

The Factors Affecting Container Port Development for Regional Resilience (Case Study of Koja Container Terminal at Tanjung Priok Port)

Bambang Priyono^{1*}

¹Institut Transportasi dan Logistik Trisakti, Jakarta, Indonesia
Corresponding Author: bams.priyono@gmail.com

Abstract

Mode of the commodity transportation changes rapidly from general cargo to container due to technological advance that one finds it significant to develop the container terminal mainly viewed from regional and thus national stability. For that purpose, the writer selects a title of this thesis The Factors Affecting Container Port Development for Regional Resilience. In such a current technological advance, it requires International Standards of Container Transportation to enable ships of greater DWT to easily and safely call and do discharging and loading. The objectives of this research are : 1) To determine the factors effecting container port development; 2) To determine the alternatif ways to develop container port in Tanjung Priok, without disturbing the regional resilience. The method to be used is Analytical Hierarchy Process (AHP). The results are : 1) The factors affecting : Port authority 35%; Exportir & Importir 26,8%; Invironmental group 19,5% Population sorrounding 10,7%; The user of the road leading to the port 8,1%. 2) Alternative development without disturbing regional resilience are: Development by stage 52,2 %; Drastically development 33,9%; Status Quo 13,9 %.

Keywords: Container terminal development, Analytical Hierarchy Process

Introduction

In the construction of this port, only using social and economic aspects with other aspects that are conducive to development today is no longer necessary. The Tanjung Priok Port which includes several ports is a conventional port, Samudera, Nusantara conventional port, the port of the Container Terminal and the passenger terminal port.

The container port consists of container handling, namely JICT I and JICT II and Koja Terminal Container. It is from these ports that we will focus on discussing the Koja container terminal. Given the trade patterns from general cargo to container are quite significant and the extent of the port problem. (Case Study of Koja Container Terminal at Tanjung Priok Port.

National Resilience is a dynamic condition which is an integration of the conditions of life of the nation and state, because every aspect of life has a relationship that is interrelated with other survival. (according to the TNI Admiral (Purn) F.M Parapat, national defense political strategy). Activities related to other goods related to other goods, transportation trends and privatization have encouraged ports to have development.

Problem Formulation

1. What groups have an interest in the development of the Koja container terminal in Tanjung Priok, as well as how much weight each interest.
2. How to determine the alternative development of the Koja container terminal in the Tanjung Priok area in terms of regional resilience.

Research objectives and benefits

Research purposes

1. To analyze the interest groups and determine the weight of their influence on the development of the Koja container terminal at Tanjung Priok Port..
2. Determine the alternative development of the Koja container terminal in the Tanjung Priok area.

Benefits of research

1. Central Government / DITJENHUBLA, Tanjung Priok Port Authority and PELINDO II Tanjung Priok Branch in planning and developing container ports, mainly reviewing regional resilience.
2. City / District Governments to address port development in order to increase regional resilience and national resilience.
3. For science as a contribution to complex decision-making applications can be analyzed using the Analitical Hierarchy Process (AHP) method.

Scope and methodology of the study

The scope of research

Limited to the development of the Koja container terminal in the location of the Tanjung Priok port in the Tanjung Priok region Interested groups are limited to those who have a direct interest in the development of container ports in Tanjung Priok port.

1. Research Methodology

This study uses the Analytical Hierarchy Process (AHP) method with Goal: Development of container ports. As the first hierarchy, parties / groups are placed who have an interest in the development of container ports in the Tanjung Priok region. Then it needs to be arranged into the hierarchi, namely the criteria desired by each group. As an alternative development is determined by the choices available.

