JURNAL AKTA
Volume 7 No.4, December 2020
Nationally Accredited Journal,
Decree No. B/4130/E5/E5.2.1/2019

Legal Aspects & Evaluation of Operational Service Performance Standards of Boom Baru Container Terminal Palembang

Tulus Umy Purwati[*)], Erika Buchari[**)], Edi Kadarsah[***)]

[*)] Student of Master of Transportation Program, Department of Civil Engineering, Faculty of Engineering, Sriwijaya University, South Sumatra, E-mail: tulus.purwati@gmail.com
[**)] Professor of Engineering, Sriwijaya University, South Sumatra, E-mail: erikabuchari@ft.unsri.ac.id
[***)] Doctor of Engineering Faculty, Sriwijaya University, South Sumatra, E-mail: aedikadarsah@gmail.com

Abstract. *This research was conducted to evaluate legal aspects and the service performance of the Boom Baru Palembang Container Terminal has implemented the DIRJENHUBLA Standard. The research was conducted by collecting data from the Boom Baru Container Terminal and then calculating and evaluating based on applicable regulations. Performance analysis is carried out by calculating BOR (Berth Occupancy Ratio), YOR (Yard Occupancy Ratio), BTP (Berth Troughput), and Effective Time Ratio (ET: BT). Performance analysis shows that the 2018 for BOR value does not match the rules which is 58.57% and it is above the UNCTAD recommended value of 50% and the 2019 BOR value of 48.36%. The 2018 Effective Time Ratio (ET: BT) value of 55% is under minimum DIRJENHUBLA standard of 70%.*

Keywords: Terminal Container; Berth Occupancy Ratio (BOR); Effective Time Ratio (ET: BT); Yard Occupancy Ratio (YOR); Experiential Models.

1. INTRODUCTION

The Ministry of Transportation has set port operational standards to be used as a reference in order to achieve maximum management and performance. The Decree of the Director General of Sea Transportation number UM.002/38/18/DJPL-11 of 2011 stipulates nine indicators of Port Operational Service Performance Standards that become references or in evaluating port operational service performance standards. The port operational service performance report is submitted monthly to the Port Authority which is then monitored and reported periodically to the Director General. Evaluation is carried out by the Director General at least 1 (one) time in a period of six months. The nine indicators consist of waiting time for ships (waiting time), scouting service time (approaching time), effective time (effective time compared to berth time), work productivity, container receiving/delivery, berth occupancy ratio/BOR, yard occupancy ratio/YOR, and equipment operation readiness. Operational service performance standards are standards of work results from each service that must be achieved by terminal or port operators in the implementation of port services including in the provision of port facilities and equipment. If the port management or business entity cannot meet the standards set by the ministry of transportation, in accordance with PP 61 of 2009 concerning ports, sanctions may be imposed.

Boom Baru Port has a registered land area of 24 hectares and is utilized around 18.5 hectares, equipped with 6 units of warehousing area with a total area of 6,775 m2. Boom Baru Container Terminal has a pier facility with a length of 266 m consisting of 2 docks with a stacking area of 4.7 hectares and a working time of 355 days/year with an operating time of 24 hours/day (Situmorang & Erika Buchari, 2015). Until now, the Boom Baru Container Terminal is equipped with 2 units of Container cranes, 4 jib cranes, 4 real mounted gantry cranes, 21 forklifts, 19 head trucks, 19 chassis, 3 side loaders, 4 reach stakers and weight bridge 3 units. TPK Boom Baru has also implemented digitalization services to accelerate the unloading process starting from online temporary storage places (TPS), and also a payment system that no longer uses cash but electronic money or e-money. This is expected to reduce logistics costs and improve port services. However, the facilities and equipment provided by the management cannot be ensured to operate optimally, effectively, and efficiently according to the goals and objectives and meet the standards that have been set.

This study was conducted to test whether the regulations of the Ministry of Transportation Number UM.002/38/18/DJPL-11 have been complied with or not by the Boom Baru Container Port of Palembang.

