduced to 25.7% (Zanni and Bristow, 2009). Therefore, it

can be concluded from previous studies that dry port operations could be friendly to the environment if it could reduce the emissions generated.

6. Legal factors

Governments, both local and central, play a major role in the development and implementation of the dry port, ie. tax regulations, inland customs clearance procedures, concession contracts, operational authorizing, land arrangements, and investment regulations (Beresford et al., 2012). As an example the case in Madrid, Spain in 2003, where the Spanish government supported in creating or approving legislation to Coslada Dry Port, which was advised to provide customs and regulatory inspection services (Estrada, 2008). More importantly also from government support there will be regulations and policies regarding legal issues and bureaucracy of the funding obtained from the government or from multiple stakeholders (Harrison et al., 2011).

7. Ethics factor

Ethics is generally known and associated with individual characteristics such as trustworthiness and honesty. Each individual must have a moral and ethics in daily life, both at home and in the office, especially for the leadership of an organization. Discipline at work is one example of implementation of ethics (Brown, 2005). Corporate culture or organizational culture also brings an important role in creating an ethical workplace. Corporate culture teaches how a company or organization can survive in an external environment and is responsible for internal matters. Good conduct or ethics should be promoted and used as a standard of values or norms of behavior in the company (Gorman, 1989). From research conducted in 2014 it was found that income in an organization or company lost 5% as a result of fraud or corruption. From the estimated gross world product in 2013, the data obtained loss due to fraud and corruption amounting to 3.7 trillion dollars (Association of Certificate Fraud Examiners, 2014). Therefore, good moral ethics for employees with the implementation of policies and codes of conduct in the company, especially in the dry port is needed to reduce the possibility of fraud or corruption.

After all the PESTELE factors have been discussed, the dry port should immediately consider these factors in the successful development and implementation of the dry port's future. Finally, in Table 2 the factors that influence the implementation of the dry port based on the experience in different places from previous research are summarized.

Table 2. List and source of revitalization factor in dry port

1. Politic	
Governance policy, regulation, and support	Beresford et al. (2012), Hanaoka and Regmi (2011), Padilha and Ng (2012), Rodrigue et al. (2006), Rodrigue et al. (2010), Toh et al. (2008), Visser et al. (2007),
Stakeholder role	Beresford et al. (2012), UNESCAP and Korea Maritime Institute (2008), UNESCAP (2009).
2. Economic	
Main services (handling services, transportation services, temporary storage, customs clearance, warehousing) and Value-added services (Distribution centers, consolidation centers)	Crainic et al. (2013), Haralambides and Gujar (2012), Ka, B. (2011), Li et al. (2011), Roso et al. (2009), The South East of Scotland Transport Partnership (2012), Woxenius et al. (2004), UNECE (1998), Zhong et al. (2010).
Transportation cost	Crainic et al. (2013), Fremont and Franc (2010), Robinson (1999), Rodrigue et al., (2012), Roso et al. (2007), Lumsden (2009), Toh et al. (2008), The South East of Scotland Transport Partnership (2012), Woxenius et al. (2004), Wang and Wang (2012).
3. Social	
Human resources, marketing, and planning	Padilha and Ng (2012), Robinson (1999), Slack (1999), The South East of Scotland Transport Partnership (2012), Toh et al. (2008).
4. Technology	
Implementation of Advanced Technologies	Crainic et al. (2013), Robinson (1999), Visser et al. (2007), Wang and Wang (2012).
5. Environment	
Environmentally Friendly	Hanaoka and Regmi (2011), Liao et al. (2009), Michail (2006), Robinson (2002), Zanni and Bristow (2009).
6. Legal	
Legal issue	Beresford et al. (2012), Estrada (2008), Harrison et al. (2002)
7. Ethics	
Discipline, Fraud and corruption issue	Brown (2005), Gorman (1989), Association of Certificate Fraud Examiners (2014)

2.5. Implementation dry port in Indonesia

2.5.1 Lamong Bay Terminal

Terminal Teluk Lamong (Lamong Bay Terminal) or known as TTL is an international and a domestic container terminal in the Port of Tanjung Perak, Surabaya, East Java, Indonesia. TTL has a major business dealing with goods including dry bulks and containers import,

export, and domestic in East Java and the surrounding area. The container yard that can accommodate 5.5 million TEUs, 20 million tons of dry bulk, and a total of 386 hectares of port area which includes quays, yards, warehouses and land, TTL has become one of the largest container terminals in East Java.

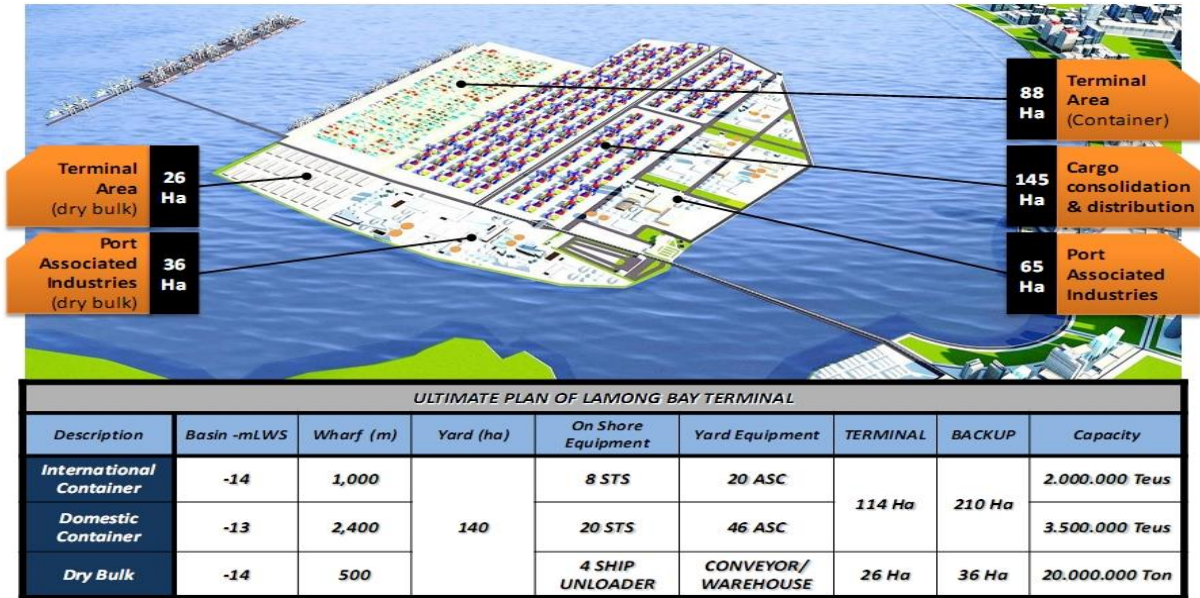


Figure 11. Masterplan TTL Surabaya (IPC III, 2016)

Table 3. TTL throughput trend (Pp3, 2014)

Period	Call	Total Box	Total Teus
Nov-14	1	290	304
Dec-14	7	996	1138
Jan-15	10	3027	3136
Feb-15	20	5449	5717
Mar-15	24	5952	6304
Apr-15	28	6310	6756
May-15	30	5592	6060
Jun-15	22	6049	6345
Jul-15	27	7165	7761
Aug-15	37	8929	10334
Sep-15	42	9921	11574
Oct-15	53	14728	17331
Nov-15	56	17509	20645
Dec-15	51	16121	19196
Jan-16	56	17350	20000
Feb-16	50	16579	18996
Mar-16	52	15580	18112
Apr-16	46	15111	17896

May-16	48	14245	16735
Jun-16	52	17048	20058
Jul-16	35	15823	19993
Aug-16	52	18380	21444

From the data in Table 3 it can be seen that the additional container yard is required at the place of the container in TTL. Availability of the container yard is influenced by the increasing traffic of container throughput. If TTL cannot deal with the increase in container traffic throughput, it will cause congestion around TTL. Congestion problems not only affect the terminal operators, but also affect the performance for all stakeholders, such as consignees, shippers, hinterland operators, stevedores and carriers (Visser et al., 2007). According to research carried out by Cullinane et al. (2012), it showed that some cases that occurred in the port due to lack of infrastructure and adequate transportation can make the performance of port operations slow, so that ports need to develop their services to keep balance with the growth of trade.

The TTL must be able to provide better service that can be integrated with other modes of transportation service systems which are simpler, secure and reliable to compete with other container terminals in Java and Indonesia in general. Congestion that occurs at the port and the surrounding area is a challenge that must be faced by the company to reduce the total cost of logistics in Indonesia. Yard Occupancy Ratio is almost 60%, but the standard should be below about 50% of the total terminal operator in IPC III. This made a special concern for the continuity of operations in TTL (Pelindo III, 2016). Table 3 shows that the growth rate of container throughput increased from 2014 through 2016 for import and export activities, which could potentially cause congestion if not an immediate solution is found.

2.5.2 Kandangan Dry Port

So far the presence of the dry port in Indonesia is still not used optimally to support a reliable national logistics system because it is not well managed and there are still many who do not take advantage of the railway transportation mode (Pelindo III, 2016).

Kandangan is the name of the area which is located about 15 kilometers to the south of Surabaya; there is a dry port that has not been used optimally and even now not operated anymore. It is owned by the government companies (Pelindo III, 2016). With a good cooperation between stakeholders about financing and regulation, especially with the

government, the project Kandangan dry port will be able to minimize the cost and time in development that could eventually reduce the congestion that occurs.

Moreover, in addition to reducing congestion good cooperation is also needed with other organizations by dividing the dry port container throughput capacity due to reduced capacity which accumulates in one place (Gray, 1990). That must be done first by the operating division in TTL to reduce congestion in the container yard area. Inside TTL is to replanning the use of container yard. Development and implementation of a new container yard cost a lot of money and time. Therefore, the development and implementation will be easier and faster regarding cost and time required for good cooperation between stakeholders and the full support of the government. Roso et al. (2009) stated that the concept of dry port is derived from the seaport that has a direct connection via train or other modes of transportation to the hinterland or inland terminals where containers are handled as in the seaport. Therefore, for the dry port project to succeed, the company should have a dry port agreement with the railway companies as well as with customs as representatives of the government, and also the cooperation agreement with the industrial sector as a customer.

