

## The Feasibility Analysis of Container Terminal in Makassar As an International Port of Era Free Trade

Muhammad Idris<sup>1</sup>, Muh.Asdar<sup>2</sup>, Ganding Sitepu<sup>3</sup>

<sup>1</sup>Postgraduate Student, At Master Degree of Transportation, Faculty of Postgraduate,  
Hasanuddin University,

<sup>2</sup>Professor, <sup>3</sup>Lecturer, Transportation Engineering, Hasanuddin University,  
Makassar-Indonesia

**Abstract:** Ports are sea transport node being a liaison with other area facilities to carry out trading activities. Makassar is the Axis Maritime of Indonesian Archipelago Sea Lanes II (IASL II) in Eastern Indonesia. The strategic position led to Makassar need to develop sea transport and container terminal facilities to support the development of trade in Makassar and the surrounding area. This study aims to explain (1) the facilities and infrastructure at the Port of Makassar, (2) the performance of port operations and surplus loading and unloading activities and (3) conditions hinterland, the geography of the city of Makassar and it is surroundings in supporting the Makassar Container Terminal as an international port. This study is a survey research in the form of descriptive analysis. The results of this study showed that the Port of Makassar container is feasible to become International Port for fulfilling some aspects of the requirement that the International Port. The strategy is to be prepared, namely: 1) improvement of port management, 2) improvement of port facilities and infrastructure, and 3) improvement of port services

**Keywords:** Transport, Ports, Container Terminal, Feasibility

### I. INTRODUCTION

In the era of globalization such as the current transport has role important in human life as one of the elements that determines the development of a State. Indonesia is the largest archipelago in the world to have a number of less than 17,506 islands scattered in the sea area reaches 5.8 million square kilometers with a coastline of approximately 81,000 km and approximately 2/3 of the entire region is an archipelago. As an archipelago, Indonesia requires marine transportation so that the process of transporting logistics could run smoothly.

Ports are sea transport node being a liaison with other area facilities to conduct trading activities. The ports also serve as the gate for the merchandise either from abroad or to be sent abroad. Based on the functions of the port has an important role in the economy of the country to boost economic growth. Indonesia, with the rate of economic growth of around is 6% per year, becoming one of the countries targeted by agent free marketers in the world. The large population is approximately 300 million people. So Indonesia is a very promising trading purpose. To prepare for the free market, the government should improve the facilities of transporting logistics is now, in terms of both quality and quantity.

In South Sulawesi fairly stable economic growth is on average above 7%, and followed by the growth of freight and passengers. Makassar Port in five years significantly grew over 10%. Therefore, Makassar needs to prepare for sea transportation in order to accelerate the progress of trade in the region around. In light of the geographical position of Makassar very strategic for transportation because it was in the middle of Indonesian Archipelago Sea Line II (IASL II), so Makassar became a bridge by sea and air that connects the island of Java, Java western part of the regions in the Eastern Archipelago, in other words Makassar is the "gateway" for the Eastern Indonesia. In an archipelago like Indonesia, the transport of containerized is one of the best option compared to conventional haulage, given the transport of containerized can avoid damage to the logistics. The development of container transport services have advantages in terms of security and safety, ease of loading and unloading services, and can quickly arrive destination condition of transported logistics packaging quality is still relatively well preserved.

Makassar is the gateway to the eastern part of Indonesia by having a strategic role in the process of trading in Indonesia. With a very strategic location led to Makassar had to develop sea transport and container terminal facilities to support the development of trade in Makassar and the surrounding area. Makassar can be a direct trading purpose from other countries with a pretty good considering its potential. Currently the process of external trade is still concentrated in Java, especially in Jakarta and Surabaya. With the development of the port of Makassar will facilitate the process of foreign trade. The pathway that normally must pass through the port in Java can be directed to Makassar. This course will also improve the effectiveness and efficiency of cost and time. Makassar Container Terminal is one of 25 strategic ports in Indonesia and an international port that

function to serve unloading activities and over national and international transport in bulk and comprehensive range of services as well as a node in a network of international sea transportation. To support the smooth flow of containers, it must be supported by infrastructure and facilities are sufficient. Each port must provide the container stacking yard is adequate. In an effort to handle the service activities of containers through the port of Makassar is increasing, then the PT. Pelabuhan Indonesia IV develop a container terminal in Makassar for users of port services, especially services of containers.