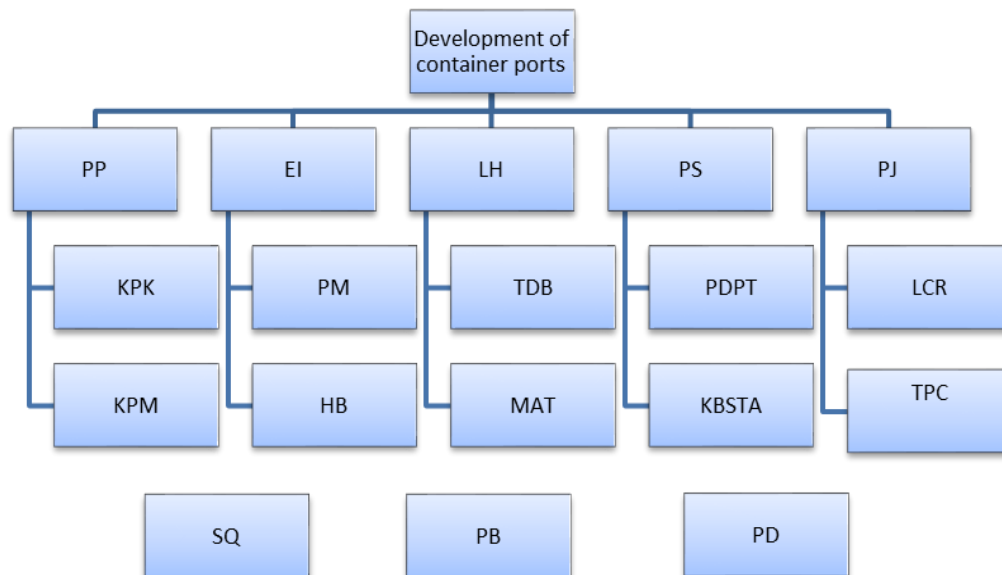


Chart structure of Analytical Hierarchy Process (AHP)

Information:

PP	Pengelola Pelabuhan (Port Manager)
SQ	Status Quo (Status quo)
EI	Eksportir/Importir (Exporter / Importer)
PB	Perkembangan Bertahap (Gradual Development)
LH	Lingkungan Hidup (Living environment)
PD	Perkembangan Drastis (Drastic Development)
PS	Penduduk Sekitar (Population Around)
TDB	Tidak Banjir (No Flood)
PJ	Pengguna jalan ke pelabuhan (User walks to the port of)
MAT	Mutu Air Tetap (Fixed Water Quality)
KPK	Keinginan Pemilik Kapal (The wishes of the ship owner)
PDPT	Pendapatan Tetap (Fixed Income)
KPM	Keinginan Pemilik Muatan (The Wish of the Owner of the Load)
BSTA	Kebisingan Tidak Ada (Noise Is Not Available)
PM	Produksi Meningkat (Production Increases)
LRC	Lancar (Current)
HB	Hinterland Berkembang (Hinterland Grows)
TPC	Tempat Parkir cukup (Parking space is enough)

2. Research locations, Populations and Samples

a. Research sites

The location of the study was in the port of Tanjung Priok container terminal of the Koja container

b. Population and Sample

The population in this study are port managers, export / import entrepreneurs, environmental experts, communities around the Tanjung Priok area and road users to the port.

The number of representative samples was determined by 10 people (10 respondents) consisting of:

- 2 (two) people from the port management group
- 2 (two) people from the group of importers and exporters
- 2 (two) people from environmental groups
- 2 (two) people from the surrounding population group
- 2 (two) people from port users.

All respondents, according to the author, are well aware of the development of container ports and can represent their groups and represent them.

3. Engineering data collection

- a. Literature study Secondary data (statistics and monographs, SIMOPEL)
- b. Interviews to find out about the main issues in accordance with the results of their observations and views on the factors that influence the development of container ports in order to increase the resilience of the region.
- c. Questioner, this method is used to obtain data from respondents who know about port development and representation.

Data Analysis Method

Data analysis method uses Analytical Hierarchy Process (AHP).

Analytical Hierarchy Process (AHP) is one of the tools commonly used in the decision-making process of a problem that has a relationship between its components in a very complex system using the Analytical Hierarchy Process (AHP) method, because this method:

1. Is an analysis that can be used to understand the complexity of the system and can improve the quality of predictions in the decision-making process:
2. Designed to be able to rationally capture people's perceptions that are closely related to certain problems through procedures designed to arrive at a certain scale of preference among various alternative sets.

Thomas L. Saaty, a University of Pittsburgh mathematician in the United States, was the person who first developed the analytical technique in 1970.