This dry port concept can help improve logistics solutions, increase throughput by reducing the container yard occupancy ratio, reducing congestion in the area around the port, help move modes of transport to become more environmentally friendly and more efficient (Roso et al., 2009). In cooperation with the railway companies as well as the reopening route from Kandangan to TTL, should be solved quickly and easily the problem of congestion that occurs on the road quickly and cheaply.



Figure 12. TTL Surabaya – Kandangan railway. (Google, 2014)

To build a dry port and a new container yard consumes much time and considerable cost. On the other hand, to compensate for the growth in container volume, revitalization Kandangan dry port to connect the seaport and hinterland. With good connections it is expected to be one of the solutions to overcome congestion.

2.6. Summary

This literature review can help to explain the factors that influence the development and implementation of a dry port and explaining the effect of the growth of container volumes. The benefits of dry ports are that they can provide solutions to overcome congestion problems occurring at the port. This chapter describe the common problems faced by the container port as a result of increased container markets. To deal with the problem in sea ports, the dry port concept gives additional solution. From previous research studies, the PESTELE factor has been categorized into the most important factors group for the development of the dry port.

Moreover, TTL is facing problems dealing with the growth of trade in the container market. Meanwhile, to reduce the congestion that occurs around TTL and the surrounding area, the revitalization of the Kandangan dry port could be one solution. There is still no comprehensive research on the development and implementation of Kandangan dry port. Finally, by using a gap / Importance Performance Analysis of the PESTELE factors can help to analyze the revitalization of the dry port. Kandangan dry port is expected to be one of the solutions to deal with congestion and could strengthen the national logistics system.

Chapter 3 Methodology

The purpose of this study was to identify important factors that should be considered by Kandangan dry port to succeed in revitalizing and implementing the dry port which could eventually provide a choice of solutions to the problem of congestion in TTL. For that reason, to achieve the objectives a comprehensive method that can obtain optimal results was required. This section will specifically discuss techniques or methodology used in this study ranging from questionnaire design, data collection, including primary data and survey data and an analytical approach to ethical issues.

3.1. Collection of Data

After getting a few examples from previous studies, the PESTELE factors were considered the most important in the case of dry port development and implementation, as well as primary and secondary data from multiple stakeholder surveys. If the Politics, Legal and Technology factor is the most important factor among other factors PESTELE. To answer the research questions of this study, it is necessary to give a survey or questionnaire to find perceptions of respondents about the important factors that influence the development and implementation of Kandangan dry port. When conducting this study, the survey data from respondents, in this case, were used as the main data to achieve the research goal. Respondents were asked to fill out a questionnaire from the questions concerning important factors that should be considered in developing Kandangan dry port and condition Kandangan dry port from the perception of each respondent. Because of the many examples that should be analyzed, the use of the questionnaire was considered an appropriate method to address and analyze problems that occur in a research study (Sekaran, 2003).

Data from questionnaires are considered as the most effective way by many writers to obtain quantitative data which can be measured in numbers (Collis and Hussey, 2009; Sekaran, 2003). Although the questionnaire could be sent in the form of a soft copy via email, the researcher preferred to use the media in a hard copy of this questionnaire to the respondents who are directly concerned with the Kandangan dry port. In the technique of this questionnaire, the researcher gave the opportunity to the respondents to ask for something they did not know at all before about the questionnaire; this was to minimize misunderstanding or bias on the answers given to respondents. The researcher hopes that the respondents should have enough time to answer the questionnaire (Sekaran, 2003).

In the questionnaire, respondents were given closed questions which were answered by select how quickly, they could answer the questions of open-ended questions were used to find out more detailed answers from the respondent's (Sekaran, 2003). This questionnaire was designed by using ten factors questions ie. the most important and should be selected using the 7 point Likert scale. The researcher designed a questionnaire to the model comparison between the level of importance and the condition of Kandangan dry port which is expected to facilitate the respondents to answer. In addition to easy answers, the researcher tried to collect and analyze the results easily (Sekaran, 2003).

3.2. Respondents

The limited time was one of the main concerns encountered in this study. Respondents were selected from stakeholders who are directly involved with the operation Kandangan dry port and using the services in TTL.

Table 4. TTL Respondents or stakeholder summary.

Respondent	Total Respondent	Number Answer closed questionnaire	Number Answer open-ended questions
Container Depot	8	3	1
Government	1	1	0
Logistics Provider	111	68	25
Port Operator	1	1	1
Railroad Company	1	1	1
Shipping Lines	15	15	9
Terminal Operator	1	1	1

Primary data obtained from 138 companies listed as respondents were expected by the researcher to be able to get the same picture of the daily operational activities. Therefore, in this study questionnaires were distributed to 138 respondents from March 2016. However, only 90 respondents who answered and returned the questionnaire (for more details see Table 4). Before the survey was conducted, the researcher sent an approval letter of the questionnaire to the respondents as part of the rules of conducting surveys ethically(see Appendix A). This study only included respondents representing the position of the

respondent in the company, and the company name and type of company is based on the requests of many respondents.

Table 5. Respondent Characteristics

Respondent	Age of Company	Position	Employee	Amount	Send	Return
Logistics Service	1 - > 20 years	Customer Service, Operational Staff, First Level Supervisor, Middle Management	< 100	245	111	68
Shipping Line	> 20 years	Middle management, Operation Manager	< 100	25	15	15
Port Operator	> 20 years	Operation Manager	100 -1000	1	1	1
Terminal Operator	11 - 15 years	Operation Manager	100- 1000	1	1	1
Container Depot	11 - > 20 years	Customer Service, First Level Supervisor, Middle Management	<100	10	8	3
Government / Ministry of Transportation	> 20 years	First Level Supervisor	>2000	1	1	1
Railroad Company	> 20 years	First Level Supervisor	>2000	1	1	1
Sum				284	138	90

One of the difficulties experienced by a researcher in the study was to obtain or collect data questionnaire results. Some respondents only answered some of the questions or even no answer at all expressed by email or met directly with investigators if they are not directly involved in operations at the dry port Kandangan. 48 respondents could not answer with or

without giving a reason. 90 respondents answered only closed-questions and 38 respondents answered both types of open and closed questions.

3.3. Questionnaire Design

A questionnaire was designed into two clear and simple parts (see Appendix C). The first section uses a closed question and the second section using open-ended questions. In the first part of closed questions, respondents were asked to answer what score that they think or the perception of respondents of the level of importance and the condition of the Kandangan dry port from important factors that influence the development and implementation of Kandangan dry port. In this section 10 questions will be discussed. these will be answered by the respondents based on the identification of factors affecting dry port development that has been done in the previous chapter and which has been carried out by other researchers. The factors are: legal, environmental, safety and security, technology, managerial, hinterland accessibility, seaport accessibility, value added services, main services, transportation cost, location, stakeholder role, and governance policy. A 7-point Likert scale that measures the importance of the following factors for the revitalization Kandangan dry port (1 = not important at all to 7 = extremely important), was used and how the condition Kandangan dry port at this time of the factors that affect (1 = completely dissatisfied to 7 = completely satisfied) a series of closed questions were given to respondents. It can help respondents to focus on the elements of the problem and also make it easy to answer questions (Malhotra, 2007). There is no significant difference by using a 5 or 7 point scale, but on a 7 point scale the sensitivity level of precision is more than 5 scale, so the results obtained become more reliable (Preston and Colman, 2000). To identify the factors that affect and relate to the development and implementation of Kandangan dry port from the perspectives of each respondent, as was done previously by other researchers a Likert scale questionnaire was used. Furthermore, the factors were identified as qualitative data, so by this method qualitative data are converted to numeric data, which makes analysis easier (Collis and Hussey, 2009). Therefore, the researcher preferred to use closed questions with a 7-point Likert scale as the primary method of data collection.

In the second part, the respondents were given open-ended questions that contain what factors need to be Considered in Revitalizing Kandangan Dry Port and what TTL should do to support and implement that factor to succeed the Revitalizing project of Kandangan dry port according to the perception of the respondents. The researcher will be able to receive more

qualitative data as a complement of closed questions with a flexible response because it uses the words of the respondents themselves (Hussey and Hussey, 1997).

3.4. Analysis Method

After the questionnaire data were obtained it was analyzed by using Importance-Performance Analysis (IPA). Analysis using IPA is very easy because it only compares the level of interest with existing conditions of Kandangan dry port seen from the perspective of each respondent / stakeholder. Then from the difference between the level of importance and the existing conditions were analyzed one by one and the greatest difference was suggested to be increased. For additional complementary of closed questions, answers to open-ended questions that can help analyze more detail are required.

To analyze and study to what extent the efficiency of operational service at the port based stakeholder perspective, Brooks (2012) uses IPA analysis as a supporting tool. Other studies such as evaluating programs, customer satisfaction, development services also use the IPA analysis (Wong et al., 2011; Van Ryzin & Immerwahr, 2007). The IPA method of rating scale was used to measure each of these factors on the level of importance and the existing condition. Therefore, in this study, the IPA method of analysis was preferred to identify gap factors that affect the revitalization of Kandangan dry port.

After the results of the questionnaire were obtained from the respondents and further analyzed. They were conducted in early March 2016 and continued until the end of the writing of this dissertation at the end of September 2016 (detailed timeline in Appendix D).