## II. METHODOLOGY

This study is a descriptive analysis, which is type of survey research to explain the strategy of competitive advantage. Data were collected through interviews and literature as well as methods of descriptive analysis and SWOT analysis.

## III. RESULTS AND DISCUSSION

### Analysis Aspects Ports

Its infrastructure consists of a pier with a length of 1000 meters and width 9 meters, spacious CY 126 400 m<sup>2</sup>, CFS Warehouse 4000 m<sup>2</sup>, and weigh 4 units with a capacity of 60 tons. It is supporting facilities Makassar Port Container Terminal, consisting of: 1) Region office to support the port service, 2) The storage of waste, 3) Facilities that support the business activities of the port, and 4) the development of the harbor area. Facilities owned by the Makassar Container Terminal can be seen in Table 1.

**Table 1.** Facilities of Makassar Container Terminal

No.	Description	Total
1	Container Crane	7 units
2	Rubber Tyre Gantry (RTG)	16 units
3	Reach stacker	2 units
4	Forklift	7 units
5	Head Truck	24 units
6	Chassis	26 units
7	Side Loader	1 unit

Source: PT. (Persero) Pelindo IV Makassar Branch, 2015

### Operational performance and market

**Table 2.** The Performance Assessment of Container Terminal Operations at PT. Pelindo IV based on the Average Value

No.	Performance	Standard	Makassar Container Terminal	
			Value	Criteria
1	WT (hour)	1.00	0.31	Good
2	AT (hour)	2	1.41	Good
3	ET/BT(%)	80	83.64	Good
4	B/C/H	25	27.6	Good
5	Receiving (minute)	30	27.82	Good
6	Delivery (minute)	45	27.36	Good
7	BOR (%)	70	48.95	Good
8	YOR (%)	70	65.32	Good
9	Readiness Tools (%).	80	77.13	Good
Assessment Criteria				Good

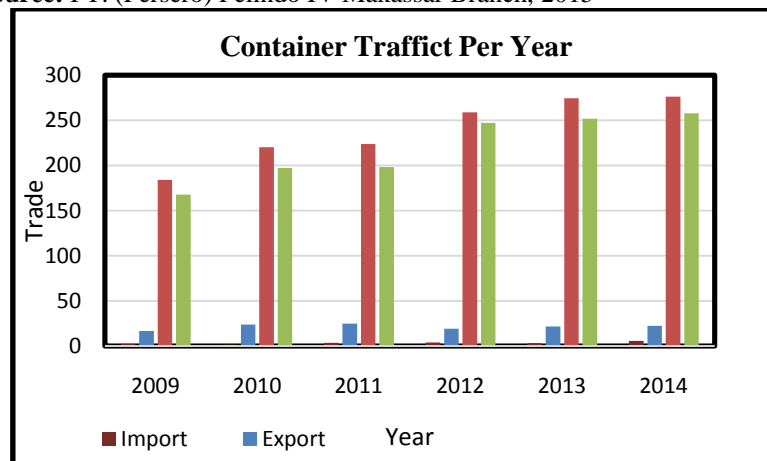
Source: Data processed, 2015

Analysis of the results of operational performance container terminal based Standard Performance Operational Service Ports obtain results as shown in Table 3, where the value ET / BT 83.64% (Good), BOR 48.95% (Good), YOR 65.32% (Good) and equipment readiness 77.13% (Good). From the aspect of the market, the level of trading services includes: import, export, loading, unloading in the year 2009 to 2014 have increased the number of 370.532 in 2009 to 562.048 in 2014 to increase from year to year, can be seen in Table 3 and Figure 1.