2. RESEARCH METHOD

This research was conducted by reviewing legal aspects and calculating port operational service performance standards and evaluating possible solutions. These steps are described in detail below:

Port operational service performance

In order to achieve operational service performance at the Container Terminal, the manager in this case PT. It is recommended that the Palembang Container Terminal meet the standards in accordance with the Decree of the Director General of Sea Transportation Number: UM.002/38/18/DJPL-11 concerning Port Operational Service Performance Standards for the South Sumatra Region which is summarized in the following table:

Table 1. Palembang container port operational standard

NO	Service Performance	Standard Value	Unit
1	BOR (Berth Occupancy Ratio)	70 (max)	%
2	YOR (Yard Occupancy Ratio)	65	%
4	ET: BT	70 (min)	%
5	Loading and Unloading Performance	22	B/C/Hour

Source: DIRJENHUBLA decree number UM.002/38/18/DJPL-11

Port operational service performance data is secondary data obtained from PT. Palembang Container Terminal. Some of the service performance indicator data is raw data that has not been processed and some indicator data has been processed by the

manager. In general, operational service performance indicators can be calculated and analyzed with the following formula:

Berth occupancy ratio (BOR)

Berth Occupancy Ratio (BOR) is an indicator of dock utilization which states the level of use of the dock against the available time. The BOR value is a comparison between the amount of time used for each available wharf with the amount of time it is ready to operate for one period expressed in percentage (%). The standard BOR values based on UNCTAD 1978 are as follows:

Table 2 Recommended standard BOR values from UNCTAD 1978

The number of moorings in the group	1	2	3	4	5	6-10
Recommended BOR value (%)	40	50	55	60	65	70

And calculated by the following equation:

$$BOR = \frac{Vs\ x\ St}{Waktu\ Efektif\ x\ n}\ x\ 100\% \quad (1)$$

With:
BOR = Berth Occupancy Ratio (%) Vs = Number of Vessels served (units/year),
St = service time (hours/day), n = number of berths.

Berth throughput (BTP)

Berth throughput (BTP) is the number of loading and unloading flows of TEU's (containers) handled at one dock in one period per year or month. The BTP value can be calculated by the following equation (Triatmodjo, B 2011):

$$BTP = \frac{\sum TEU\ s\ Boxes\ x\ BOR\ \%}{Lp\ x\ n} \quad (2)$$

With:
BTP = Berth Throughput (TEU's/Year), TEU's = number of containers (TEU's/year),
BOR% = number of berths per year (%), Lp = length of pier (berth)
n = number of piers/moorings.

Yard Occupancy Ratio (YOR)

It is the usage rate of the CYOR and YOR container yards, which is the ratio of the number of container yards used in 1 TEU per day or m2 per day with the available stacking capacity.

$$YOR = \frac{\sum TEU\ s\ Boxes\ x\ day}{Capacity\ boxes\ x\ working\ day}\ 100\ \% \quad (3)$$

Loading and unloading performance

Loading and unloading performance measured in Box/Crane/Hour (BCH) is the number of containers unloaded/loaded by one crane in a period of 1 (one) hour. In this case the author will also analyze the number of containers that are unloaded/loaded from or to the ship in a period of 1 (one) hour or called Box/Ship/Hour (BSH).

Analysis of the effective working time ratio at the mooring

Berthing Time (BT) or mooring time is the number of hours while the ship is at the mooring, from the time the ship is tying the rope until the rope is untied at the mooring, while Effective Time (ET) the effective time is the real amount used to carry out loading and unloading activities expressed in hours (Triatmodjo, 2009).). The working time ratio at the mooring is the ratio of Effective Time and Berthing Time in percent. The ratio can be calculated by the formula:

$$ET: BT = \frac{Effective\ Time}{Berthing\ Time}\ x\ 100\%$$

3. RESULTS AND DISCUSSION

PT. Palembang Container Terminal as the manager of the Boom Baru Container Terminal provides data information on equipment and facilities for container flow services, the number of docks / moorings is 2, the area of the stacking field is 4.7 hectares with a capacity of 177096 TEUs, and the length of the pier is 266 m. As for the work productivity of the container port, it is 355 days/year with 24 hours working hours per day so that the working time in a year is 8520 hours/year (Situmorang 2015).