3.5. Ethical Issue

A research study that involves human beings as participants, there are some rules of ethics that must be met and considered by the respondents and the researcher at the time of data collection. To collect data from individuals or other companies about the information that is needed by the researcher, first of all the researcher must use high ethical standards. One of the requirements to meet the ethical rules is to make the consent letter to the respondents before giving the questionnaires. In addition to aiming for approval of the respondents regarding the data as well as issues related to research the latest news, a consent letter should also be able to provide assurances that the respondents will be given the confidentiality of respondent data (Hair et al., 2007; Wilson, 2014). After the respondents had agreed to answer and respond to the questionnaire, the questionnaire was distributed to the respondents. However, the respondents also reserve the right to refuse to not answer the questionnaire.

Confidentiality of information from respondents should be kept by the academic rules of the University (Sekaran, 2003).

A consent letter also has the objective to convince respondents to participate in a questionnaire to give a brief explanation of the research study. After that, the respondents were given sufficient time to answer the questionnaire. The researcher collected the results of questionnaires from respondents by the agreed time to be analyzed.

As requested by the respondent, the questionnaire was allowed to be published without mentioning the name of the respondents but only the name of the company and the department just to ensure and respect the confidentiality of respondents (Collis & Hussey, 2009; Riley et al., 2000).

Chapter 4 Analysis of Data

The purpose of this dissertation is to identify the factors that play a role and should be considered in the project development of Kandangan Dry port that can function optimally as one of the solutions in dealing with congestion in the TTL area. Data was obtained from the questionnaire collection by using the 7-point Likert scale. Respondents were asked to answer closed and open question. For closed questions, respondents were asked to answer about ten factors regarding the importance and existing conditions by giving the score 1-7 on the existence Kandangan Dry port. Factors that influence the success of the construction of the dry port were obtained and discussed in previous studies. Respondents are the stakeholders, including customers who were directly involved in the care of port operations, both seaport and a dry port.

Collecting data obtained from the questionnaire will be analyzed in this section. First of all, a general or overall results and detailed results of each factor will be given. Factors that influence and should be considered in the development of Kandangan Dry port. Moreover, the results will be equipped and supported with open questions in analyzing the factors that are very important in the development of Kandangan Dry port based on the views of each respondent.

4.1. Questionnaire Overview Result

This questionnaire contains seven points, a critical importance level of 10 factors and a 7-point satisfaction level of existing conditions of Kandangan dry port, and it just focuses on the gap analysis. The level of importance of implementation of dry port factors are represented by a letter (I), and for the existing condition of Kandangan Dry Port are represented by a letter (E), and gap analysis is measured by the difference between the level of importance and existing conditions are represented by the letters (I-E). The results of a large gap between importance and existing demonstrated low performance and required special attention. In analyzing each of these factors this will be combined with the results of the open questionnaire. With the help of software EVIEWS in which there are features of IPA (Importance Performance Analysis) the position of each of these factors and priorities for improvement were analysed and identified.

Table 6. Considered factors in implementation of Kandangan dry port result

Factor		Mean Importance	Rank	Mean Existing	Rank	Mean Gap	Rank
1	Governance policy, regulation and support	6.48	1	2.94	6	3.53	2
2	Stakeholder role and support	6.00	8	2.60	10	3.40	4
3	Location (closeness to markets and seaport)	6.31	4	3.29	2	3.02	7
4	Transportation cost	6.42	2	3.03	4	3.39	5
5	Main services	6.10	7	2.89	7	3.21	6
6	Value added services	6.37	3	2.64	9	3.72	1
7	Accessibility between seaport and dry port and between hinterland and dry port	6.27	5	3.38	1	2.89	8
8	Managerial	5.78	10	2.98	5	2.80	10
9	Implementation of Advanced Technologies	6.18	6	2.70	8	3.48	3
10	Safety and security, Environmentally Friendly	5.92	9	3.12	3	2.80	9
Overall Mean		6.18		2.96		3.22	

From Table 6, it shows the summarized result of factors considered in the implementation of Kandangan dry port. The highest average importance is governance policy, regulation, and support (1), followed by transportation cost (4) and then a value added service (6). The highest average existing is accessibility between seaports and dry port and between the hinterland and dry port (7), followed by location-close to markets and the seaport (3) and safety and security, environmentally friendly (10). Moreover, finally, the top three average gap can be seen from the rank of the average gaps which is a value added service factor (6), followed by governance policy, regulation and support (1) and advanced technology implementation (10).

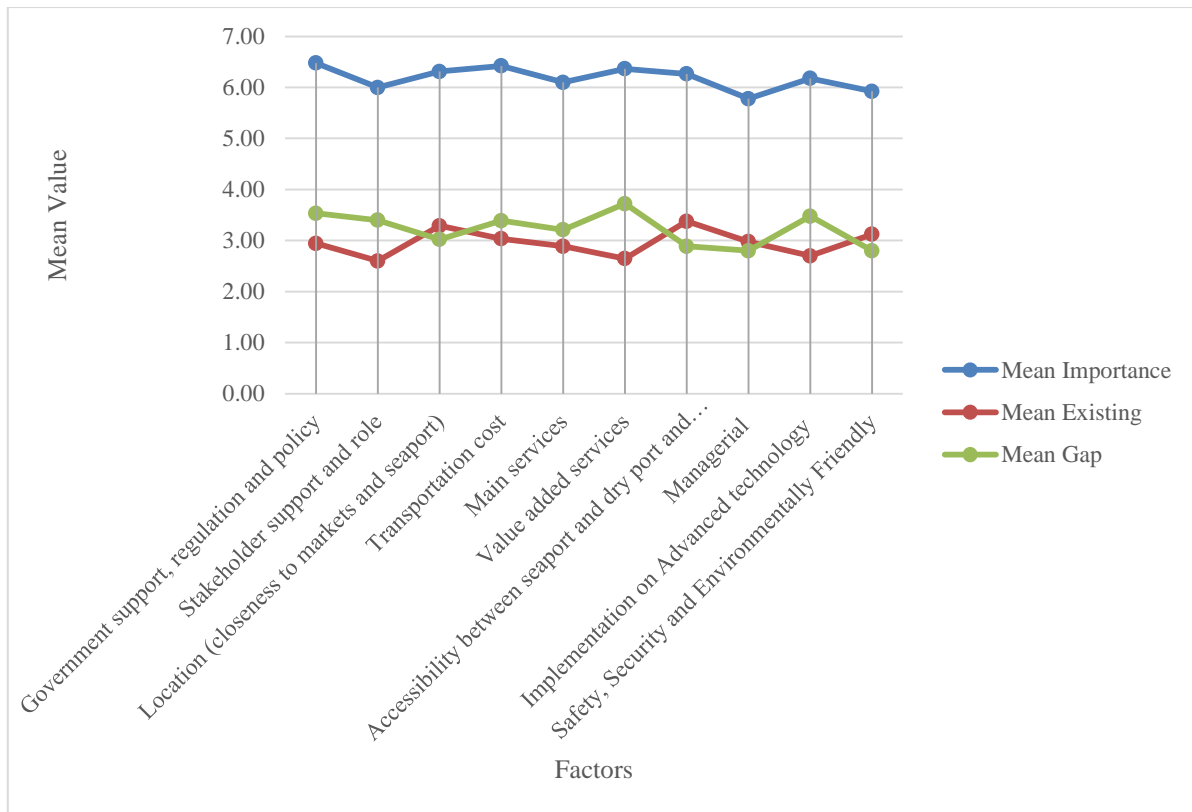


Figure 13. An overall score of mean importance and mean existing

Figure 13 indicates that the mean importance range is between 5 (moderately important) to 7 (extremely important) of overall factors. This indicates that the stakeholder considers these factors important. Meanwhile, the score from Kandangan dry port existing condition falls in the range between 2 (mostly dissatisfied) to 4 (neutral). Based on ten factors that should be considered for implementation of Kandangan dry port, there is a difference between the importance and existing conditions which is called a gap.

Therefore, to understand the gap of each of these factors is important, to analyze in detail this section. Also, a comparison chart of each factor between existing conditions and the importance level of Kandangan dry port is included in the Appendices G).

4.2. Government Support, Regulation and Policy Factor

The development of the dry port cannot be separated from government support, regulation and policy, especially if the dry port belongs to state-owned corporations. The government's role is very important in helping the development of the dry port, including all support resources (financial or budget, human resources) and also to support investment, tax regulations, inland customs clearance procedures, concession contracts, operational authorizing, land arrangements and other regulation and policies either by local or central government (Beresford, 2012). There is some case in Brazil where dry port development is

unsuccessful because of lack or minimum support from the government (Padilha, 2012). Moreover, also three dry ports in China (Kunming Dry Port, Xi'an Dry Port, and Shijiazhuang Dry Port) experienced problems such as the lack of coordination in the top - level institutional. Three ministries are working independently without mutual communication; they have different roles in planning, regulating and operating transportation systems and for the development of the dry port as well. However, there is a successful story from South Africa that gives a comprehensive framework, including regulations for the development of their dry port. The government support not only the financial aspect, but also helps to promote the freight in dry port and coordinate in good integration between the rail and road network company. Therefore, government support, regulation, and policy became one of the important factors that should be considered in the successful construction of a dry port.

Table 7. Government support, regulation and policy factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.67	3.67	3.00
Government	7.00	2.00	5.00
Logistics Provider	6.46	2.97	3.49
Port Operator	7.00	2.00	5.00
Railroad Company	6.00	3.00	3.00
Shipping Lines	6.47	2.80	3.67
Terminal Operator	7.00	3.00	4.00
MEAN	6.66	2.78	3.88

From Table 7, the total mean of importance (6.66) was higher than the total mean existing (2.78) and made the total mean gap became 3.88. From each group (7 groups) of respondents, it can be seen that 3 (government, port operator and terminal operator) out of 7 groups of the respondent gap are beyond the total of average gaps. This case illustrates that the majority of respondents who have a gap above the average agreed that government support, regulation, and policy are still below their expectations. The government support, regulation and policy factor in the importance mean received the highest rank (number 1), so it is mean from the respondent's point of view, government support, the regulation and policy factors are more important than another factors. However, unfortunately, most respondents are not satisfied

with the government support, regulation, and policy as can be seen from the mean gap or differences between mean importance and mean existing.