**Table 3.** Container Traffic per year

No.	Trade	Year					
		2009	2010	2011	2012	2013	2014
1	Import	2.2	1.5	3.6	4	3.2	5.5
2	Export	16.6	23.6	24.9	19.3	21.6	22.3
3	Unloading	184	220.2	224	258.8	274.4	276.1
4	Loading	168	197.2	198	247.2	251.6	257.9
Total		370	442.5	451	529.3	550.8	561.8

Source: PT. (Persero) Pelindo IV Makassar Branch, 2015



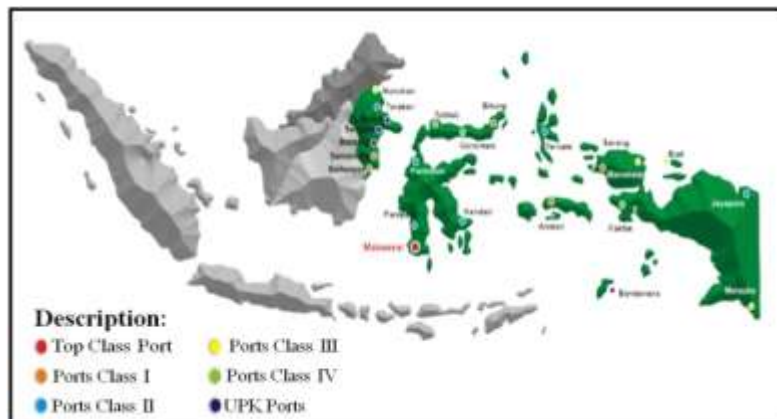
Source: PT. (Persero) Pelindo IV Makassar Branch, 2015

Figure 1. Container Traffic per year

Based on the analysis of aspects of ports, facilities, infrastructure and technical aspects of operating a subsystem that must be owned by the container port of Makassar to support and streamline the activities of loading and unloading of containers, the Port Container of Makassar is feasible into the International Port, due to comply with certain aspects of the requirement that the International Port.

#### Analysis Aspects Hinterland

Makassar port is the center of trade in the position of Indonesian Archipelagic Sea Lanes II (IASL II) and a cruise line that connects between the western and eastern Indonesia.



Source: PT. (Persero) Pelindo IV Makassar Branch, 2015

Figure 2. Makassar Port Hinterland

Hinterland determination results as shown in Figure 2 shows that the magnitude of the most dominant is the distance between the locations of origin to the destination location. Exponent distance has no significant impact on the determination of the hinterland because of the small range of distances compared to the distance exponent.

Makassar port hinterland region is strongly influenced by the ports in the province of South Sulawesi. South Sulawesi Province have 20 regencies and 4 cities, and Makassar as the capital of the province. The district twentieth namely; Maros, Luwu, Gowa, Bulukumba, Barru, Pangkep, Soppeng, Bone, Wajo, Takalar, Sinjai, Sidrap, Enrekang, Tanah Toraja, Pinrang, East Luwu, North Luwu, Jenne Ponto. In some areas there are ports including the Port of Awerang in Barru, Makassar Port, Palopo Port and Pare-Pare. However, only a fifth of Makassar Port which has a container that is the terminal services Makassar Container of Hatta Base, which serve the entire districts in South Sulawesi. This has resulted in an increase in the flow of containers that occur each year.

Based on the accessibility of the attribute distances, the limits of the administrative area of Makassar city and the existing facilities are in Makassar Container Port as well as observing the condition of the road network that connects the city of Makassar with surrounding regencies. Then the Makassar port hinterland is covering all

regencies in South Sulawesi. This is because geographically the regions have a short distance away and are directly related to the port area so that the entry and exit of containers to or exit from the hinterland will be through the port of Makassar Container first.

**Economic Factors Analysis: Trade and Surplus Unloading**

Analysis of World Trade, up to ten years to bring ongoing, thus economic activity between countries is increasing. The development of export and import in South Sulawesi likely to result in a trade surplus fluctuated, but still is positive. See in Table 4.

