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Identification and Analysis on Stakeholder of Cross-Border Freight Transportation

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Abstract— **The growing international trade needs a logistic system managing the transportation system to create continuity in its process. Indonesia, as a country having land borders with neighboring countries, needs research about the freight transportation system with those different characteristics. Meanwhile, there is a tendency where the shift of the freight model paradigm results in the movement of the aggregate analysis approach to disaggregate or agent-based approach. With the need to consider the role and influence of actors' decisions in the analysis-based of freight transportation, the agent-based model will become will be a supporting tool to analyze freight transportation. This paper will identify and elaborate on the actors or stakeholders having roles in the freight transportation system in cross borders, mainly the marine product commodities. To determine the most significantly influential stakeholders in the analysis of freight transportation in the cross-border area, we used the analytical network process (ANP) method. ANP is the improvement of AHP Analytical Hierarchical Process (AHP) by referring to the thoughts that there is a correlation in the network form between elements where ANP enables the occurrences of inner dependence within a set (clusters) of elements and outer dependence among different sets (clusters). Based on the analysis using ANP, we found that the company owners are the most influential party followed by governments, employees, and customers. The link of result of stakeholder mapping and the relationship patterns among stakeholders, and it gives a strong foundation in the agent-based model needed in contemporary freight transportation modeling.**

Keywords— **stakeholders; cross-border; freight transportation; hierarchical analytical process.**

I. INTRODUCTION

Globally, there is a tendency for the fast growth of international trade. Indonesia, as an archipelagic country, should improve the transportation infrastructure continuously. Indonesian export routes consist of four kinds of transportation modes. According to the geographical condition of Indonesia, the sea transportation mode is the most significant contributor to export values reaching 98% of the total export [1]. However, the most interesting one is the volume increase and export values at the land transportation mode from 157.9 thousand tons (USD 82.7 million) in 2015 to 183.2 million tons (US 83.3 million) in 2016. The non-oil export of Indonesia through the land transportation mode reached 178.5 thousand tons and US$80.8 million in 2016. There are volume and value increase at 0.66 percent and 16.57 percent, respectively, compared to 2015. The main non-oil export country destinations are Malaysia at US$80.8 million, Timor Leste US$19.8 million, and Papua New Guinea US$1.3 million. In the cross-border trade, Indonesia, with the highest natural resources, still cannot achieve remarkable export growth. With the highest export value of Indonesia, reaching USD 203.62 million in 2011, this value kept decreasing, reaching USD 144.43 million in 2016.

Kalimantan Island, as one of the biggest islands, rich in natural resources, and having a direct with the neighboring country that is Sarawak of Malaysia, has the potential to improve its export volumes and values. West Kalimantan Province is a province having the longest borders adjacent to the state of Sarawak, Malaysia, at 849.76 km as well as having a wide hinterland that it needs a good strategy in the international trade mainly the cross-border trade. The trade liberalization and Foreign Direct Investment (FDI) are also developed in the regional framework among ASEAN countries forming the ASEAN Free Trade Area (AFTA) in 1992. AFTA had become the only trade regulation in the central formal region in East Asia until the1990s. The 1992's agreement regulated the tariff and non-tariff liberalizations [2].

Meanwhile, since 2007, ASEAN Economic Community Blueprint had started creating a blueprint of a free flow of goods of AEC 2015 that consisted of (i) elimination of tariff barriers, (ii) elimination of non-tariff barriers, and (iii) improvement of trade facilities. Bilaterally, there is a potential of cross-border border trade between West Kalimantan Barat and Sarawak. Government, in this case, Indonesian President, has stated that there is a huge economic opportunity to make exports some pre-eminent commodities that have not utilized optimally, leading to the improvement of local and national economic growths. The international trade, which is the exchange of goods among involved parties, includes the custom procedure. The physical movement of international trade requires logistical activities that will affect modes of transportation, terminals, and land transportation that create sustainability [3].

Recently, the paradigm in freight transportation modeling shifts from aggregate to disaggregate approach. The new paradigm refers to the inability of aggregate concept in its four-step to capture the behavior aspect of decision-makers that is a very determinative and inventory aspect in freight transportation [4]. Some freight transportation modeling literature can be found by emphasizing the aspect of the choice model. However, in some proposed methods, the concept of the four-step model is still used. From the existing literature, the study of freight transportation at the international level is infrequent. One of them is the study of truck flows passing the borders of Texas and Mexico by using the autoregressive moving average [5].