The answer from the open-ended question was also obtained and combined in the following analysis in which respondent stated "lack of government support, too much unclear or overlapping regulation and too many bureaucracies " and "Government should regulate about the competition among the dry port player also in the development of Kandangan Dry port." Therefore, learning from the failures experienced by Brazil at the time of building a dry port is very important in the continuing development of the Kandangan dry port which is involving government support, regulation and policy.

4.3. Stakeholder Support and Role Factor

In Indonesia, there are many players involved in dry port activities, such as terminal operator, port operators, shipping lines, container depots, logistic providers and many more. Therefore, the success of the development and implementation of the dry port does not only depend on the owners of the dry port itself. Establishing good cooperation among stakeholders plays a fairly important role for the successful development of Kandangan dry port and can make the logistics chain more effective and efficient (De Langen, 2004; Berqvist, 2013; Beresford, 2012). For example merger, alliances or joint venture among stakeholder should be done. Therefore, the support and role of stakeholders became an important solution and factors need should be considered for development and implementation of Kandangan dry port.

Table 8. Stakeholder support and role factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.67	2.33	4.33
Government	7.00	2.00	5.00
Logistics Provider	5.99	2.63	3.35
Port Operator	6.00	3.00	3.00
Railroad Company	5.00	3.00	2.00
Shipping Lines	6.00	2.47	3.53
Terminal Operator	5.00	3.00	2.00
Mean	5.95	2.63	3.32

From Table 8, the total mean of importance (5.95) was higher than the total mean existing (2.63) and made the total mean gap became 3.32. From the position of the general rankings

overall, stakeholder support and role-factor in the average importance ranks 8 and for the average existing condition last ranks 10th among other factors. This case illustrates that the involvement and cooperation of stakeholders are still lacking and needed a harmonious relationship with stakeholders in the development and implementation of the Kandangan dry port. Most respondents are still not satisfied with the stakeholder support and role in the development of the dry port Kandangan which can be seen from the results of the average total gap or differences between important and existing condition. The stakeholders' support and role should be upgraded to make the development and implementation of Kandangan dry port successful.

In the open-ended questions, some of the respondents stated that “Kandangan Dry Port needs to act as integrated customs service zone due to export and import activities” and “it will need good partnerships with all the stakeholders to accomplish that” also “Imbalance in providing services for each stakeholder level.” The statement above means that in order to get the logistics chain effectively and efficiently harmonious cooperation between stakeholders is still needed even if there is still Imbalance in providing services for each stakeholder level, such as previous studies. Furthermore, the support and participation of stakeholders have become one of the important factors that should be considered in the development and implementation of Kandangan dry port.

4.4. Location (closeness to markets and seaport) Factor

The dry port location also plays an important role in the development of a dry port. Some research studies also stated that the importance of the location of the dry port is usually located close to the industrial hinterland (Zhong, 2010). According to case studies in India, Indochina and South Africa and some other developing countries usually dry port location is in the middle of the port facility and the market as a cross-border transportation or locations near a production base that is at the end supply chain (Lam Canh Nguyen, 2016). Therefore, the selection of the right location in the development of the dry port would be very helpful in improving the quality of services for the supply chain as it can reduce transportation time, transportation costs, pollution, and congestion. In order to make successful development of a dry port, Thuermer (2008) said in the inland port article that: “access to a major container seaport, an intermodal facility serviced by Class I railroad, a minimum of 1,000 acres of total land, customs clearance services, Foreign Trade Zone (FTZ) status, strong local market

access (e.g., major metropolitan area), nearby access to north/south and/or east/west interstate highways, and access to a strong local labor pool.”

Table 9. Location factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.33	3.33	3.00
Government	6.00	2.00	4.00
Logistics Provider	6.34	3.35	2.99
Port Operator	6.00	3.00	3.00
Railroad Company	6.00	4.00	2.00
Shipping Lines	6.27	3.07	3.20
Terminal Operator	6.00	3.00	3.00
Mean	6.13	3.11	3.03

From Table 9, the total mean of importance (6.13) was higher than the total mean existing (3.11) and made the total mean gap became 3.03. From each group (7 groups) of respondents, it can be seen that only government and shipping lines are beyond the total of average gaps. This indicates that respondents agreed and expected that the location of Kandangan dry port could be close to the industrial hinterland and marketed, though in need of sustainable development. Some of the respondents were still not satisfied about the location of Kandangan dry port development, as can be seen from the total mean gap between total mean importance and total existing mean.

For open-ended questions, some of the respondents state that ”The location of Kandangan Dry Port is strategic due to the closeness to the industrial area as the hinterland, but it needs wider access to reach the location” and “Choose sites with adequate development possibilities” also. The importance of planning in selecting a strategic location in the development of the dry port by selecting a place close to the industrial area will bring time and cost efficiency as was done by previous research study (Zhong, 2010). Therefore, the location factor is one of the important factors that should be considered in the development of Kandangan dry port.

4.5. Transportation Cost Factor

A transportation cost factor also had a crucial role in dry port development. One of the efforts to reduce transport costs in the supply chain is to connect the intermodal transport from the main seaport with the dry port. Moreover, also to reduce congestion on the roads due to high

flows of containers, previous research studies in Europe have combined water and land transport modes (Fremont, 2010). In addition, the transport connections by using the railway mode can also help reduce the cost of transport and logistics (Roso V. W., 2009; Woxenius, 2004).

Table 10. Transportation cost factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.33	2.67	3.67
Government	6.00	3.00	3.00
Logistics Provider	6.47	2.99	3.49
Port Operator	6.00	3.00	3.00
Railroad Company	6.00	3.00	3.00
Shipping Lines	6.27	3.27	3.00
Terminal Operator	7.00	4.00	3.00
Mean	6.30	3.13	3.16

From Table 10, the total mean of importance (6.30) was higher than the total mean existing (3.13) and made the total mean gap become 3.16. From each group (7 groups) of respondents, it can be seen that only the Container Depot and Logistics Provider are beyond the total of average gaps. This indicates that the respondents agreed and expected transportation costs would go down with the reopening of the Kandangan dry port. Some of the respondents were still not satisfied about the transportation cost factor, as can be seen from the total mean gap between total mean importance and total mean existing.

For open-ended questions, some of the respondents stated that "The transportation cost in Kandangan Dry Port would make the market not refuse its attraction if all the stakeholders would collaborate well and reduce the transportation cost." In the revitalization of the Kandangan dry port, the government needs to invest more in the infrastructure that already exists. In cooperation with the railway company in linking sea ports with the dry port it is expected transportation costs will also go down. To support the successful development of Kandangan dry port, not only depending on the strategic location factor, but also working together with stakeholders were important. In case studies from India it was reported that the government provides for the rules and policies as well as value added services that are less able to cause high transportation costs (Ng, A.K.Y and Gujar, G.C 2009). Shippers is getting

trouble and not able to control and minimize the cost of transportation even though they are already using the nearest dry port. Therefore, the transportation cost factor is one of the important factors that should be considered in the development of Kandangan dry port.

4.6. Main Services Factor

To attract customers and improve the performance of the dry port, then apart from the factors already discussed previously, the main service factor is also required (Roso, 2007, Woxenius et al., 2004). What makes a successful inland port in the operation is to provide services to their users. In the United States, this method has been applied in the development and operation of several dry ports. The five biggest are Cincinnati, Memphis, Pittsburgh, St-Louis and Huntington (United States Army Corps Of Engineers, 2003). They provide a wide range of services, such as customs clearance services, maintenance for road or rail cargo carriers, consolidation of goods and storage. Development in this service can reduce custom space and storage in the seaport itself. All operations are made possible in the dry port could be done with the system outsourcing.

Table 11. Main service factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.33	2.33	4.00
Government	7.00	4.00	3.00
Logistics Provider	6.04	2.88	3.16
Port Operator	7.00	3.00	4.00
Railroad Company	6.00	3.00	3.00
Shipping Lines	6.20	2.87	3.33
Terminal Operator	6.00	4.00	2.00
Mean	6.37	3.15	3.21

From Table 11, the total mean of importance (6.37) was higher than the total mean existing (3.15) and made the total mean gap became 3.21. From each group (7 groups) of respondents, it can be seen that three from seven group respondents are beyond the total of the average gaps. This case shows that the majority of the group of respondents agree that the main service should be able to meet their expectations while upgrading the quality of its services. Some of the respondents were still not satisfied about the transportation cost factor, as can be seen from the total mean gap between total mean importance and total mean existing.

For open-ended questions, some of the respondents stated that "Kandangan Dry Port already provided main basic services but needs a lot improvement to have excellent services." Furthermore, to improve service to users as it has been described in some previous research studies, the dry port of Kandangan must consider the importance of the infrastructure, the facilities, the capacity and size of the dry port itself (Haralambides, 2012). Some respondents asked Kandangan Dry Port "to provide fast and reliable service with reasonable price." The previous study also stated that providing services to meet users' expectation can affect the performance and image of the dry port (UNESCAP, 2006). Therefore, main services have also become one of the important factors in the development and implementation of Kandangan dry port.

4.7. Value Added Services Factor

The attractiveness of a dry port can be increased with the availability of value-added services, and will become one of the important factors that should be considered to develop and implement the dry port (Roso V. et al., 2008). The dry port can have the same services like the logistics service provider to give more value added as is done by the Port of Rotterdam. It can organize all of the logistics process services for transporting the goods until tailored services such as repairing, blending, assembling, labeling, packaging, inventorying, sorting, storing, maintenance of the container, handling dangerous types of cargo and handling different types of cargo. (Port of Rotterdam, 2016).