**Table 4.** Development of Export and Import of South Sulawesi province from 2009 to 2014 (Million US \$)

Description	2009	2010	2011	2012	2013	2014
A. Export	1.308,36	2.318,81	1.904,01	1.559,85	1.575,77	1.747,91
B. Import	649,11	987,32	1.398,90	1.294,96	1.361,46	836,22
<b>Export Netto (A-B)</b>	<b>659,25</b>	<b>1.331,50</b>	<b>505,11</b>	<b>264,89</b>	<b>214,31</b>	<b>911,69</b>
<b>Export Increase (%)</b>	<b>-37,92</b>	<b>77,23</b>	<b>-17,89</b>	<b>-18,08</b>	<b>1,02</b>	<b>10,92</b>
<b>Import Increase (%)</b>	<b>-25,52</b>	<b>52,10</b>	<b>41,69</b>	<b>-7,43</b>	<b>5,14</b>	<b>-38,58</b>

Source: BPS.sulsel.co.id

Export featured South Sulawesi is still held by nickel and cocoa. Even the year 2014 59% of the value of our exports is a result of nickel mine. Exports of nickel are entirely devoted to the land of Sakura-Japan. Each year from 2010 to 2014, economic growth in South Sulawesi remained above the national economic growth. With the GDP amounted to 300.12 trillion rupiahs in 2014, accounted for 2.8% of Gross Domestic Product (GDP) National. In 2014, the growth of the national economy grew by 5.02%. While economic growth throughout the province on the island of Sulawesi is above the national, the South Sulawesi ranks second highest in the island of Sulawesi. The current loading and unloading in the export-import activities in Makassar Port Container can be seen in Table 5.

**Table 5.** Flow Realization of Loading-Unloading the Container of 2009 to 2014 at the recapitulation of Foreign Trade of container Export-Import

No.	Description	Unit	2009	2010	2011	2012	2013	2014	%
1	2	3	4	5	6	7	8	9	
	Total A	Box	1.719	1.334	2.786	2.756	2.437	4.203	29.25
		Teus	2.245	1.524	3.649	4.068	3.212	5.534	34.01
		Ton	40.086	30.295	64.836	65.904	58.377	100.591	30.43
	Total B	Box	13.382	19.881	20.489	15.4	16.933	16.576	6.93
		Teus	16.548	23.599	24.885	19.278	21.659	22.363	8.23
		Ton	308.447	453.371	466.788	354.31	395.39	392.725	7.35
	Total (A+B)	Box	15.101	21.215	23.275	18.156	19.37	20.779	8.43
		Teus	18.793	25.123	28.534	23.346	24.871	27.897	9.56
		Ton	348.533	483.666	533.624	420.218	453.774	493.316	8.89

Source: PT. (Persero) Pelindo IV Makassar Branch, 2015

Based on the recapitulation of foreign trade is total of (A + B) with the lowest result occurred in 2009 with a value box (15,101), TEUs (18 793), and the value of tons (348 533), while the highest yield occurred in the year 2011 with a value box (23,275), teus (28 534), and the value of tons (531 624). Recapitulation results can be seen in Figure 3.



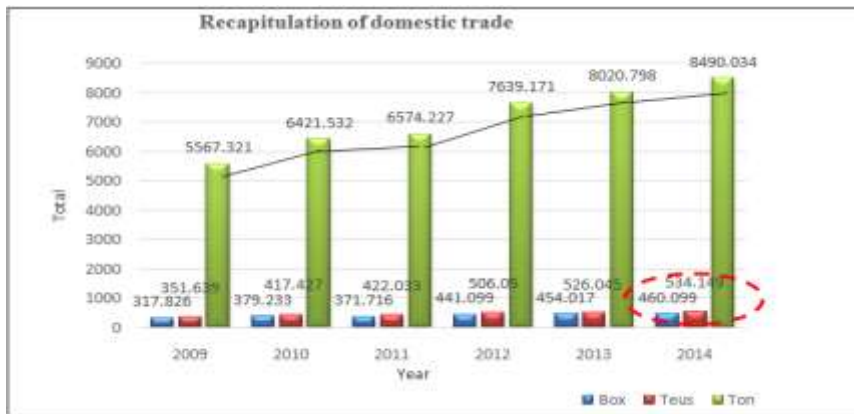
Source: PT. (Persero) Pelindo IV Makassar Branch, 2015

**Figure 3.** Recapitulation of Foreign Trade

**Table 6.** Flow Realization of unloading-loading the container of 2009-2014 at the recapitulation of the Domestic container trade of unloading-Loading

