Survey Methode and Subsidies Investigation For Freight Transport at 3T Region

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Strengthening Rural Economy (11)

Abstract

The price deferences of staple and essential goods at underdeveloped, outer and frontier regions, or we call as 3T area, commonly high enough. In order to price stabilizing, and reducing the differenciation among that area, the government has reponsibility to provide transportation cost from and to that area.
Through supply chain approach, trajectori analysis, LQ economic base analysis, and VOC analysis can be developed a survey and investigation method for staple and essential goods transportation from and to 3T area. In the case of rice transportation from Jayapura to Sarmi, the subsidies can be gave in the form: reducing save time in warehouse, reducing VOC, reducing travel time, or another type of subsidies, which can be conversion base on travel time preference (Rp/Hour) or travel distance preference (Rp/Km) to reduce the highly of price disparity, between 3T area with it's capital city.

Keywords
Staple and essential goods; disparity; supply chain; VOC; subsidies

1. Introduction

The price deferences of staple and essential goods at underdeveloped, outer and frontier regions, that is the area exist at the border between country with the other region, or we ordinary call it as 3T area, commonly high enough.

Government has responsibility to stabilize the price and reducing gap among that region. So that the government has responsibility to provide subsidies for transportation cost from and to that 3T region (underdeveloped, outer and frontier regions).

The problem is how to determine the ammount of transportation cost subsidies, considering so many variation the location of the underdeveloped, outer and frontier regions, and also many variation of goods type which they consume, and or producing by that 3T area. The next problem is, what methode is right to use for determine the ammount subsidies of that transportation cost, and what survey and investigation look like right to do, to answer the determining problem on that transportation cost.

1.1 Research Objectives

This research objectives is:

- Getting a simple methode which can use to determine the ammount or form of transportation cost subsidies for 3T region. It become consider handling on the operation of freight

transportation volunteer to reduce the disparity cost of the price of the staple goods and importance,

- To determine data survey and investigation methode which needs collected as calculation material for preparing transportation cost subsidies in that 3 T region.

2. Literatur Review

All this time supporting to 3T region commonly look like subsidies to passanger transportation, none subsidies for freight transportation, it cause why the price deferences of staple and essential goods at 3T region is very high comparing to the price at the origin goods region. To develope how survey and investigation freight transport methode to 3T region should be done, formerly needs understanding how to determine the selling price, what is the elemen of transportation have to consider, what is freight transport, what is the relationship between transportation management and goods distribution, and what it's function. One of approach can be used to develope methode for survey and investigation freight transport is "Supply Chain" model, which will discuss after all of us understanding the function of transportation management and goods distribution.

2.1 Determining selling price

Basically there are 4 type aim in determine price, that is:

1. Profit oriented, where are each company always choose price which will give highest profitability, or often call as "maximizing profit"
2. Volume oriented, where are the price determining in such a way can reach certain level of selling volume, selling value or certain market share.
3. Image oriented, where are the certain price determining can form company image, for example determining higher price will forming presticous company image, meanwhile determining lower price allows to keep certain value of the company (to keep the lowest price at a region).
4. Price stability oriented, this case done to maintain stabilize relationship between a company and the industrial leader.

2.2 Transportation element

Transportation has five elements:

1. Man: men have role as subject or perpetrators, at once as object of transportation which will make use of transportation mode to do activitation.
2. Goods: goods become transportation object, goods delivery to some place for market reason needs transportation mode, not only for marketing but also for traffic mobility intended to increase people welfare.
3. Vehicle: vehicle as tool or transportation mode has important role to delivery and moving object of transportation from one place to another.

4. Way: way is an important element in transportation. Way become path where the transportation mode pass through. Way will connect one place to anothers smoothing transportation process and mobility.
5. Organization: a system must needs an organization to manage and working to guarantee that system will good work.

2.3 Freight transport

The mean of freight transport more or less same with "material handling" that is activation of lift, load, and placing goods using transportation tools. In relation with freight transport, there is 3 parties involved, that its:

1. The sender
2. The receiver, including warehouse, and
3. The deliver

Switching or moving that goods can be:

- From warehouse (stock) which own by seller, to the warehaouse place pointed by buyer
- From fabric where is goods produced to warehouse or place pointed by buyer.
- From warehouse or agriculture and plantation area where is goods (agriculture product) has produced.
- From mining location (mine material) to warehouse where the fabric placed needs that mine material for raw material.