YOR (yard occupancy ratio)

It is a comparison of the amount of container yard usage calculated in 1 TEU per day or m² per day with the available stacking capacity. Based on the data obtained from the Palembang Container Terminal are as follows:

Table 3. Yard occupancy ratio (YOR) value data

2018					**2019**				
MONTH	**SHIP CALL**	**BOX**	**TEUS**	**YOR %**	**MONTH**	**SHIP CALL**	**BOX**	**TEUS**	**YOR %**
JAN	30	9101	10011	50	**JAN**	28	7760	8727	39
FEB	41	13217	15368	54	**FEB**	35	10206	11480	33
MAR	45	12071	13616	55	**MAR**	39	10011	11313	35
APR	45	12516	13755	52	**APR**	35	9743	10945	40
MAY	39	12605	13973	53	**MAY**	30	10495	11919	38
JUNE	37	11581	12938	53	**JUNE**	26	8535	9528	32

2018					2019				
MONTH	**SHIP CALL**	**BOX**	**TEUS**	**YOR %**	**MONTH**	**SHIP CALL**	**BOX**	**TEUS**	**YOR %**
JUL	47	14957	16541	57	**JUL**	34	11727	13069	49
AUG	47	13714	15400	52	**AUG**	36	11352	12833	49
SEP	42	12867	14159	42	**SEP**	37	10864	12678	45
OCT	45	15248	16331	45	**OCT**	37	12268	13965	60
NOV	38	12439	13473	39	**NOV**	37	11929	13497	58
DEC	43	14394	16019	40	**DEC**	38	13892	15579	51

Source: PT. Palembang Container Terminal

Based on the provisions of the container terminal performance standards set by the DIRJENHUBLA in Decree Number: UM.002/38/18/DPL-11, the Palembang Container Terminal YOR value still meets the recommended service standards.

Berth occupancy ratio (BOR)

Based on the calculation results, the 2018 and 2019 BOR values are obtained as follows:

Table 4. The results of the calculation of the level of use of the wharf in 2018 and 2019

YEAR	MONTH	SHIP CALL	BOX	TEUS	TEUs/ ship	BOR (%) (TPK data)	BOR % (calculate)
2018	JAN	30	9101	10011	334	-	42.25
	FEB	41	13217	15368	375	-	57.75
	MAR	45	12071	13616	303	-	63.38
	APR	45	12516	13755	306	-	63.38
	MAY	39	12605	13973	358	-	54.93
	JUNE	37	11581	12938	350	-	52.11
	JUL	47	14957	16541	352	-	66,20
	AUG	47	13714	15400	328	-	66,20

YEAR	MONTH	SHIP CALL	BOX	TEUS	TEUs/ ship	BOR (%) (TPK data)	BOR % (calculate)
	SEP	42	12867	14159	337	-	59.15
	OCT	45	15248	16331	363	-	63.38
	NOV	38	12439	13473	355	-	53.52
	DEC	43	14394	16019	373	-	60.56
2019	JAN	28	7760	8727	312	26.46	39.44
	FEB	35	10206	11480	328	27.63	49.30
	MAR	39	10011	11313	290	28.97	54.93
	APR	35	9743	10945	313	28.76	49.30
	MAY	30	10495	11919	397	36.73	42.25
	JUNE	26	8535	9528	366	27.56	36.62
	JUL	34	11727	13069	384	37.29	47.89
	AUG	36	11352	12833	356	34.24	50,70
	SEP	37	10864	12678	343	39.79	52.11
	OCT	37	12268	13965	377	44.34	52.11
2019	NOV	37	11929	13497	365	40.98	52.11
	DEC	38	13892	15579	410	39,90	53.52

Source: PT. Palembang Container Terminal and calculation results

From the table of calculation results above, it can be seen that for 2018 the average value of the author's calculation results is 58.57%, greater than the UNCTAD recommended 50%. As for 2019 the average value of the Berth Occupancy Ratio (BOR) obtained from PT. Palembang Container Terminal is 34.39%. While the average value of the results of the author's calculations is greater that is 48.36%. However, both still meet the standards suggested by UNCTAD.