A progressive step was made even though he is still using the model framework of four-step as his analysis basis in international freight transportation with the land transportation mode [6]. The model of freight transportation demand plays an important role in transportation planning. Even though most big waves of those models refer to the aggregate approach, most research is conducted with the behavior-based approach to analyze international freight transportation [7]. The needs consider the roles and influence of actors' decisions like shippers, freight forwarders, and carriers that in this analysis, the agent-based model becomes the preference of the transportation writer in recent [8], [9].

An analysis that can give guidance and determine the actors affecting the transportation and logistics decisions is in need. The complexity upon the freight transportation system leads to the needs to map actors and their roles in the systems. Therefore, complex and challenging decisions in transportation can be elaborated based on involved stakeholders by using the multi-criteria decision analysis (MCDA). It can be said that, besides multi-criteria, this decision-making process is multi-stakeholders. In the transportation research, occurrences that become the research objects are the decisions of stakeholders and therefore, the need to analyze stakeholder is obvious. The mapping of stakeholders and their roles in the freight transportation system in this paper is the initial stage of travel behavior research for cross-border freight transportation.

II. Materials and Method

A. *The Importance of Stakeholder Analysis*

The stakeholder analysis is an analysis conducted to identify, analyze, and understand the interrelations among stakeholders [10]. This stakeholder analysis is a systematic way to analyze stakeholders with their strengths and interests [11]. Some definitions about stakeholders are developed, but most refer to the definition made by Freeman [12] by identifying parties influencing or being influenced by a decision or action. This analysis is important to be conducted since the stages of data collection and analysis involving policies need identification and roles of stakeholders.

The stakeholder analysis that was initially used in business management is now widely used. The purpose of stakeholder analysis was to make a policy analysis and predict policy development [13]. The same things take place in freight transport. There is a need to know the actors having roles in the fields of freight transportation or logistics. This need also includes how those actors play a role or affect the decisions in these fields. Some studies emphasized the importance of stakeholder analysis to evaluate freight transportation so that they can inform the policymakers by considering different priorities of respective stakeholders [14], [15]. Therefore, we can see that involved stakeholders can elaborate on some complex and complicated decisions in the transportation field by using several methods. Those methods are multi-criteria decision analysis (MCDA), economic-effect analysis (EEA), and the social cost-benefit analysis (SCBA) [16].

The need for the stakeholder analysis is also found in the effort to evaluate the transportation project where the transportation researchers put more concerns on policymakers, private enterprise, and other related parties [17]. It can be said that, besides multi-criteria, this decision making is also multi-stakeholder. In the research stage of the transportation field, incidences that become the research object are the decisions of stakeholders so that the need of the stakeholder analysis is obvious. Mapping the stakeholders and their roles in the freight transportation system in this paper is the initial step of the travel behavior research of cross border freight transportation.

B. Analytical Network Process

In a multi-criteria analysis, different from ANP, Analytic Hierarchy Process (AHP) method was known earlier. AHP uses the problem hierarchy construction to decide multiple criteria problem, which is usually defined as a decision tree. AHP has some parts where the first level represents the goal, the second level consists of groups of criteria, and the third level consists of all decision alternatives [18], [19]. ANP is proposed as a solution since many problems in the decision-making process cannot be built in a hierarchy structure [20]. The next most important thing about ANP is that this tool enables interdependence or interactions between alternatives and criteria [21].