2.4 Transportation management

According to Siregar (1990:3), "transportation means as haul process or carry out things from one place to another place". Transportation used to make easier people in daily activation. By that definition can be conclusion that transportation activation will occure when fullfill some condition as like: goods will be load, availability of adequate conveyance and there way facilities which pass through. Transportation management is an effort to reach certainty aim by produce transportation services by transport company in such a way, so by tarif applied can fullfill public interest.

Commonly the transportation management as Nasution (1996:30) mention, facing three main duties:

1. Creating plan and programe to reach whole company vision and mission
2. Improving productivity and company performance
3. Social impact and social responsibility in transportation operation.

General problem of transportation management is how to optimalize transportation capacity. Transportation capacity is the ability of transport tool to move goods from one place to certain other place. The elements of transportation capacity as Abbas Salim (1993:10) said "composed by weight and charge, distance has taken, time to be needed".

2.5 Transportation management and goods distribution

Distribution is a activation to move product from supplier to consumer in a supply chain. Distribution is a key of profit which company will get, because the direct distribution will

influence the cost of supply chain in consumer demand. The sharp distribution network can be used to reach any aim of supply chain. Start from lower cost till higher respon of consumer demand (Chopra, 2010).
Transportation is a product movement from one location to another, which representation by begining chain of supply chain till consumer. Transportation is very important cause a scare product which will produce and used in the same location (Chopra, 2010).
According to Nyoman (2005,p.173), transportation management from distribution is activity processing movement a product from one location to another location, where that movement

usualy forming or produce a network. In many product, the role of distribution and transportation network is very vitaly. This distribution and transportation network make posibility to move from location where there are produced to the consumer location, which often constrained by longest distance. The ability to deliver product to consumer in sharping time and appropriate ammount and in good condition will determined what that product at the end will become competitive at market or not.
The ability to manage distribution network at this time is a component of advantage, competitive component which very important for many industries.

2.6 Basic function of Transportation Management

Some of company uses term Logistic Management, and the other uses term Physical Distribution. This principle function aim to create higher services for consumer, which can be seen by Level of Services has reach, speed delivery. Perfection goods till to consumer hands, and satisfied after sales of services. Transportation and distribution activity can be done by manufacture company with forming distribution/ transportation division itself or submitted to the third parties. As effort to fullfill the above aims, distribution and transportation management usualy do basic function as like:

1. To do segmentation and determine level of services target
2. Determining transportation mode which will uses
3. To do information consolidation and delivery
4. To do schedulling and determining delivery route
5. Inventory (storage)

2.7 Supply chain model for staple and essential goods

Supply chain, logistic network, or supply network is a coordinate system consist organization, human resources, activity, information, other resources, which involve together on moving a product or services, right in physical form or virtual from supplier to cunsumer.
The main objective of supply chain management is fullfill consumer demand through uses most efficient source, including capacity distribution, stock, and human resource.
Supply chain can be done by survey investigation at some place which become collectors or first aim of staple and essential goods, as like:

- Central market

Central market, basicaly is entering place or first aim of staple goods before redistribute again to other micro trader. Through central market we can investigate flow pattern of goods, where is the origin of that staple goods coming.

- Source of goods (producer)
  Supply chain can be identified by investigate to the source of goods or place where that goods has produced, by asking delivery distribution all this time has done.