Table 12. Value added service factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.33	2.67	3.67
Government	7.00	3.00	4.00
Logistics Provider	6.35	2.63	3.72
Port Operator	6.00	3.00	3.00
Railroad Company	7.00	3.00	4.00
Shipping Lines	6.40	2.60	3.80
Terminal Operator	6.00	3.00	3.00
Mean	6.44	2.84	3.60

From Table 12, the total mean of importance (6.44) was higher than the total mean existing (2.84) and made the total mean gap became 3.60. From each group (7 groups) of respondents,

it can be seen that five from the seven group respondents are beyond the total of average gaps. Some of the respondents were still not satisfied about the value added service in Kandangan dry port and because from their expectations more improvements are needed. Therefore, from the stakeholder's point of view, this factor was top of the rank in the columns mean a gap in Kandangan dry port development and implementation of the survey.

From the open-ended questions, some respondents said that “it would be great if Kandangan Dry Port could make their place become a distribution and consolidation place that had integrated facility with customs like in European dry port.” Moreover, they also stated, “It would be better to provide the tailored services as what we expect.” According to The South East of Scotland Transport Partnership (2012), giving value added services in dry port operation is more important when the dry port as become a consolidation center and distribution center. It would be more beneficial to stakeholders, especially economically if it is successfully applied in the development of Kandangan dry port. Therefore, value added services have also become one of the important factors in the development and implementation of Kandangan dry port.

4.8. Accessibility between dry port and seaport and between dry port and hinterland Factor

Road congestion that occurs in sea ports to the hinterland can be reduced by building a special route between the dry port and sea port, so the accessibility factors between the seaport and dry port and access between the dry port and hinterland become an important factor and should be considered in building a dry port (Roso V. et al., 2008; Padilha, 2012). Thuermer (2008) explains that in order to be successful, a logistics park needs “access to a major container seaport, an intermodal facility serviced by Class I railroad, a minimum of 1,000 acres of total land, US Customs clearance services, Foreign Trade Zone (FTZ) status, strong local market access (e.g., major metropolitan area), nearby access to north/south and/or east/west interstate highways, and access to a strong local labour pool”. Besides accessibility between seaports and dry port factors, accessibility between hinterland and the dry port factor also became an important part of the dry port revitalization because it is one requirement that must be met in building a dry port between the seaport and dry port and the hinterland and the dry port (Roso, 2008).

Table 13. Accessibility between seaport and dry port and between hinterland and dry port factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	7.00	3.67	3.33
Government	6.00	3.00	3.00
Logistics Provider	6.16	3.37	2.79
Port Operator	7.00	4.00	3.00
Railroad Company	6.00	4.00	2.00
Shipping Lines	6.60	3.27	3.33
Terminal Operator	6.00	4.00	2.00
Mean	6.39	3.61	2.78

From Table 13, the total mean of importance (6.39) was higher than the total mean existing (3.61) and made the total mean gap become 2.78. From each group (7 groups) of respondents, it can be seen that 5 (Container Depot, Government, Logistics Provider, Port Operator, Shipping Lines) from the 7 group respondents are beyond the total of average gaps. Some of the respondents were still not satisfied about the accessibility factors between the seaport and dry port and access between the dry port and hinterland in Kandangan dry port and more improvement was needed because it was below their expectations. Therefore, from the stakeholder's point of view, this factor was top of the rank in the columns total mean existing of Kandangan dry port development and implementation of the survey. This means that the expectations of the respondents to get the accessibility between the seaport and dry port and between the dry port, and hinterland gets many choices and is much easier.

From the open-ended questions, respondent said that “Besides need wider access to Kandangan Dry Port, the road to reach TTL become a problem due to its traffic concentration” and “The location of Kandangan Dry Port is strategic due to the closeness to the industrial area as the hinterland, but it needs wider access to reach the location”. From previous studies, Crainic et al. (2013) and Toh et al. (2008) it was stated that the success and performance of the dry port can be measured on the availability of direct access connection with good quality from and to the dry port either through land access via trucks or by train (Roso, 2007). Therefore, accessibility between seaports and dry port and between the hinterland and the dry port factor became one of the important factors and should be considered for development and implementation Kandangan dry port. To improve attractiveness for the customer,

Kandangan dry port not only depends on the strategic location that is close to an industrial area, accessibility between the hinterland and dry port and between seaports and a dry port must be improved. By improving and making the capability and availability direct connection beside the truck that can connect and access the hinterland from seaports or dry port, it is expected that the transportation cost can be reduced (UNCTAD, 2013). Therefore, accessibility between seaports and dry port and between the hinterland and the dry port has also become one of the important factors in the development and implementation of Kandangan dry port.

4.9. Managerial Factor

Managerial factor plays an important part in the dry port development and implementation. To get a good performance, dry port managers need a good planning, efficient and effective in marketing and also good human resources are needed (Slack, 1999; Padilha & Ng, 2012; Robinson, 2002). The composition of the organizational structure is very influential on the performance of the dry port, from the owners of capital structure, the structure of the board of directors until structure under the Board of Directors. Also, in the early stages of development careful planning is required to make the initial framework, such as the planning of human resources who are competent in their field. Accountants for managing development resources, railway experts for track layouts, customs and shipping experts to establish clearance procedures, engineers to design the physical attributes of the facility and layout planners are all needed.

Table 14. Managerial factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	5.67	3.00	2.67
Government	5.00	2.00	3.00
Logistics Provider	5.79	3.01	2.78
Port Operator	6.00	4.00	2.00
Railroad Company	7.00	3.00	4.00
Shipping Lines	5.73	2.80	2.93
Terminal Operator	5.00	3.00	2.00
Mean	5.74	2.97	2.77

From Table 14, the total mean of importance (5.74) was higher than the total mean existing (2.97) and made the total mean gap became 2.77. From each group (7 groups) of respondents, it can be seen that 4 (Government, Logistics Provider, Railroad Company, Shipping Lines) from 7 group respondents are beyond the total of average gaps. Some of the respondents were still not satisfied about the managerial factors in Kandangan dry port and more improvement was needed because it was below their expectations although some improvements have already been finished.

From the open-ended questions, some respondents said that “Kandangan Dry Port managerial need more improvement to have excellent services for their marketing and planning are out of date” and “Transparency and Good Corporate Governance” also “Human resources management.” The strategic marketing activity is also important to make Kandangan dry port exist and develop, and being transparant to avoid/reduce corruption in internal structure management making Good Corporate Governance easy to implement. Moreover, also choosing reliable workers with high skills and knowledge, with a good attitude / ethics and train them to become high-level people, which can speed up the development and implementation of Kandangan dry port. From previous research, the management of the Kandangan dry port needs a good marketing strategy plan to market their products in the hinterland areas and to attract more customers (The South East of Scotland Transport Partnership, 2012; Toh et al., 2008; Padilha and Ng, 2012). Therefore, the managerial factor has also become one of the important factors in the development and implementation of Kandangan dry port.

4.10. Implementation of Advanced Technologies Factor

In addition to previous factors, implementation of advanced technologies also has a significant role in the dry port development and implementation. Robinson (1999) cited in Harrison (2011), acknowledged Information and Communication Technology (ICT) as important and should be considered a factor in implementing the dry port. By using high-end technology or an information system that has broad access to the dry port operation with an automation system can increase productivity and reduce operational cost due to labor.

Table 15. Implementation of Advanced Technologies factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	6.33	2.67	3.67
Government	6.00	3.00	3.00

Logistics Provider	6.13	2.74	3.40
Port Operator	6.00	2.00	4.00
Railroad Company	6.00	3.00	3.00
Shipping Lines	6.33	2.60	3.73
Terminal Operator	7.00	2.00	5.00
Mean	6.26	2.57	3.69

From Table 15, the total mean of importance (6.26) was higher than the total mean existing (2.57) and made the total mean gap became 3.69. After looking at the Table 15 in more detail, there are 3 (port operator, shipping lines, and terminal operator) from the 7 group respondents that are beyond the total of average gaps. It means that some more groups of respondents agreed that Kandangan Dry Port using advanced technology is still far away from their expectations. Therefore, more improvement should be done. Some of the respondents were still not satisfied about the implementation of advanced technology factors in Kandangan dry port and need more improvement because it was below their expectations.

Based on open-ended questions, some respondents said that “Kandangan Dry Port stakeholders need IT integration such as EDI (Electronic Data Interchange) or single window / one stop shop concept to improve their cooperation and improved Kandangan Dry Port to have fast and reliable services” and “Should be equipped with high-end modern superstructure technology in order to increase the service, and also for safety and environmentally friendly aspect” also “Support with reliable workforce than can operate all of the system”. From previous research, Robinson (2002) acknowledged the information technology (IT) in dry port operations is a factor that should be considered. The implementation of ICT, for example, using data exchange between stakeholders in the seaport area, dry ports, and customs to prevent the illegal import and export. The availability of Electronic Data Interchange (EDI) System such as Baplie, Coparn, Coarri, and Codeco are really important to those stakeholders. Therefore, the requirement of advanced technology for development and implementation the dry port is important.

4.11. Environmentally Friendly Factor

Environmentally friendly factor also has a key role for implementation of the dry port. Over the past decade, environmental concerns due to the issue of global warming have become a serious concern, particularly for logistical roles that can influence on environmental impacts

(Aronsson, 2006). However, the reduction of environmental impacts caused by logistics role until now has still not been studied in more depth (1). One of the dry port development concepts is to create many benefits for transportation or logistics systems and reduce environmental damage (Roso, 2008). Over the years this concept has been less attractive and just recently reappointed for their environmental issues associated with the development of containerizing in the maritime transport sector, and also in the government as policy makers want to find a proper solution to that problem (European Commission, 2001). Previously several studies described that explain that the development of the dry port concept will lead to more useful and friendly for the environment (Hanaoka, 2011).