No.	Description	Unit	2009	2010	2011	2012	2013	2014	%
1	2	3	4	5	6	7	8	9	
	Total A	Box	165,539	199,276	196,686	225,156	236,242	236,879	7.75
		Teus	184,012	220,234	223,921	258,873	274,450	276,154	8.72
		Ton	3,508,047	3,916,041	4,184,441	4,833,852	4,886,978	4,847,976	6.86
	Total B	Box	152,287	179,957	175,030	215,943	217,775	223,220	8.43
		Teus	167,627	197,193	198,112	247,177	251,595	257,995	9.44
		Ton	2,059,274	2,505,491	2,389,786	2,805,319	3,133,912	3,642,058	12.47
Total (A+B)	<b>Box</b>		317,826	379,233	371,716	441,099	454,017	460,099	8.05
	<b>Teus</b>		351,639	417,427	422,033	506,050	526,045	534,149	9.04
	<b>Ton</b>		5,567,321	6,421,532	6,574,227	7,639,171	8,020,890	8,490,034	8.95

Source: PT. (Persero) Pelindo IV Makassar Branch, 2015



Source: The results of data processing, 2016

**Figure 4.** Recapitulation of the Domestic container trade

**Table 7.** Recapitulation of Stevedoring Makassar Container Terminal (2010-2014)

No.	Year	Total of Stevedoring	%
1	2010	16.104	-
2	2011	15.442	-0.66
3	2012	30.243	1.96
4	2013	30.558	1.01
5	2014	27.090	0.89
Total		119.437	3.19

Source: PT. (Persero) Pelindo IV Makassar Branch, 2015

Based on the recapitulation of domestic trade has increased each year on the current loading and unloading, which results in total (A + B) with the lowest result occurred in 2009 with a value box (317 826), TEUs (351 639), and the value of a ton (5,567,321) , while the highest yield occurred in 2014 with a value box (460 099), teus (534 149), and the value of tons (8,490,034).

Thus the region's economic development is a process by which local governments and communities to manage existing resources and establish a partnership between local governments and the private sector to create new jobs and stimulate the development of economic activities in the region. World trades up to ten years, globalization will continue to run, so that the economic activity the country is increasing.

**Feasibility Analysis of Strategies Port Container Terminal**

The analysis of container port performance strategies uses SWOT. The analysis results show the feasibility of the strategy of Makassar Container Port is an international port with Strength: 1) Makassar port is the center of trade and the layout is well positioned Indonesian archipelagic sea lanes linking the western and eastern Indonesia. 2) Makassar port has complete facilities. 3) Flow Makassar port are along the 2-mile and 150 meters wide with a minimum depth of 9 MLWS. Makassar port is also supported by the break water facility with a length of 1,581 meter. 4) Makassar Container Terminal container yard has an area of 126 400 M<sup>2</sup>, and CFS warehouse of 4,000 M<sup>2</sup>. And has a weakness: 1) Knowledge and ability to Human Resources (HR) is low. 2) Support and coordination of relevant institutions are still weak. 3) Lack of Land Development thus requiring new land to address the needs of accumulation of logistics area. 5) Access to the port of Makassar, the traffic conditions around the Port of observed frequent traffic jams.



### External analysis

**Opportunity:** 1) Increased use of container, 2) Development of infrastructure in the port adds the business opportunity, 3) The increase in vessel traffic from year to year, and 4) Potential Export Import large field of industry, agriculture, plantation, fishery, and mining can improve the country's foreign exchange.

**Threat:** 1) The rivalry with the nearby Port Container. 2) Human resources for Container port management. 3) Competition domestic and world markets for commodities increases. 4) Disruption of cleanliness and safety.