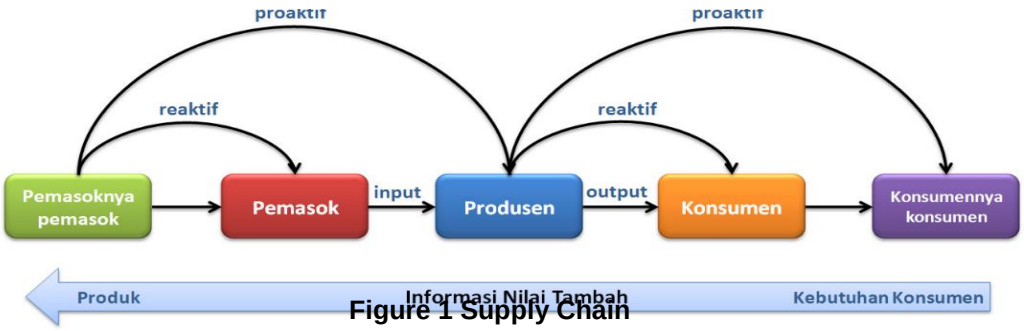

Figure 1 Supply Chain

There is four main activities in supply chain, that is Plan, Source, Make/ assemble, and deliver (Gunasekaran et al, 2004:344), and Klapper et al (1999:3-4) mention that fourth activities as Function, whose own definition as:

- Plan : a process of balancing agregat demand and offering to build the best way of action to fullfill the rule of business what has determine.
- Source : a process of procurement goods to fullfill planned demand or actual.
- Make : a process of changing goods to finishing stage to fullfill planned demand or actual.
- Deliver : a process of providing finished goods and services, including booking management, transportation management and warehouse management, to fullfill planned demand or actual.

3.Metodologi

In this research, the approache which try to do is Supply Chain approache in transportation management and goods distribution, where transportation is an activity chain moving goods/ man from origin place to destination place uses transportation mode. Diagram for this approache can be drawn in framework as can be seen in Figure 2.
It necessary to understood that 3T region not always consumtive area, sometimes is productive area too, but it's production can not be taken out cause the transport cost very expensive. Cause of it has to test first, what that 3T region is productive or consumtive area, one of the ways by LQ methode. If that region is a productive area need to be noticed is collection chain, in vice versa if that region is a consumtive area need to noticed more to distribution chain.

3.1 Determine collection goods or distribution goods

To determine characteristic of supplied goods is collection or distribution goods uses base economic analysis methode LQ (Loqation Quotient). LQ used to knowing the ability of the

regions in primary goods production. Apart of that analysis is used to predict eksport and import flow of primary goods that region. LQ methode which used refere to formulation by Arsyad (1999).

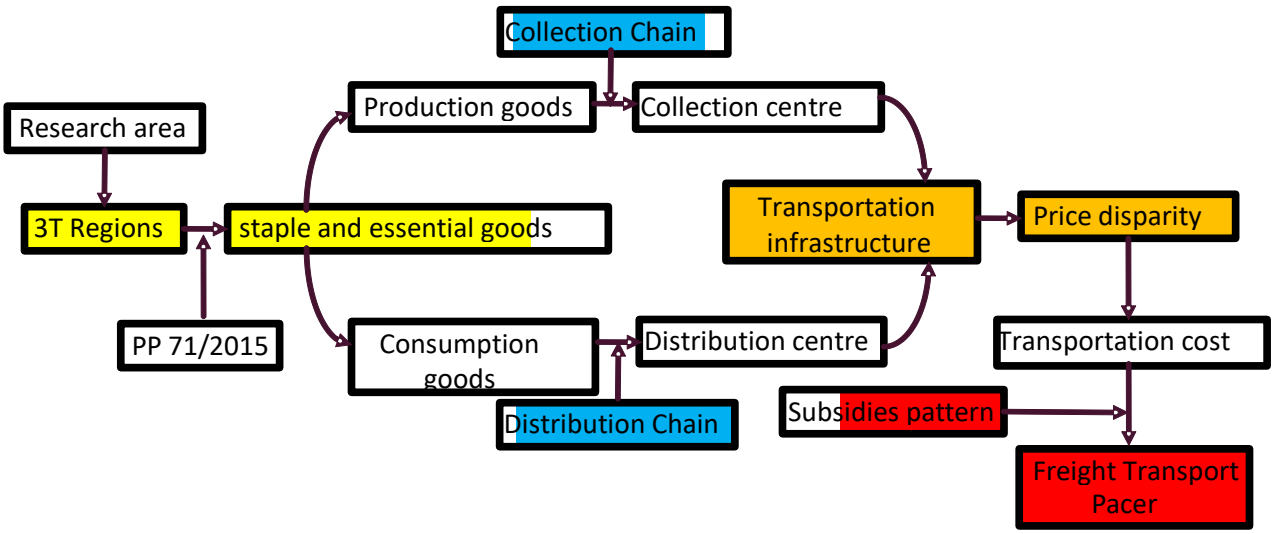

Figure 2 Framework

LQ = (Si/Ni) /(S/N).....(1)