The use of the AHP method is often used for decision making for planning, resource allocation, and prioritizing the strategies that players have in conflict situations (Saaty, 1993).

The AHP method has advantages in modeling unstructured problems in various fields including economic, social, and management. The strength of this analytical

technique is in its holistic design that uses logic, consideration of intuition and experience, quantitative data and qualitative preferences.

This method still has weaknesses because there is an element of subjectivity. To eliminate these weaknesses, in the selection process and the determination of the respondent must be appropriate, namely that the selected respondents must be appropriate and master their respective fields (capable) so that the information / data obtained has a high level of validity and accuracy.

The advantage of using this AHP method in the analysis of the decision making process is:

- A hierarchical system can be used to explain how priority changes at the top level will affect the priority of elements at the level below.
- The hierarchy system provides complete information on the structure and functions at a lower level and determines the factors that influence at a higher level.
- More efficient than looking at the system as a whole.
- More stable and flexible.

The factors that influence the successful application of the AHP method are how to manage irregular problems through the right hierarchy to arrive at decision making.

The most important stage of this method is the stage of judging comparison between factors at a hierarchical level, which is done by giving numerical or verbal weights based on the comparison of inter-factor pairs with one another. Analyze to determine which factors have the highest or lowest role to the upper level where the factor is located. Assessment is obtained through participants who will evaluate each set of factors in pairs with each other stating the importance of these factors at a higher level in the hierarchy that occurs. To assess the comparison of the level of importance of an element to other elements, a weighting comparative scale is based on the scale of the AHP process suggested by Saaty. (Saaty T.L, 1993) starting from weights 1 to 9, as in the following table:

Pairwise Scale Comparison in AHP

Intensity importance	Definition	Explanation
1	Both elements are equally important	The two contributing elements are the same as those properties
3	One element is slightly more important than the other	Experience & consideration strongly supports an element of the other elements
5	One element that is essential or very important than other elements	Experience & consideration strongly supports an element of the other elements.
7	One element is clearly more important than the other	One element that is strongly supported and dominant has been seen in practice.
9	An absolute element is more important than the other elements	Evidence supporting one element over another has the highest level of affirmation that might strengthen
2,4,6,8	The values are between two close considerations	Compromise is needed between two considerations
Opposite	If for activity i get one number compared to activity j, then j has the opposite value when compared to i	

Source: Saaty (1993)

Operational variable

1. Independent variable

Port manager

For this port management group, it consists of the criteria of the wishes of the ship owner and the desire of the cargo owner who has their respective weight in the assessment with an acceptable inconsistency ratio.

Exporters and Importers

For exporters and importers, this consists of higher production criteria and developing hinterland which have their respective weights in the assessment with an acceptable inconsistency ratio.

Living environment

For this environmental group consists of criteria for non-flooding and fixed water quality which have their respective weights in the assessment with an acceptable inconsistency ratio.

Residents around the port

For population groups around this port, there are no fixed income and noise criteria which have their own weight in the assessment with an acceptable inconsistency ratio.

Port road users

For this port road user group, it consists of current criteria and sufficient parking space that has their respective weights in the assessment with an acceptable inconsistency ratio.

2. Dependent variable

The development of container ports is a goal of the results of this study.

Theoretical and Thought Framework

A. Theoretical Framework

1. Theory About Wisdom Analysis

According to Thomas R. Dye: An attempt to find out what is really done by the government, why they do it, and what causes them to do it differently. (policy Analysis, University of Alabama Press, Alabama. 1976. p1).

2. National Strategy and Resilience Theory

- a. Strategy theory according to G. Kuypers: a choice from the road, through which a particular actor departs from a certain initial situation tries to achieve a certain final goal.

(Kuypers G. Grondbegrippen van Poletiek Het Spectrum Utrecht,1973).

- b. National Resilience Theory

The development of container terminal port facilities and infrastructure is as a means of development in achieving national goals and indirectly can strengthen national resilience in all aspects including economic, political, socio-cultural and defense aspects which are in accordance with their roles. Successful national development will certainly increase regional resilience and national resilience.

The territorial / regional resistance and national security of Indonesia is a means to realize national life and power.