Table 16. Environmentally friendly factor questionnaire result

Respondent	Mean Importance (I)	Mean Existing (E)	Gap (I - E)
Container Depot	5.67	3.67	2.00
Government	7.00	4.00	3.00
Logistics Provider	5.90	3.12	2.78
Port Operator	5.00	3.00	2.00
Railroad Company	6.00	4.00	2.00
Shipping Lines	6.07	2.87	3.20
Terminal Operator	6.00	4.00	2.00
Mean	5.95	3.52	2.43

From Table 16, the total mean of importance (5.95) was higher than the total mean existing (3.52) and made the total mean gap become 2.43. After looking at Table 16 in more detail, there are 3 factors (Government, Logistics Provider, and Shipping Lines) from the 7 group respondents that are beyond the total of average gaps. It is mean there are a balance perceptions and expectations among the group of respondents about Kandangan Dry Port from the environmentally friendly factor. However, some of the respondents were still not satisfied about the environmentally friendly factor in Kandangan dry port and more improvement was needed because it was below their expectations.

Regarding the open-ended questions, some respondents said that “by using rail way from Kandangan Dry Port to TTL, the pollution and traffic jam on the road can be reduced.” Similarly, from previous studies it was stated that dry port activities in Taiwan produces 60% fewer harmful emissions (Liao et al., 2009). In addition, research was also conducted in London in the dry port construction freight consolidation unit area producing emission

reductions up to 25.7% (Zanni et al., 2009). In some research it was mentioned that a dry port can protect the environment by reducing the emissions and make it environmentally friendly so it should be considered a factor in dry port development.

4.12. Importance – Performance Analysis (IPA) Matrix

After collecting each factor analysis, an IPA graphical matrix aimed to determine priorities along with knowing the position of each of the important and influencing factors affecting the development (Wong et al., 2011; James, 1977; Martilla, 1977; Kitcharoen, 2004). IPA matrix contains four quadrants:

1. Quadrant I (Low Performance and High Importance) is labeled with “High Priority”. It represents key crucial factors that should need to be improved with the highest priority.
2. Quadrant II (High Performance and High Importance) is labeled with “High Appropriate”. It represents factors that have become the pillars and strengths of the organizations and still need to be kept on track.
3. Quadrant III (Low Performance and Low Importance) is labeled with “Low Priority”. It represents factors that are not threatening and not so important for the organizations.
4. Quadrant IV (High Performance and Low Importance) is labeled with “Less Appropriate”. It represents the factors that are making the organization proud or very satisfying but not so important. All resources should be distributed fairly by the organization to handle these kinds of factors.

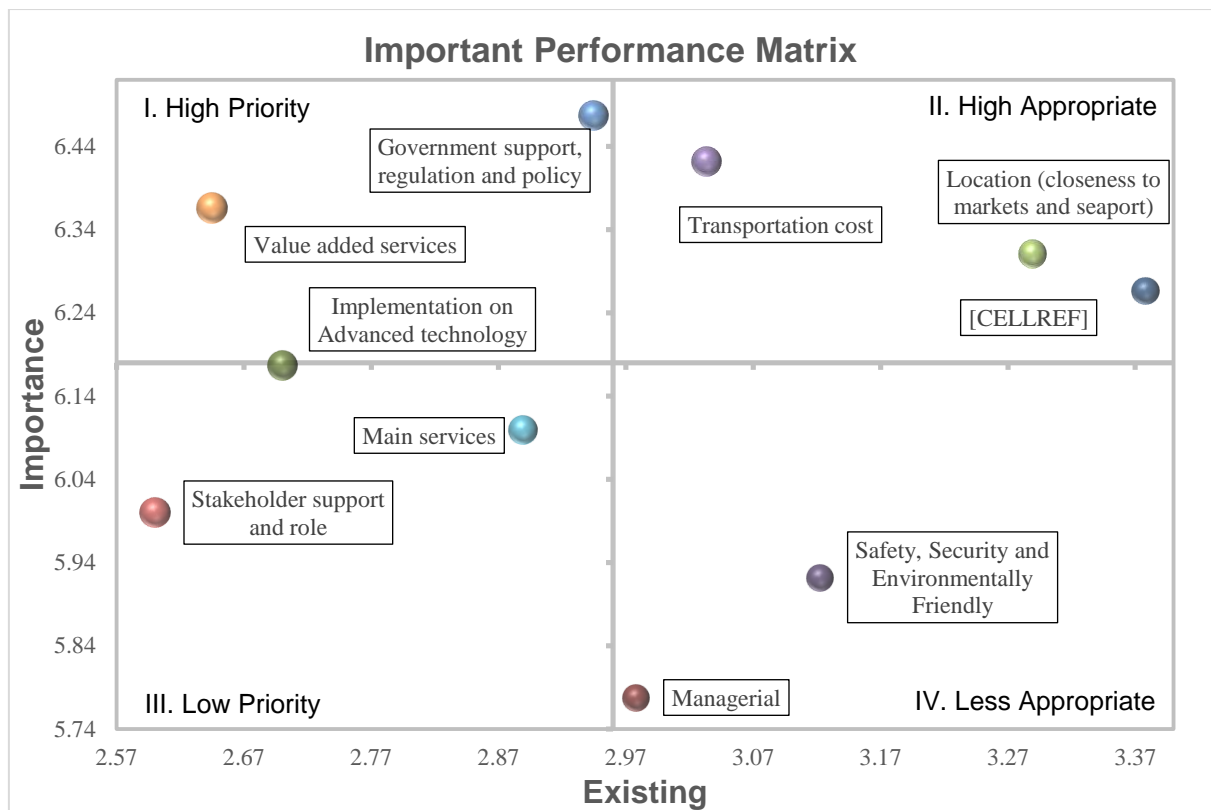


Figure 14. Questionnaire results based on IPA Matrix

Figure 14 shows the IPA matrix from the questionnaire results in which the position and priority for each factor. The vertical axis crosses in that IPA matrix are created from the total average level of importance at 6,18 and the horizontal axis crosses is created from the total average level of existing conditions of 2,96.

1. Quadrant I (High Priority): Group quadrant I contains three factors, there should be considered as crucial and need special attention and priority, but in the existing condition less than average from the implementation of Kandangan dry port, inter alia government support, regulation and policy (1), value added service (6) and Implementation of Advanced Technologies (9). These three factors have the highest value gap among other factors. According to some respondents for the government support, regulation and policy can also help solve the problems related the financial burden, because it will easily get direct financial support from the government if the government gives full support. Therefore, to make a success of the development Kandangan dry port, it takes more effort to focus on three important factors because these three factors have important values and high gap value in accordance with the position in the IPA matrix.
2. Quadrant II (High Appropriate): There are three factors that are located in quadrant group II, which is very important in both levels, that is a level of existing conditions and

level of importance as well. Because both levels are above average, which means, according to the respondents they are quite satisfied with the development and implementation of Kandangan dry port and it should be continued to increase their capability, which are: Location factor (closeness to markets and seaport) (3), transportation cost factor (4) and Accessibility between seaports and dry port and between hinterland and dry port (7). These three factors have become the pillars and the strengths of Kandangan Dry Port development and implementation. To retain or keep their customers, Kandangan dry port must continue these three factors to maintain and even improve with better performance. If these three factors are not maintained properly, it could be possible to position these three factors to the first quadrant (High Priority).

3. Quadrant III (Low Priority): According to the respondent's perspective, there are two factors which are located in less important level and less satisfied with the existing conditions for Kandangan Dry Port development and implementation, they are: Stakeholder support and role factor (2) and Main service factor (5). Based on the perception of respondents, which translates to the questionnaire results are summarized in the IPA matrix to mention that the factor in quadrant III is less important and less satisfactory in the existing condition. After making repairs at quadrant I (High Priority), maintain and improve the performance in quadrant II (High Appropriate), then Kandangan dry port should also be treated the same on factors in quadrant III to improve performance. Otherwise, it will get difficulties and heavier effort in the development and implementation of Kandangan dry port and will also be eliminated in the group of factors considered.
4. Quadrant IV (Less Appropriate): Moreover, quadrant group IV is the last group that contains factors that play a less important level of importance because it is still below average, but the level of the existing condition has exceeded the expectations of respondents or above average, which contains: Managerial factor (8) and Safety, Security and Environmentally Friendly factor (10). These factors are labeled with 'less appropriate' which means that factor are possible excessive and at present existing condition, according to some respondents who chose this factor is very satisfying because it performed better than other factors, but it is still less important at the level of importance. The factors in this quadrant also need hard work for improvement. On the other hand, it is better to focus on the first quadrant (High Priority) if Kandangan Dry Port still needs more resources to deal with other factors.

In conclusion, to measure and identify the prioritization factors from respondents' satisfaction and the need for Kandangan dry port, using IPA matrix tools can help to do that. These tools can also help to show which factors are crucial and less important from importance level for Kandangan dry port development and implementation. Based on the IPA results, Kandangan Dry Port implementation can be focused on main priorities of these three factors, which are government support, regulation and policy (1), value added service (6) and implementation of advanced technologies (9).

4.13. Summary of Analysis Data

Based on the perspective of the stakeholders or customers obtained from the interview or the questionnaire show there are several factors that have a high priority that should be considered and more in focus. From the analysis results using gap analysis and IPA matrix obtained three very important factors were obtained in the development and implementation of Kandangan dry port by level of importance and performance against existing conditions, which are: government support, regulation and policy (1), value added service (6) and Implementation of Advanced Technology (9). These three factors also have a large gap between mean importance level and existing mean levels from a stakeholder's point of view. Other factors relating to the factors above are also added and analyzed from the results of the open-ended questionnaire. The government support, regulation and policy factor have a vital role and significance based on the perspective of the respondents or stakeholders. Likewise, government support, regulation, and policy factors have become a major factor and number one in the mean importance level factor of development and implementation of Kandangan dry port from a stakeholder's perspective. Therefore, three main factors should come soon and be more focused on optimizing the development and implementation of Kandangan dry port, namely government support, regulation and policy (1), value added service (6) and Implementation of Advanced Technology (9). Factors in quadrant II should not be reduced or forgotten, (Location factor (closeness to markets and seaport) (3), transportation cost factor (4) and Accessibility between seaports and dry port and between hinterland and dry port (7)), which should still be maintained and enhanced to manage their already acquired customers.