Loading and unloading performance

In this case the author will analyze the loading/unloading performance data obtained from PT. Palembang Container Terminal, namely by making comparisons to the

standards set by the DIRJENHUBLA. The productivity of loading and unloading equipment or Box Crane Hour (BCH) and the productivity of the dock or Box Ship Hour (BSH) can be seen in the following table:

Table 5. Productivity of loading and unloading equipment and dock productivity

2018							2019					
SHIP CALL	**BOX**	**TEUS**	**TEUs/ SHIP**	**BCH**	**BSH**	**MONTH**	**SHIP CALL**	**BOX**	**TEUS**	**TEUs/ SHIP**	**BCH**	**BSH**
30	9101	10011	334	30	36	JAN	28	7760	8727	312	32	43
41	13217	15368	375	27	34	FEB	35	10206	11480	328	33	42
45	12071	13616	303	31	36	MAR	39	10011	11313	290	33	40
45	12516	13755	306	30	36	APR	35	9743	10945	313	34	41
39	12605	13973	358	32	39	MAY	30	10495	11919	397	37	42
37	11581	12938	350	30	37	JUNE	26	8535	9528	366	34	40
47	14957	16541	352	33	40	JUL	34	11727	13069	384	31	38
47	13714	15400	328	32	39	AUG	36	11352	12833	356	30	41
42	12867	14159	337	32	40	SEP	37	10864	12678	343	30	35
45	15248	16331	363	33	42	OCT	37	12268	13965	377	29	36
38	12439	13473	355	34	41	NOV	37	11929	13497	365	29	36
43	14394	16019	373	35	43	DEC	38	13892	15579	410	28	35

Source: PT. Palembang Container Terminal

Based on the table above, it can be seen that the average Box/Crane/Hour (BCH) value in 2018 and 2019 is 32. This value is still above the minimum value set by the Directorate General of Sea Transportation for the Palembang area, which is 22 Box/Crane/ Hours.

BTP (berth throughput)

Based on the data obtained from PT. Boom Baru Container Terminal Palembang, the author will process data on the BTP Value (Berth Troughput) for 2018 and 2019 with a pier length of 266 m. The results of data processing can be seen in the following table.

Table 6. The result of calculating the value of BTP (berth throughput)

YEAR	MONTH	TEUS	DRIL %	BTP	YEAR	MONTH	TEUS	DRIL %	BTP
2018	JAN	10011	42.25	795.11	2019	JAN	8727	26.46	434.04
	FEB	15368	57.75	1668,14		FEB	11480	27.63	596.32
	MAR	13616	63.38	1622.15		MAR	11313	28.97	615.94
	APR	13755	63.38	1638,71		APR	10945	28.76	591.68
	MAY	13973	54.93	1442.73		MAY	11919	36.73	822.90
	JUNE	12938	52.11	1267.36		JUNE	9528	27.56	493.68
	JUL	16541	66,20	2058,21		JUL	13069	37.29	915.96
	AUG	15400	66,20	1916.23		AUG	12833	34.24	825.93
	SEP	14159	59.15	1574.39		SEP	12678	39.79	948.17
	OCT	16331	63.38	1945,61		OCT	13965	44.34	1163.93
	NOV	13473	53.52	1355.43		NOV	13497	40.98	1039.61
	DEC	16019	60.56	1823.62		DEC	15579	39,90	1168,43

Source: Calculation results

The BTP (Berth Throughput) value obtained can be used to see the level of use of the wharf or the number of containers unloaded or loaded at moorings in a period of years or months. The results of this data processing can be used by further researchers related to the capacity of the dock and the performance of the equipment used for container loading and unloading activities.