Where:

- Si = Ammount production commodity -i at kabupaten
- Ni = Total production commodity-i at province
- S = Ammount production all commodities at kabupaten
- N = Ammount production all commodities at province
- LQ > 1 means growth sector (i) that kabupaten more than growth same sector at province.
- LQ = 1 means growth sector (i) that kabupaten same with growth same sector at province.
- LQ < 1 means that sector is not superior for this area, and not potential to develope as economic driven that economic area.

Furthermore, survey methode and investigation which developed in this research follow up the plot as sawn at Figure 3.

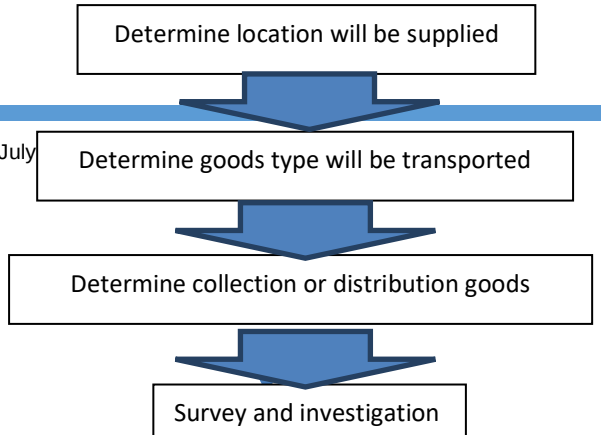

Figure 3 Survey and Investigation Subsidies for Freight Transportation

4. Result and Discuss

4.1 Determine location

Determine location will be supplied, in this case is 3T region base on decree PPN BAPPENAS, number 2421/Dt.7.2/04/2015 which there is 122 kabupaten as underdeveloped, and 43 regions outer and frontier. Base on that decree, at Papua Province there is 26 kabupaten (of 29 kabupaten) classified as 3T regions, meanwhile for West Papua Province there is 8 kabupaten (of 13 kabupaten) classified as 3T regions.

4.2 Determine type of goods

To determie type of goods will be tranported, in this case is Staple and Essential goods type base on Peraturan Presiden Nomor 71 Tahun 2015 about Penetapan dan Penyimpanan Barang Kebutuhan Pokok dan dan Barang Penting (Determine and storage Staple and Essential goods).
The government has determine type of Staple and Essential goods as like:

1. Type of staple goods

a. Staple goods as agriculture product: 1) Rice; 2) Soyabeans source for tahu and tempe; 3) Chili; 4) Red onion.
b. Staple goods as industrial product:1) Sugar; 2) Cooking oil; 3) Wheat flour
c. Staple goods as farming and fishery product:1) Beef; 2) Chicken meat; 3) Chicken egg; 4) Fresh milkfish, mackerel and mackerel tuna.

2. Type of essential goods:1) Seed of padi, corn, and soyabeans; 2) Fertilizer; 3) LPG Gas 3Kg; 4) Triplex; 5) Cement; 6) Iron steel for construction; 7) Light steel.

4.3 Determine of collection or distribution goods

To determine characteristic of supplied goods is collection goods or distribution goods, uses economic base analysist methode LQ (*location Quotient*). For example can be seen at Table - 1, where is rice become to staple trading goods (distributed) between Kota Jayapura and Sarmi.

4.4 Disparity investigation of goods price

Disparity investigation of goods price deed by price comparison analysist between origin region and destination region. For example is the result transportation of staple goods or essential goods between Jayapura – Sarmi can be seen at Table-1.