Chapter 5 Summary and Conclusions

A 7 point Likert scale question and the open-ended question have been used to identify important factors that should be considered to optimize the development and implementation of Kandangan dry port. If it can be implemented, it is expected to be one option to overcome congestion in TTL. As the results obtained from the questionnaires were analyzed using gap analysis and the matrix IPA, the analysis results are found in the form of a gap between the mean importance level and the mean existing level from a stakeholder's point of view. To understand the results of these gaps, open-ended questions were also given to help and add in the analysis. This final chapter will discuss on how to answer the research question that correlated the findings and analyze what has been made in the last chapter of the important factors that determine the realization of development and implementation of Kandangan dry port in an effort to reduce congestion in TTL. Later this chapter will also give a recommendation for further research, accompanied by more specific weaknesses obtained during the performance of this study.

5.1. Preliminary

As mentioned in the literature review, the port is facing road congestion problems not only affecting the container port, but also the recipients and senders of goods due to the limited area around the seaport (Visser et al., 2007). To implement new container yard would not be practical, effective and efficient if it takes a long time and high operation cost. On the other hand, to face and prepare for an increase in container throughput volume that is in TTL, by revitalizing the Kandangan dry port, which has a good connection with the seaport and hinterland, is expected to be one of the solutions. The dry port concept has been successfully developed in several countries in North America, Europe and parts of Asia. Therefore, one of the goals of this research is to find and determine the important factors that influence the success of the development and implementation of the Kandangan dry port seen from the PESTELE (Politics, Economy, Social, Technology, Environment, Legal, and Ethics) factor.

5.2. Findings Summary

The previous chapter has described and given facts about what factors need to be considered in the development and implementation of the Kandangan dry port in an attempt to overcome the bottlenecks that occur in TTL. Factors that are presented have been obtained from a

previous research study concerning the implementation of dry ports in various countries around the world that are connected to PESTELE factor. Three main factors obtained from the questionnaire should be prioritized and considered in the optimization of the development and implementation of the Kandangan dry port. The result has been analyzed from the gap between “the importances of the factors” and “the existing condition of Kandangan Dry Port” based on the stakeholders’ point of view as the respondents. The three key factors are: Government support, regulation and policy (1), value added service (6) and Implementation of Advanced Technologies (9).

Regarding the result of the open-ended questionnaire, most respondents wrote that the government support, regulation and policy factor has a crucial role. Some respondents said that there is still a lack of government support, regulation and policy in Kandangan Dry Port optimize its function. Equally, also this factor was ranked number 1 in the mean level of importance from the viewpoint of the stakeholders. This indicates that the function of Kandangan dry port is still less than optimal, just as an additional container yard without a good link between the seaport and dry port and dry port and hinterland.

From the above discussion, it was mentioned that the active role of government support, regulation and policy is the key factor that must be considered and prioritized for revitalizing the Kandangan dry port. For that reason, in this study it was advised to focus more on government support, regulation, and policy. To improve the efficiency and effectiveness of services to get the satisfaction of customers, from the previous studies, the government is expected to establish policies governing healthy competition in the dry port and seaport (UNESCAP, 2006). This also means to promote the development of hinterland, regulations, and policies established by the government to be able to promote and support the economic environmental and social benefits of intermodal transport. This research result does look similar from the results of previous research oriented to the dry port development in developing countries who have found the effect of the support, regulation and government policy (Ng and Padilha, 2012; Regmi and Hanaoka, 2011; The South East of Scotland Transport Partnership, 2012; Toh et al., 2008;). To optimize the development and implementation of Kandangan dry port, the government in this case as regulatory and policy-makers should be involved more and be more active. Moreover, to attract many investors and customers as it has been done by the dry port in Singapore, India, and China, the Kandangan dry port is expected to have a free trade zone and an area of consolidation and distribution centers (Haralambides and Gujar, 2012; Jahed and Asa, 2012; UNESCAP, 2006).

From the previous research, regarding provision of dry port value-added services like Container Freight Station (CFS), container maintenance, stuffing and stripping and customs clearance could also influence the implementation of the dry port (Roso et al., 2009). According to The South East of Scotland Transport Partnership (2012), giving value added services in dry port operations is more important when the dry port has become a consolidation center and distribution center. Nevertheless, a full implementation of all the additional value-added service still depends on the support from the government, infrastructure and the availability of the equipment. Government regulation support becomes the important key factor to give customs clearance for the dry port as a value added service. A previous case study in other Asian countries stated that government support is needed for implementing free trade zone regulation areas in dry ports, such as Hong Kong, Malaysia, China, Taiwan, South Korea and Singapore (UNESCAP, 2002). This will economically benefit the customer if the dry port could be carried out fully and successfully.

Based on the result of the answers to the questionnaire it was also mentioned that implementation of advanced technology is not sufficient. Advance technology is very broad and here it can be Information Communication Technology (ICT) and ancillary operational equipment. According to previous studies, Harrison (2011) and Robinson (1999), acknowledged implementation of advanced technology as the considered key factor in dry port operations. Some studies suggest that the application of advanced technology can improve and maintain safety in the dry port (Visser et al., 2007). One example of the application of ICT in the dry port area is the integrated system among stakeholders, for example, using the electronic window to improve services and coordination, so that there is more accurate, reliable and quick service. The current findings of this research concluded that the implementation of advanced technology is one of the key factors that is important to consider in the development and implementation of the Kandangan dry port. Using the latest technology like automation for an operational tool or machine can reduce the cost of labor and risk from human error. To prevent illegal import or export goods it is needed to use data exchange between customs, quarantine, seaport and a dry port. The availability of EDI systems such as BAPLIE, Coparn, Coarri and Codeco, are really important to those stakeholders. However, it still needs government support to take part via customs, their safely regulations to fully implement that. Moreover, also most importantly is shipping and port activities emission impacts can be reduced with best practices in port management, operational strategies and deployment of available advanced technology. Therefore, Wang

(2012) also stated that implementation of advanced technology as a requirement for the dry port is needed to have reliable and fast services. Fast response and high sensitivity capabilities of the market is a success factor in helping the company further develop (Li & Wu, 2003).

One function as a solution to overcome congestion in TTL, revitalizing Kandangan dry port which is indispensable because with the increase in the number of container throughput. This research study can help to analyze and identify the factors that should be considered for revitalizing and implementing the Kandangan dry port. Furthermore, as the result of a research study that is believed by the stakeholders represented by the respondent concludes that the government support, regulation, and policy have become the main key factors of development and implementation of the Kandangan dry port.

5.3. Conclusions

This research used and focused on the important factors determining the success, which was then analyzed using gap analysis, finding the different gap between the level of importance and the existing condition of the Kandangan dry port. A combination of the closed and open-ended questionnaire showed a more in-depth analysis of the factors. Therefore, the research question (“What factors need to be considered in revitalizing Kandangan Dry Port?”) can be answered with the results of three key factors that influenced and should be prioritized and optimized in the development and implementation of the Kandangan dry port namely government support, regulation and policy (1), value added service (6) and implementation of Advanced Technologies (9). These factors are the key factors that should be prioritized and focused on the revitalization and the implementation of the Kandangan dry port, which could have an impact on reducing congestion in TTL.

5.4. Research Weaknesses

Each study certainly has a weakness. One of the obstacles and weaknesses was the problem of limited time to make the respondents answer and return the questionnaire results that were given. From 138 respondents given the questionnaire, 90 respondents answered the closed-ended question, and 38 respondents answered from the closed-ended questionnaire, which mean it is still possible to represent the population. The enclosed questionnaire may have a sufficient degree of accuracy, but the open questionnaire still has low accuracy, and it is expected the total can represent the whole of the population. However, most respondents are stakeholders who have worked with the Kandangan dry port and TTL since the beginning of

the operation. The stakeholders were terminal operators, port operators, shipping lines, container depots, logistics providers, government, and railroad company. Therefore, the results that have been obtained can still help to improve knowledge of the important factors that influence and should be considered in the development and implementation of the Kandangan dry port to overcome congestion in TTL. There are some respondents that the data answer from the questionnaire results would not be exposed for reasons of confidentiality about their company despite the results of the questionnaires were guaranteed confidentiality and also for academic purposes. Biased answers may exist of the respondents because of the desire of the respondents, but most respondents provided real answers and honestly so this was ideal for this study. Therefore, time is still needed for analysis to translate the biased answers.

5.5. Research Recommendations

In this study the important factors that should be considered for the development and implementation of Kandangan dry port to overcome congestion in TTL have been clearly conveyed. Three important factors like government support, regulation, and policy, value added service and implementation of advanced technology can be related to each other. Therefore, continuing deeper research related to the third important factor is advised, especially regarding the government support, regulation and policy in the maritime field. As an additional recommendation, more dry ports in Indonesia such as SIER Dry port, Rambipuji Dry Port or Gedebage Dry Port should be included. They should be compared with another dry port in Indonesia to get better results. An additional recommendation is to increase the number of respondents in the next study to get the data with more samples and more accurately. There was limited time for the researcher to wait for answers from the results of the questionnaire respondents. To reduce response bias of the respondents, future studies will have better results, so the next research project is expected to use two-way conversation, not as the current research with one way only. Further, to obtain better analysis results, methodology in analyzing requirements can be added such as using a Distribution Center Analysis, Cost Benefit Analysis.

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Appendices

Appendix A Consent Letter for Respondents (English version)

Dear Madam/Sir

My name is WARDHANI PUDJI RAHMANTO. I am an employee at Lamong Bay Terminal (TTL). At the present time, I am a student at World Maritime University, Malmo, Sweden in the Port Management subject. You are invited to participate in a research project entitled: Kandangan Dry Port Project: An option of solution for congestion in Lamong Bay Terminal (Surabaya, Indonesia). The purpose of this study is to identify the factor that is needed to revitalize Kandangan Dry Port to reduce congestion in Lamong Bay Terminal (TTL). You are chosen as participant by considering your working experience which has been directly involved with the operations of TTL and Kandangan Dry Port.