### III. CONCLUSION

1. Based on the analysis of aspects of port, facilities, infrastructure and technical aspects of the operation are a subsystem that must be owned by the container port of Makassar to support and streamline loading and unloading of containers. Makassar container port of is feasible into International Port, since fulfilling some aspects of the requirement that the International Port.
2. From the aspect of the geographical location of a region paramount in determining the position of the port as a place of unloading. Makassar is a very strategic area and has a complete infrastructure.
3. Facilities and infrastructure are a component that must be owned by a port as a tool to facilitate the performance in the affairs of loading and unloading at the port container terminal of Makassar, standard service every port in the container terminal has been set up by the government in this case acts as a regulator as outline in the letter the Director of Sea Transportation Number: UM.002 / 38/18 / DGLT-11, about the standard of service performance of port operations.
4. The strategy is considered appropriate in the capacity of PT. Pelindo IV Makassar are; 1) the improvement of port management, 2) improvement of port facilities and infrastructure, and 3) improvement of port services

### REFERENCES

- [1]. Amir, 1997. Export-Import and Theory of Application. PT. Pustaka Binaman Presinda.
  - [2]. Arwinas, 2000. Ship Handling Instructions and Logistics in the Port, PT. (Persero) Pelabuhan Indonesia II, Jakarta.
  - [3]. Ismah Rustam, 2016. Challenges Indonesian Archipelagic Sea Lanes (IASL) in Achieving Goals Indonesia as World Maritime Axis. Indonesian Perspective, Volume 1 Number 1 (January to June); 1-21, ISSN: 2502-2067.
  - [4]. Jinca M.Y. 2011. Sea Transportation. Systems Analysis and Case Studies. Brilliant International. Surabaya.
  - [5]. Jinca, M.Y. 2011. Sea Transportation Indonesia. Hasanuddin University, Makassar.
  - [6]. Transportation Minister Decree No. 22 of 2004, Regulations On The Master Plan in Makassar
  - [7]. Transportation Minister Decree No. 51, 2011, Regulations on the order of national port.
  - [8]. Misliah & Zulkifli Idrus A. Yusuf. 2013. Analysis of optimal capacity terminal Container Yard of Makassar-based Operator container port users. Journal of Marine Research and Technology.
  - [9]. Myers, Raymond H. 1995. Opportunities Science and Statistics for Engineers and Scientists. 4th edition. Publisher ITB, Bandung.
  - [10]. Nasution, H.M.N. 1996. Transportation Management. Balai Aksara. Jakarta.
  - [11]. Olukoju O. Ayodeji. 2006. Ports, Hinterlands and Forelands. University of Lagos
  - [12]. Indonesian Government Regulation No. 69, 2001, the regulations concerning port.
  - [13]. Subandi. 1993. Container Management, Publisher Arcan, Jakarta.
  - [14]. Sudjatkiko F.D.C, 2006. Container Transportation System, Janjiku Pustaka, Jakarta.
  - [15]. Sumardi, 2000. Ports Management. First Edition. PT Pelindo.
  - [16]. Supriyono. 2010. Analysis of the Performance of the Container Terminal at the port of Tanjung silver Surabaya. Semarang: Master Program in Civil Engineering.
  - [17]. Suyono, R.P. 2003. Intermodal Transportation Shipping Export-Import by Sea. Publisher PPM. Jakarta.
  - [18]. Tamin. Ofyar Z, 2002. Transportation Planning and Modeling, Institute of Technology Bandung, Bandung.
- Legislation:**
- [19]. Law No. 17 of 2007 on the National Long-Term Development Plan 2005-2025.
  - [20]. Law Number 17 Year 2009 on the voyage.
  - [21]. Government Regulation No. 61 Year 2009 concerning Port.
  - [22]. Director General of Sea Transportation Decision No.UM.002/38/18 / DGLT-11 about Port Operational Performance Standards Services

**Internet:**

- [23]. AFTA-2015-Perdagangan-Bebas-dan-Kesiapan-SDM  
Indonesia/5408.(<http://manadopostonline.com>diakses 8 Desember 2014
- [24]. [www.BPS.sulsel.co.id](http://www.BPS.sulsel.co.id)
- [25]. Perdagangan\_bebas.(<http://ms.wikipedia.org/wiki/>. diakses 8 desember 2014 Pengertian ppt.
- [26]. (<https://sanggapramana.files.wordpress.com>.Diakses 15 Desember 2014
- [27]. [www.google.com](http://www.google.com). Perdagangan Bebas : Mario Aditya, 2013. Diakses tanggal 11 Juli 2013.