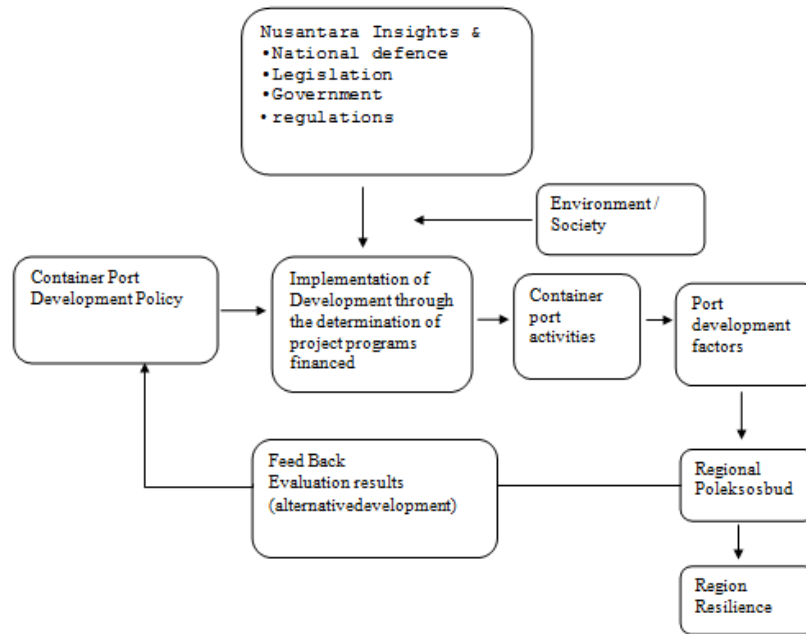
Wan Usman (1994) in his writing National Development with a resilience approach: Development is a process of increasing value added in all fields of life.

3. Container

The container in practice is crates made of metal from several sizes and types.

B. Previous thoughts and research

Mindset



In port development can not be separated from the existence of port development policies contained in the national transportation system (SISTRANAS), Law of the Republic of Indonesia Number 17 of 2008 concerning shipping. (Port according to its type consists of sea ports and river and lake ports).

DESCRIPTION OF TANJUNG PRIOK PORT AREA

The area of the Tanjung Priok port in the west until Koja is included in the village area of Tg. Priok, the middle part is the location of the Koja UTPK including the Koja village and the eastern part of the Kali Barau village. The area of North Jakarta has an area of 7,133.51 km².

The area of Tgok, which is estimated to be affected by the development of the port, is 15.74 km², Warakas village, Tg. Priok village, Kebon Bawang village, Lagoa village, Koja village, Kalibaru village.

.Overview of containers from Gedebage

The container from Gede Bage was transported by train to Pasoso 3s / d5 series per day and the series volume of 34 Teu's and from Pasoso using head truck chassis directly taken to the container terminal to be loaded onto the ship.

Overview of the container from Priok to Merak

Cotainer distribution from Tg. Priok to Merak 1.9%

Macro depictions of container depots.

Total 22 container depots outside the port.

Big picture of road and class road.

The heaviest axial load load strength (MST) is 10 tons.

Macro description of sea transportation support companies.

The loading and unloading company of DKI 195 limited company, 26 West Java limited companies, the shipping company of DKI 294 cargo ship company, West Java 25 companies. Management of transportation services DKI 1,288 companies, West Java 4 companies.

Macro loading / unloading per shipping line image.

18 foreign companies, 17 national companies, a total of 35 shipping companies.

Description of Bojonegara Port.

Built as a buffer for the Tanjung Priok port.

Method

This study uses the Analytical Hierarchy Process (AHP) method with Goal: Development of container ports. As the first hierarchy, the parties / groups that are interested in the development of container ports in the Tanjung Priok region are placed. Then it is necessary to arrange hierarchy into the criteria desired by each group. As an alternative development is determined by the choices available.

A. Description and Analysis of Research Results

1. Location of the research area

The study was conducted at the Koja Container Port located in the Tanjung Priok port of DKI Jakarta Province, which is geographically located in the North Jakarta Mayor area.

2. Identity of respondents

Respondents are port managers, export / import entrepreneurs, environmental experts, communities around the Tanjung Priok area and road users to the port that can be representative and representative.