Effective Working Time Ratio at Mooring

The effective working time ratio data at the mooring or ET: BT was obtained from PT. Palembang Container Terminal which is then analyzed or compared against the regulations set by the DIRJENHUBLA. The minimum standard set by the DIRJENHUBLA for the Palembang area is at least 70%. The ratio of effective working time can be seen in the table below:

Table 6. ET Value: BT in 2018 and 2019

MONTH	ET: BT 2018 (%)	ET: BT in 2019 (%)

JAN	50.94	59.51
FEB	54.21	60.76
MAR	53.48	51.11
APR	48.78	57.49
MAY	49.18	53.54
JUNE	53.65	51.32
JUL	53.93	55.62
AGU	51.18	53.51
SEP	49.46	53.68
OCT	50.26	52.95
NOV	50.58	53.41
DEC	52.65	52.02

Source: PT. Palembang Container Terminal

From the table above, it can be seen that the average effective working time ratio at the mooring (ET: BT) for 2018 is 51.52% and for 2019 it is 55%. This value does not meet the minimum standard value set by DIRJENHUBLA.

Legal Aspect

Garrison et al (2006) wrote: "….In a sense policy matters are simple. They just seem complex because policy games are played in diverse stages, with many actors and with issues that appear under different names." According to him, there are two policy models, namely the experiential policy model (figure 1) and the conventional policy model (figure 2). Transport experience is not widely known. Transportation experience will provide perceptions, principles and attitudes that can be developed for policy making. In addition, policy making must be prepared before planning, implementation, management, and action and reaction. The experiential model is shown in Figure 1.

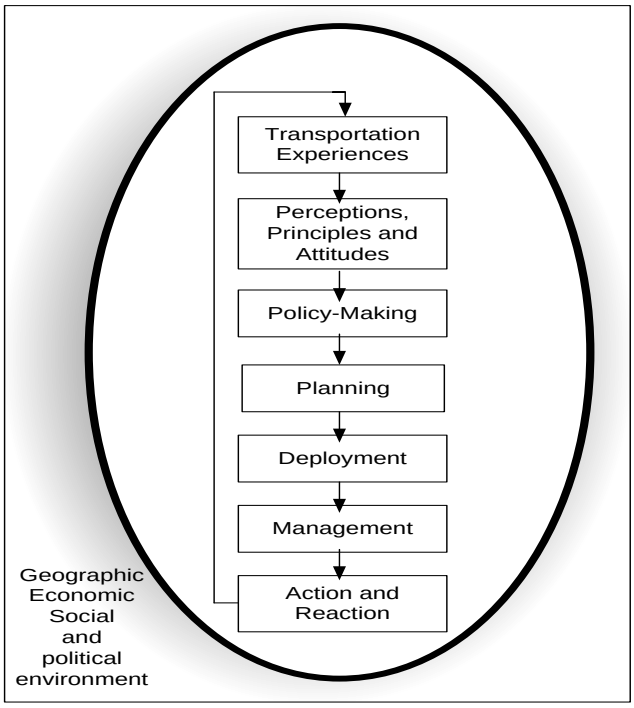

Figure 1. Experiential Model

In contrast to the experiential model, the conventional model is associated with economists, policy analysts, lawyers and others in the policy area. Conventional policy has two ways of input; they are the developing principles of social and economic thought and problems related to transportation. This policy is shown in the following figure 2:

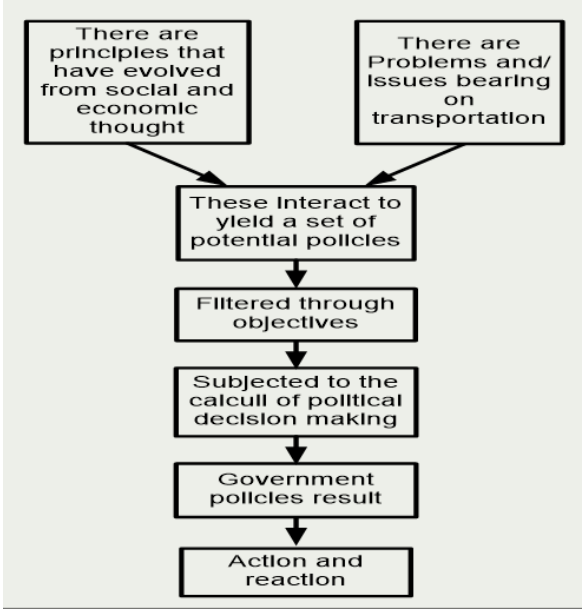

Figure 2. Conventional Policy Model

Based on PP 61 of 2009 concerning ports, Article 74 paragraph (1), concessions are granted to Port Business Entities for the activities of providing and/or servicing ships, passengers and goods as referred to in Article 69 paragraph (1), one of which is in letter (d) "Provision and/or service of dock services for the implementation of loading and unloading activities of goods and containers" which is stated in the form of an agreement. One of the contents of the agreement contains service performance standards and procedures for handling public complaints and sanctions in the event that the parties do not comply with the concession agreement. So if the port management or business entity does not comply with the standards set by the port authorities or authorities which in this case will apply the rules from the ministry of transportation, in accordance with PP 61 of 2009 concerning ports may be subject to sanctions. The sanction in question is the termination of the agreement in the event that the port business entity does not carry out its obligations, including the obligation to provide port services according to the service performance standards set by the port authority or called administrative sanctions.

According to Harahap, the types of administrative sanctions include real coercion (bestuursdwang), forced money (dwangsom), administrative fines, revocation of favorable KTUN (eg permits), security deposits, and other/special forms (Harahap. Z, 2006).

Organizational, regulatory & policy reform

The existing regulations or transportation policies have been applied conventionally which are actually less effective in implementing sanctions, where the experience of the existing problems is not widely and in detail and there is no communication or special forum for related parties in problem solving.

According to Garrison (2006) in Buchari (2008) in addition to the conventional policy model, there is an experiential policy model in which any problems that arise will be researched and evaluated in a special forum with stakeholders and related parties which are then processed to develop new regulations that are more sophisticated than before. This is considered effective in implementing the law or policy that has been set because it has been mutually agreed upon as a solution to existing problems.

In terms of these Container Terminal problems, such as BOR over capacity and ET: BT below standard, the suggested experiential policy model is as follows:

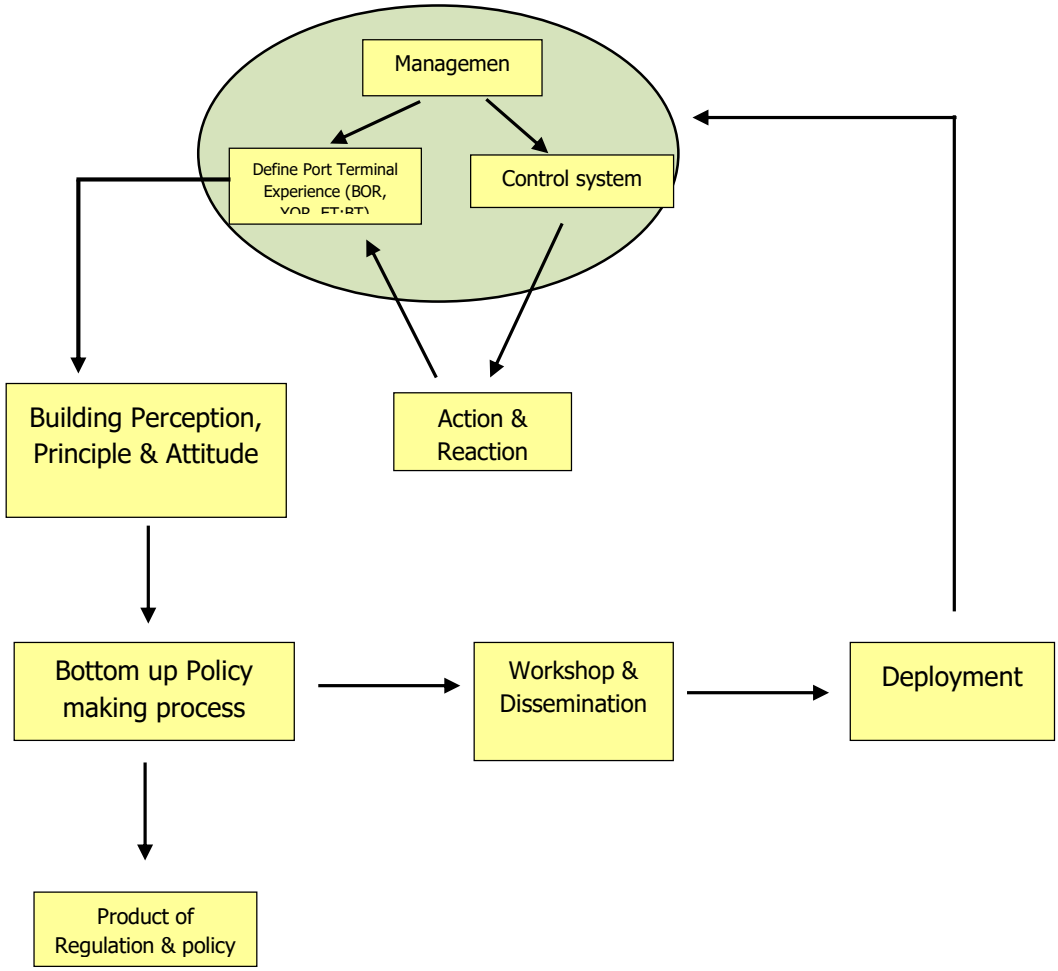

Figure 3. Experiential model of regulatory process and policy framework

4. CONCLUSION

After calculating and analyzing the data obtained from PT. Container Terminal regarding the performance of operational services, the following conclusions can be drawn: 1) The operational service performance at the Palembang Container Terminal for the 2018 and 2019 BOR values exceeds the standard set by UNCTAD, which is 50%, which means that there is a need to improve services. 2) Average Yard Occupancy Ratio (YOR) and loading and unloading performance (Box/Crane/Hour) for 2018 and 2019 still meet the standard values suggested by the Directorate General of Sea Transportation in the Decree Number: UM.002/38/18/DPL-11for the Palembang area is the maximum. 3) The regulation regarding Operational Service Performance Standards from the Directorate General of Sea Transportation in Decree Number: UM.002/38/18/DJPL-11 which has not been fulfilled by the Boom Baru Container Terminal of Palembang is the Effective Ratio at the mooring (ET: BT) and the Berth value Occupancy Ratio (BOR) which is over capacity according to UNCTAD standards. Regulation in this case Kepmen number. UM.002/38/18/DJPL-11 has not provided a solution and strict

sanctions for things that violate these regulations, so one solution is to use an experiential model of regulatory process & policy framework.

5. REFERENCES

Buchari, Erika (2008), Coping With Problems Of Implementing Public Transport Routes In Palembang, Indonesia, *FSTPT Proceeding, Simposium FSTPT (Inter University Transport Study Forum) XI,* University of Diponegoro, Semarang, Indonesia.

Buchari, Erika et al (2002), Regulation as Control Measure of Public Transport Performance, *FSTPT Proceeding, Simposium FSTPT (Inter University Transport Study Forum) V,* University of Indonesian (UI), Jakarta, Indonesia.

Garrison, L., William, Levinson, M., David, (2006), *Transportation Experience-Policy*, *Planning and Development*, Oxford University Press, Oxford

Kementerian Perhubungan RI., 2011. *Standar Pelayanan Operasional Pelabuhan Keputusan Direktur Jenderal Perhubungan Laut Nomor UM.002/38/18/DJPL-11*. Jakarta: Kementerian Perhubungan RI.

Rahman, S. (2017). Analisa Kineja Pelayanan Terminal Peti Kemas Pelabuhan Ahmad Yani Ternate Terhadap Kepuasan Pelanggan. *SAINS Vol. XIII*, No.1.

Situmorang, M. A. (2015). Analisis Kapasitas Terminal Peti Kemas Pelabuhan Boom Baru Palembang. *The 18th FSTPT International Symposium, Unila, Bandar Lampung*, 5.

Triatmodjo, B. (2011). Analisis Kapasitas Pelayanan Terminal Peti Kemas Semarang. *Seminar Nasioal BMPTTSI Medan*, 1.

UNCTAD. (1983). *Manual on a Uniform System of Port Statistics and Performance Indicators*. Geneva