Table 1 Price comparison of staple goods between Kota Jayapura and Sarmi

No	Type of goods	Price at the Province capital city (Jayapura)	Unit	Price at under developed Region (Sarmi)	Price disparity
Staple goods as agriculture product					
1	Rice	13.000	Rp/kg	17.000	4.000
2	Soyabeans source for tahu and tempe	3.500	Rp/kg	5.000	1.500
3	Chili	80.000	Rp/kg	92.000	12.000
4	Red onion	40.000	Rp/kg	60.000	20.000
Staple goods as industrial product					
1	Sugar;	12.000	Rp/kg	18.000	6.000
2	Cooking oil	13.000	Rp/kg	16.000	3.000
3	Wheat flour	9.000	Rp/kg	12.000	3.000
Staple goods as farming and fishery product					
1	Beef	130.000	Rp/kg	170.000	40.000
2	Chicken meat	25.000	Rp/kg	35.000	10.000
3	Chicken egg	27.500	Rp/kg	35.000	7.500
4	Fresh milkfish, mackerel and mackerel tuna	80.000 - 150000	Rp/kg	80.000 - 150000	
Type of essential goods					
	Seed of padi	13.000	Rp/kg	15.000	2.000
1	Seed of corn	60.000	Rp/kg	66.000	6.000
	Seed of soyabeans	12.000	Rp/kg	14.000	2.000
2	Fertilizer (Subsidies)	235.000	Rp/50kg	235.000	0
3	LPG Gas 3Kg	-	Rp/tabung	-	-

4	Triplex	61.000	Rp/sheet	68.000	7.000
5	Cement	90.000	Rp/zak/50 kg	115.000	25.000
6	Iron steel for construction (Diameter 6 mm)	35.000	Rp/buah	40.000	5.000
7	Light steel (Lenght 6 m)	200.000	Rp/buah	220.000	20.000

Source: Survey result, 2017.

4.4 Trajectory Survey (Time-space Diagram)

Table 2 Result of Trajectory Survey Rice Transported between Jayapura-Sarmi

No	Origin – Destination	Price at the Province capital city (Jayapura) (Rp)	Price at under developed Region (Sarmi) (Rp)	Time (Hours)	Distance (Km)
1	Ship – Port warehouse	Rp13.000	Rp17.000	0,3	0
2	Stay at Port warehouse			24,3	0
3	Port of Jayapura - Warehouse (Distributor)			24,75	6,6
4	Warehouse - Stop 1 (Distrik Bonggo Timur)			28,3	139,6
5	Stop 1 (Distrik Bonggo Timur) - Kabupaten Sarmi (Distrik Sarmi)			30,3	223,6

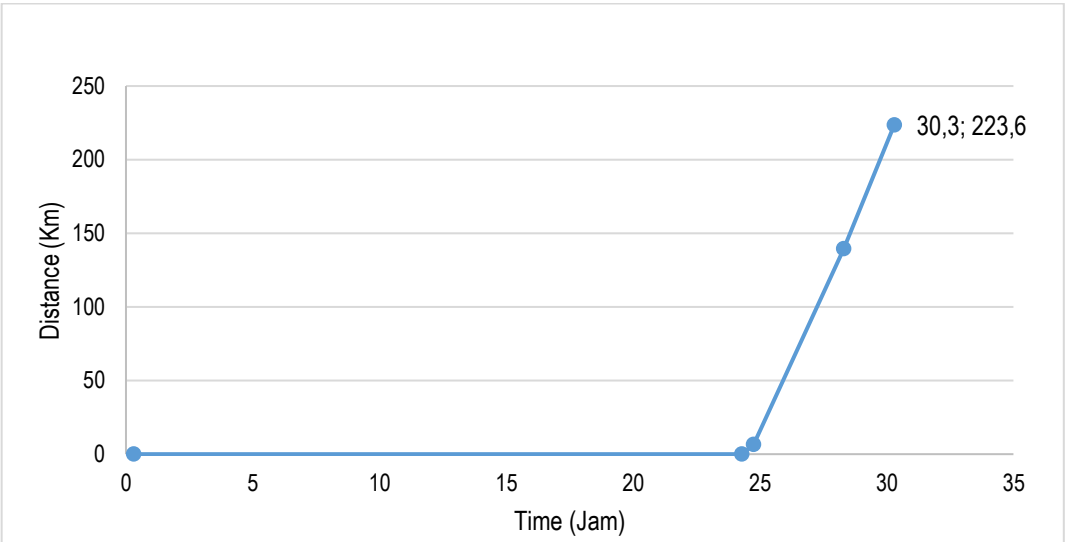

Figure 4 Rice Trajectory Jayapura - Sarmi

Time at warehouse : 24 hours
Travel time : 6,3 hours
Mileage : 223,6 Km
Price gap : 4.000 Rp/Kg