A questionnaire will be given to you after getting your agreement to participate. The questionnaire was developed to ask you a few questions regarding the factors influencing dry port implementation in global context and the existing condition of Kandangan Dry Port based on your perspective. It is our hope that this information could help on the improvement of TTL and other stakeholders' business of Kandangan Dry Port as well. There are no identified risks from this participating in this research since the views you provide would be made anonymous and the study would comply with the University's ethical policy.

Participation in this research is completely voluntary and you may refuse to participate without consequence. Since this study is purely for academic only, you will receive no compensation for participating in the research study. If you wish further information regarding your participation, you may contact me as well.

Thank you for your consideration. Your help is greatly appreciated.

WARDHANI PUDJI RAHMANTO

MSc Port Management, World Maritime University

Appendix B Questionnaire (English version)

Subjects: Kandangan Dry Port Project: An option of solution for congestion of Lamong Bay Terminal

Dear Sir/Madam,

This questionnaire is designed to study the factor needed to revitalize Kandangan Dry Port in order to reduce congestion in Lamong Bay Terminal (TTL). This research will be used as an academic dissertation of MSc Port Management of World Maritime University. As you have the knowledge and experience of the port, the information you provide will help us better understand the existing condition of Kandangan Dry Port. Your response will be kept strictly confidential, the views you provide would be made anonymous and the study would comply with the University's ethical policy.

Thank you very much for your time and cooperation. I greatly appreciate your kind cooperation and assistance.

Sincerely,

WARDHANI PUDJI RAHMANTO

MSc Port Management,

World Maritime University, Malmö, Sweden

Email: dhani@pelindo.co.id, s16028@wmu.se

Address : Fiskehamnsgatan 1, 211 18, PO Box 500, SE-201 24, Malmö, Sweden

Phone: +62 81234560987/+46 721216955

Section One: General Information

1. Number of years worked in the organization/company:
2. Present position in the organization (top management, middle management, first-level supervisor, non-managerial, others):
3. Your organization:
 - a. Terminal operator
 - b. Logistic provider
 - c. Shipping line
 - d. Other (please specify) :
4. How old is your organization:
 - a. 1-5
 - b. 6-10
 - c. 11-15
 - d. 16-20
 - e. More than 20
5. Number of employees in your organisation
 - a. Less than 100
 - b. 101-500
 - c. 1001-2000
 - d. More than 2000
6. How long have you been working with Lamong Bay Terminal?

Section Two: Kandangan Dry Port

The questions below ask about related information of Kandangan Dry Port from your company perspective.

Column B explain the factor which could effect on dry port implementation in global context.

Column C ask about the level of importance of the list factor which can affect to the implementation of dry port in general term, not only for Kandangan Dry Port.

Column D ask about the existing condition of Kandangan Dry Port based on your knowledge and experience.

In other words, you will compare between your answer of the level of importance of the factor with the existing condition of Kandangan Dry Port based on those factors.

Please write on the score you give for each number (1-7) for column C with each of number represent this condition below

1	2	3	4	5	6	7
not important at all						extremely important

1 = not important at all, 2 = low importance, 3 = slightly important, 4 = neutral, 5 = slightly important, 6 = very important, 7 = extremely important

Please write on the score you give each number (1-7) for column D with each of number represents this condition below

1	2	3	4	5	6	7
completely dissatisfied						completely satisfied

1 = completely dissatisfied, 2 = mostly dissatisfied, 3 = slightly dissatisfied, 4 = neutral, 5 = slightly satisfied, 6 = mostly satisfied, 7 = completely satisfied

Please write on the score you give for each number (1-7) for column E with each of number represent this condition below

A	B	C	D
No	Factor	How important the following factors for dry port implementation? (for any dry ports in the world) (1-7)	What is the current condition of Kandangan Dry Port for the following factors? (1-7)
1	Governance policy, regulation and support		
2	Stakeholder role and support (terminal operator, freight forwarder, transport operator and port authorities)		
3	Location (proximity to seaport and markets)		
4	Transportation cost and funding.		
5	Main services (handling services, transportation services, temporary storage, customs clearance, warehousing)		
6	Value added services (Distribution centres, consolidation centres)		
7	Accessibility between seaport - dry port and hinterland – dry port (rail/road)		
8	Managerial (GCG, Human Resources, CSR, Marketing and Planning)		
9	Implementation of Advanced Technologies (Infrastructure, Facilities and ICT)		
10	Safety and security, Environmentally Friendly (Less Emission)		

Section Three

Open question related to Kandangan Dry Port. Please write your answer on the space available below the question.

1. What factors need to be considered and influential in revitalizing Kandangan Dry Port?
2. What should TTL do to support and implement that factor in order to make succeed the revitalizing project of Kandangan Dry Port?

The questions in the survey may not be all embracing and comprehensive and may not give you an opportunity to report some things you may want to say. Please make any additional comments needed in the space provided.

Comments:

I sincerely appreciate your time and cooperation. Please check to make sure that you have not skipped any questions inadvertently. If you would like to know the result of this research, a summary of the results will be mailed to you after the data are analysed. You can contact me if there is any question related to this questionnaire.

In order to completing the research, furthermore interview might be needed via phone call. If you do not mind with phone interview, please leave your phone contact and free time that you can be contacted.

Name:

Phone number:

Day:

Time: (Indonesia Time GMT +7)

Appendix C Sample of Response from Questionnaire

Section One: General Information

1. Number of years worked in the organization/company: **13 years**
2. Present position in the organization (top management, middle management, first-level supervisor, non-managerial, others): **middle management**
3. Your organization:
 - a. Terminal operator
 - b. **Logistic provider**
 - c. Shipping line
 - d. Other (please specify) :
4. How old is your organization:
 - a. 1-5
 - b. 6-10
 - c. **11-15**
 - d. 16-20
 - e. More than 20
5. Number of employees in your organisation
 - a. **Less than 100**
 - b. 101-1000
 - c. 1001-2000
 - d. More than 2000
6. How long have you been working with Lamong Bay Terminal? **13 years**

Section Two: Kandangan Dry Port

The questions below ask about related information of Kandangan Dry Port from your company perspective.

Column B explain the factor which could effect on dry port implementation in global context.

Column C ask about the level of importance of the list factor which can affect to the implementation of dry port in general term, not only for Kandangan Dry Port.

Column D ask about the existing condition of Kandangan Dry Port based on your knowledge and experience.

In other words, you will compare between your answer of the level of importance of the factor with the existing condition of Kandangan Dry Port based on those factors.

Please write on the score you give for each number (1-7) for column C with each of number represent this condition below

1	2	3	4	5	6	7
not important at all						extremely important

1 = not important at all, 2 = low importance, 3 = slightly important, 4 = neutral, 5 = slightly important, 6 = very important, 7 = extremely important

Please write on the score you give each number (1-7) for column D with each of number represents this condition below

1	2	3	4	5	6	7
completely dissatisfied						completely satisfied

1 = completely dissatisfied, 2 = mostly dissatisfied, 3 = slightly dissatisfied, 4 = neutral, 5 = slightly satisfied, 6 = mostly satisfied, 7 = completely satisfied

Please write on the score you give for each number (1-7) for column E with each of number represent this condition below

A	B	C	D
No	Factor	How important the following factors for dry port implementation? (for any dry ports in the world) (1-7)	What is the current condition of Kandangan Dry Port for the following factors? (1-7)
1	Governance policy, regulation and support	7	4
2	Stakeholder role and support (terminal operator, freight forwarder, transport operator and port authorities)	5	3
3	Location (proximity to seaport and markets)	7	3
4	Transportation cost and funding.	7	3
5	Main services (handling services, transportation services, temporary storage, customs clearance, warehousing)	7	2
6	Value added services (Distribution centres, consolidation centres)	6	3
7	Accessibility between seaport - dry port and hinterland – dry port (rail/road)	7	2
8	Managerial (GCG, Human Resources, CSR, Marketing and Planning)	7	2
9	Implementation of Advanced Technologies (Infrastructure, Facilities and ICT)	6	2
10	Safety and security, Environmentally Friendly (Less Emission)	6	4

Section Three

Open question related to Kandangan Dry Port. Please write your answer on the space available below the question.

3. What factors need to be considered and influential in revitalizing Kandangan Dry Port?
 - Government support, regulation and policy, Value-added services and Implementation of advance technology

4. What should TTL do to support and implement that factor in order to make succeed the revitalizing project of Kandangan Dry Port?
 - Convince governments of the importance of the dry port, one of which could reduce traffic congestion. And also provide additional services such as logistic services to be supported by the availability of adequate infrastructure such as appropriate technologies

The questions in the survey may not be all embracing and comprehensive and may not give you an opportunity to report some things you may want to say. Please make any additional comments needed in the space provided.

Comments:

- should make integrated IT system with the seaport and custom in order to have fast and reliable service
- should have collaboration with other stakeholders to implement distribution or consolidation centre inside Kandangan Dry Port

I sincerely appreciate your time and cooperation. Please check to make sure that you have not skipped any questions inadvertently. If you would like to know the result of this research, a summary of the results will be mailed to you after the data are analysed. You can contact me if there is any question related to this questionnaire.

In order to completing the research, furthermore interview might be needed via phone call. If you do not mind with phone interview, please leave your phone contact and free time that you can be contacted.

Name: Iis

Phone number: +628113081187

Day: Tuesday, 10 July 2016

Time: 10:00 am (Indonesia Time GMT +7)

Appendix D Timeline Research Process

No	Determine the activity	2016						
		Mar	Apr	May	Jun	Jul	Aug	Sep
1	Research of material	√	√					
2	Observation	√	√	√				
3	Initial Data testing		√	√	√			
4	Progress Report		√	√	√	√		
5	Quality Control			√	√	√		
6	Data analysis			√	√	√	√	
7	Final Report & Presentation							√