Respondent's identity is a person who knows overall about port development that can represent the existing and representative population.

3. Implementation of container transportation

In the implementation of container transportation, it is strongly influenced by ship owners and cargo owners so that the port manager in the development of Tanjung Priok container port is very concerned about it. Access roads to container ports are considered for alternative roads so that container transport to the destination can be transported smoothly.

4. Respondents' opinions regarding the main issues in accordance with the results of observations and views on the factors that influence development in order to increase regional resilience.

A. Analysis of Research Results

From the representative respondents 'data and respondents' opinions about the development of container ports, an analysis of the results of the research was presented using the Process Hierarchy Analysis (AHP).

Integrated calculation sheet that has approval of decisions with aspects of port development. (Tally for synthesis of leaf nodes with respect to goal).

Integrated priority weights with weights:

Level I

PP priority weight value 0.35 or 35%
EI value of priority weight 0.268 or 26.8%
LH priority weight value is 0.195 or 19.5%
PS the priority weight value is 0.107 or 10.7%
PJ is the priority weight value of 0.081 or 8.1%

Level II

KPK values priority weight 0.175 or 17.5%
KPM priority weight value of 0.175 or 17.5%
PM priority weight values of 0.184 or 18.4%
HB 0.084 or 8.4% priority weight value
TDB value of priority weight 0.151 or 15.1%
MAT value of priority weight 0.043 or 4.3%
PDPT priority weight value of 0.060 or 6.0%
KBSTA value of priority weight 0.046 or 4.6%
LCR value of priority weight 0.068 or 6.8%
TPC value of priority weight 0.014 or 1.4%

Level III

For each alternative:

- If the PP and KPK as a reference weighting priority value is a gradual development with a value of 0.11 or 11%
- If the PP and KPM as a reference for priority weighting are gradual development with a value of 0.091 or 9.1%
- If EI and PM as a reference weight priority is a gradual development with a weight value of 0.087 or 8.7%
- If the EI and HB as a reference weighting priority is a drastic development with a weight value of 0.039 or 3.9%

- If the LH and TDB as a reference weight priority is a gradual development with a weight value of 0.082 or 8.2%
- If LH and MAT as a reference weight priority is a gradual development with a weight value of 0.023 or 2.3%
- If PS and PDPT as reference weighting priority are gradual developments with a value of 0.032 or 3.2%
- If the PS and KBSTA as a reference weighting priority is a gradual development with a value of 0.024 or 2.4%
- If PJ and LCR as a reference weight priority is a gradual development with a weight value of 0.033 or 3.3%
- If PJ and TPC as a reference the priority weight value is a gradual development with a weight value of 0.005 or 0.5%

A. Implications for regional / regional security

Overview of the Influence of Political Aspects

It must be seen that domestic and foreign politics, in the country of political and state life are able to absorb aspirations and can encourage public participation in a system. Foreign policy, one of the achievements of national interests in the relationship between nations.

Resilience to political aspects

As a dynamic condition of the nation's political life which contains tenacity, resilience in facing and overcoming challenges, threats, obstacles and disturbances that come from outside and from within directly or indirectly to ensure the political survival of the nation and state.

Current conditions of regional communities

The community is the port area of TG. The province is increasingly diverse so it needs to be understood by the port management and government officials.

Traffic and noise disruption considering the number of vehicles in and out of the port is quite dense.

Dispute

Every case in the community of service users or the desires of the ship owner and the wishes of the owner of the cargo and the community of the port environment are settled legally.

Economic review

Economic conditions that continue to change as a result of changes in transportation technology are not always friendly to the business world.

Important issues in the macro economy in general are national income, interest rates, unemployment rates, inflation, balance of payments, international trade.

Aspects of violations of government law and macro economy

Container economy

Container transportation continues to increase so that it has a large contribution to national economic growth.

Exporters and importers have an influence on containers

The amount of export and import charges is very influential on containers, because containers can load and transport all types of industrial and agrarian products and create a load capacity that is quite high in volume and can be transported quickly.