VOC : 1.500 Rp/Kg

4.5 Vehicle Operating Cost Investigation (VOC)

Vehicle Operating Cost (VOC) usualy used as determination base for trasnportation services tarif. Transportation tarif level based on services cost consist direct cost and indirect cost. Vehicle Operating Cost is expenditured cost to operate vehicle. Vehicle Operating Cost influenced by various conditions as like: road physical, geometric, pavement type, operating speed, and various vehicle type. Important variable which influencing calculation result of Vehicle Operating Cost is direct cost, indirect cost, overhead cost, unpredictable expenditure, and profit for vehicle owner.

Table 2 VOC calculation between Jayapura – Sarmi

No	Details of Cost Component	Cost Component /Year	Length of way (Km)	Way length/year (312 work days) (Km)	Way length/ 5 years (1.560 work days) (Km)	Cost detail /Km (5 years) (Rp/Km)	Precentage (%)
	Direct cost						
1	Amortization cost of vehicle at Papua Province	90.000.000	174	54.288	271.440	331,56	20,307
2	Crew cost of vehicle	50.402.796	174	54.288	271.440	185,69	11,373
3	Fuel cost	34.947.900	174	54.288	271.440	128,75	7,886
4	Tyre cost	26.838.948	174	54.288	271.440	98,88	6,056
5	Maintenance cost /year	2.500.000	174	54.288	271.440	9,21	0,564
6	Great Services/ year	25.449.400	174	54.288	271.440	93,76	5,742
7	Little Services/ year	1.523.321	174	54.288	271.440	5,61	0,344
8	Machine sparepart & Body repair/ year	73.214.755	174	54.288	271.440	269,73	16,520
9	Cost of vehicle washes/ year	9.360.000	174	54.288	271.440	34,48	2,112
10	Terminal retribution/ year	6.240.000	174	54.288	271.440	22,99	1,408
11	Vehicle tax	1.800.000	174	54.288	271.440	6,63	0,406
12	Business permit	7.123	174	54.288	271.440	0,03	0,002
13	Route permit	9.863	174	54.288	271.440	0,04	0,002
	Indirect cost						
14	Overhead cost (Employees)/ year	112.167.504	174	54.288	271.440	413,23	25,309
15	Management cost/ year	8.730.000	174	54.288	271.440	32,16	1,970
	Total	**443.191.610**	174	54.288	271.440	**1.632,74**	**100,00**

Source: Analysis result, 2017

4.6 Subsidies pattern

Basically the subsidies pattern is following up of VOC analysist and Trajectory analysist of freight transportation each commodity. The analysist of this subsidies pattern do to search giving subsidies alternatives which influences to reduce direct cost and/or indirect cost. For example, can be seen at Table 2 giving subsidies for rice transportation from Jayapura to Sarmi, can form i.e:

- Subsidies for vehicle amortization (influencing 20,307% of cost)
- Subsidies for sparepart (influencing 16,520% of cost)
- Subsidies for overhead/ year (influencing 25,309% of cost)
- Etc.

Next, to make easier giving subsidies, calculation can be given base on Time travel preference (Rp/hour) or Distance travel preference (Rp/Km). This way can answer the empty backhaul phenomena, which have to be borne by freight transporter.

5. Conclusion and recomendation

1. Base on the above discuss, the methode for survey and investigation operating freight transportation to 3T region can be drawn in activity line as like Figure 3.
2. Subsidies can give in the form reducing inventory time at warehouse, reducing VOC (subsidies of mortality vehicle, subsidies sparepart cost, subsidies overhead cost/year etc.), reducing time travel etc. Which conversed to time travel preference (Rp/hour) or distance travel preference (Rp/Km) to reduce company loosing cause *empty backhaul.*
3. To find more accuracy methode needs tested at some other 3T location not only at Papua and West Papua province like this research.

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