The percentage of containers for foreign businesses is global and about the capital invested

The investment in the container terminal is Grosbeak Pte Ltd 51%, PT. PELINDO II 48.9% and Kopegmar 0.1%.

Economic resilience

The living conditions of the regional economy that support the ability to maintain healthy and dynamic economic stability and the ability to create regional economic independence with high competitiveness and realize fair and equitable prosperity.

Requirements for the creation of good economic resilience are as follows: Guaranteed security, political stability and legal certainty, equitable income, high economic growth, suppressed inflation rates and monetary stability, the rupiah exchange rate is stable.

As a result of the regional economic conditions as follows: The realization of the container terminal is due to the guarantee of security, political stability and the existence of legal certainty. This changes and equalizes the economy of society, can generate new businesses for the surrounding population, increase income, reduce unemployment.

Economic aspects

The port environment community is influenced by the community, especially the exporters and importers group, weighing 26.8% as developing service users.

Socio-cultural review

The surrounding population has an important role in port development with an assessment weight of 10.7%.

Socio-cultural resilience

The condition of the nation's socio-cultural life is imbued with a national personality based on the ability to form and develop the social life of humans and the Indonesian people who are faithful and devoted to God Almighty.

Socio-cultural aspects

Container terminal development affects the development of technology in Indonesia through port technology transfer and transportation from seconded foreign workers.

Security Review

Conditions that can be felt by society where there is a sense of tranquility, a sense of order, a sense of safety and a sense of ability to hold defenses The difference is the increase in security before and after the container

Security before container

Security has not been equipped with modern equipment. With the security container as follows: Security is coordinated between the port manager and the relevant authorities.

Security inside and outside of the Koja container

Inside the port, officers are equipped with operational facilities so that the container terminal can operate properly with services in accordance with existing conditions.

Security outside the Koja container

Directly under the responsibility of the Governor of DKI Jakarta Province which is distributed to the regions of Central Jakarta, North, South, East.

Welfare of workers who work before the container is available

Workers are not equipped with modern equipment and have not received attention about the feasibility of housing and reasonable wages.

Welfare of workers who work after the container

Using modern equipment, so that the workforce is demanded for professionals by providing trainings which in turn improve welfare.

Security aspect

Terminal development will guarantee more smooth and play a role in increasing security for the general public and service users.

Community life around the port regarding welfare and security before container

Religious activities are going well and the condition of the community feels safe and prosperous with the existence of a port, because the port contributes significantly to the community around the port.

Community life around the harbor regarding welfare and security after containers

Religious activities run smoothly, with the development of containers followed by the development of other facilities, so that professional workers are needed by conducting trainings that can improve the quality of human resources and increase income.

Discussion and Result

1. Bearing in mind that those who have an interest in this port are port managers + exporters / importers, then in the development it is suggested that both parties consider / carry out the financing concepts.
2. Those who are interested in wanting a gradual development for the development of Tanjung Priok container ports.

Discussion and Result

1. Bearing in mind that those who have an interest in this port are port managers + exporters / importers, then in the development it is suggested that both parties consider / carry out the financing concepts.
2. Those who are interested in wanting a gradual development for the development of Tanjung Priok container ports.

Conclusion

From the results of the research at the Koja container terminal, it can be concluded that the development of container terminal ports by interested groups from the factors that influence it is described as follows:

1. The group that has an interest in the development of the Koja container port in Tanjung Priok port is,

- 1.1. Port manager with a weight of 35%
- 1.2. Exporters and importers with a weight of 26.8%
- 1.3. Environment with a weight of 19.5%
- 1.4. Residents around with a weight of 10.7%
- 1.5. Port road users with a weight of 8.1%

It seems that the most interested is the Port Manager, because they are responsible for the traffic of goods on the port.

The second is the expatriates and importers considering the safety of their goods.

2. The alternative development of container ports is:

- 2.1. Gradual development with a weight of 52.25%
- 2.2. Drastic development with a weight of 33.9%
- 2.3. Status Quo with a priority weight of 13.9%

From the alternatives mentioned, for strategy assessment according to priority is a gradual development strategy with a weight value of 52.2%, this is very possible for companies, especially PT. (Persero) Pelabuhan Indonesia II to develop a focus on welfare and security for the Tanjung Priok community so as to create regional resilience which in turn will reach national security

References

- A.W. Solichin, Pengantar Analisis Kebijakan Negara, Jakarta, Rineka cipta, 1990.
- Albert G.Oleona, Reformasi Serikat Buruh, Bogor, CV.Restu Ratu Rosari
- B.Horton Paul,L.Hunt Chester, Sosiologi, 1996

- Biro Hukum dan organisasi Kementerian Perhubungan, PP 61 tahun 2009 tentang kepelabuhanan.
- BH.Liddell Hart, *Strategi*, 2 drev ed, New York Praeger, 1972
- Biro Pusat Statistik, kecamatan Tanjung.Priok dalam angka 1999
- Biro Pusat Statistik, kecamatan Koja dalam angka 1999
- Biro Pusat Statistik, kecamatan Cilincing dalam angka 1999
- Cunningham,G, *Policy and Prakte*,public dministration,41, 1963
- Departemen Perhubungan, *profil transportasi Indonesia* 1995.
- DITJENHUBLA, Data penunjang Angkutan Laut, Jakarta,2000.
- Dye,Thomas R,*Policy Analysis*, University of Alabama Press, Alabama, 1976.
- De Kerchove Rene, *International Maritem Dictionary* 2 nd Edition, 1961.
- Easton, David, *The Political System*, Knopf, New York, 1953.
- Friend,JK,JM. Power and C.J.L Yewlett, *Pablic Planning: The Inter Corporate Dimension*, Tavistock, London,1974.
- G.Oleona Albert, Reformasi serikat buruh, lembaga gelekak lepo tanah, CV.Restu Ratu Rosari,Bogor,2003.
- Heclo, H, Review Article: *Police Analysis*, *Britis Journal of Political Science*,2 (1972).
- Irawan dan Suparmoko,M, *Ekonomika Pembangunan*, BPFE Yogyakarta,2002.
- Jenkins, W.I *Police Analysis: A Political and Organizational Perspective*, ST. Martin's Press, New York, 1978.
- Kramadibrata Soejono, Pengembangan Pelabuhan Tanjung Priok, merencana, merancang pelabuhan , Jakarta, Soekra, 1981.
- Litbang Departemen Perhubungan, Pengembangan Sistem Transportasi Indonesia yang mampu bersaing secara Internasional, Jakarta, Litbang Departemen Perhubungan, 1999.
- Nasution.S. *Methode Research*, Jakarta,2001.

- Nasution, Manajemen Transportasi, Jakarta, 1996.
- Noer, Delier, Pengantar Pemikiran Politik, CV. Rajawali, Jakarta, 1983.
- Parapat F.M, Strategi Nasional, Politik pertahanan keamanan, Bacaan terpilih perencanaan pembangunan dengan pendekatan ketahanan nasional.
- PSPI Partai Bulan Bintang, Tanjung Priok berdarah, Jakarta, Gema Insani Press, 1998.
- P, Siagian Sondang, Keputusan strategik yang bersifat multidimensional, Manajemen Strategik, 1988.
- Pelabuhan Indonesia II, Tinjau ulang rencana induk pengembangan pelabuhan Tanjung Priok, 1993.
- PELINDO II, Laporan Tahunan, 2000.
- SAATY Thomas, *The Analytic Hierarchy Process*, 1980
- Siregar, Muchtarudin, Beberapa Masalah Ekonomi dan Manajemen pengangkutan, 1990.
- Soenardi RM, Teori Ketahanan Nasional, 1994.
- Syahril Bosse, Pengelolaan Pelabuhan di Indonesia, 2001.
- UNTAD, *Port Development Handbook*, 2000.
- Use of Maritime Transport, *A Guide For Shippers, Freight Forwarders and ship operators*, Volume 2, United Nations, 1980.
- W.H. Riker, *The theory of political coalitions*, New Haven, 1962.
- Woodward, Frank H, *Managing the Transport Service Function*, 2 nd Edition, Grower, 1980.
- Zulyani Hidayah, Ensiklopedi Suku Bangsa di Indonesia , Jakarta PT.Pustaka LP3ES, 1997.