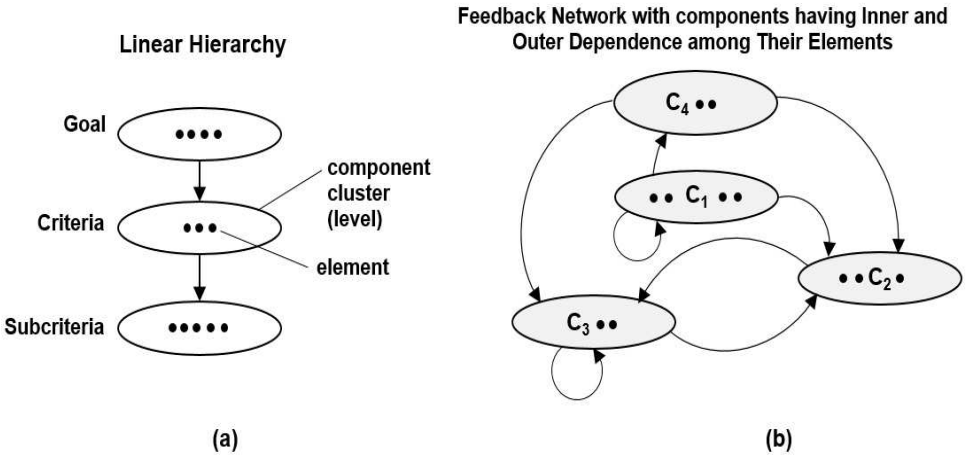

Fig. 1 The Structural difference between a hierarchy (a) and a network (b) [22]

Analytical Network Process (ANP) refers to a thought that there is a network relationship among the decision elements where ANP allows the following things to take place in inner dependence within a set (clusters) of elements and outer dependence among different sets (clusters). Steps in the multi-criteria analysis using ANP have several similarities as AHP method does as follows:

- constructing the network model.
- making the comparison matrices.
- making the checks of inconsistency ratio.
- making a super matrix.
- selecting the best alternative.

C. Method to Identify Stakeholder

In general, the mapping of stakeholders uses a matrix of four quadrants with two characteristics, which are important factor versus influence factor. The status of influencing or being influenced makes both parties in this stakeholder analysis known as both active and passive stakeholders. The division of these stakeholders further improves according to the research areas used by researchers [23]. Stakeholders having high power and interests are the key players. Otherwise, stakeholders with low power and interests are the least important ones. Business for Social Responsibility [24] recommends mapping on stakeholders in four phases, which are:

- Identifying: listing relevant groups, organizations, and people
- Analyzing: understand stakeholder perspectives and interests
- Mapping: visualizing relationship to objectives and other stakeholders
- Prioritizing: ranking stakeholder relevance and identifying issues

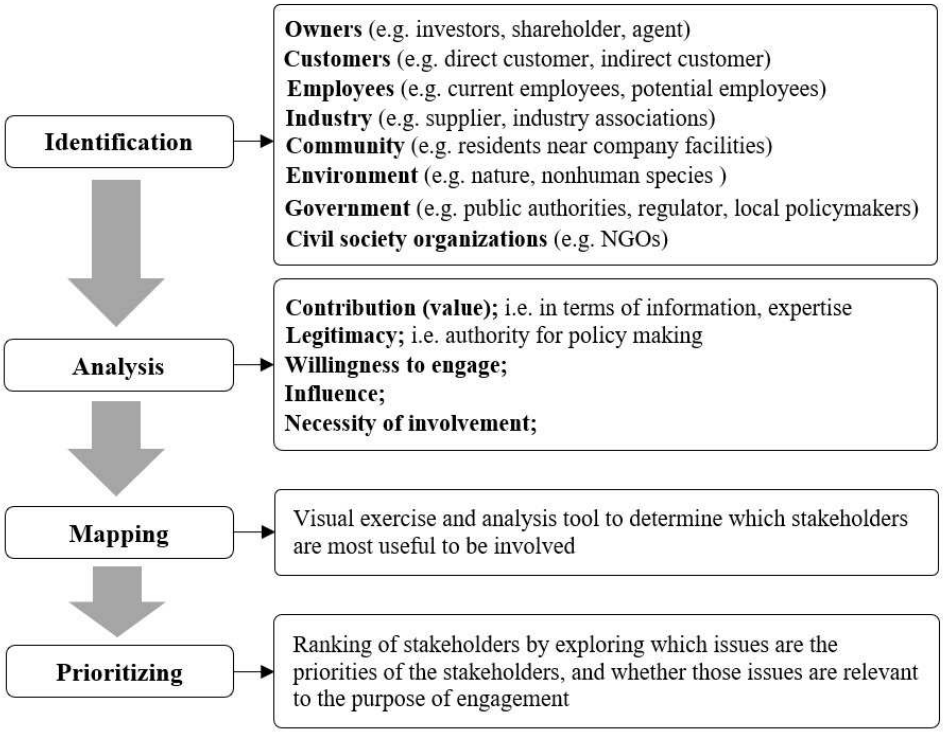

Fig. 2 Flow Process Chart of Stakeholder Analysis [24]

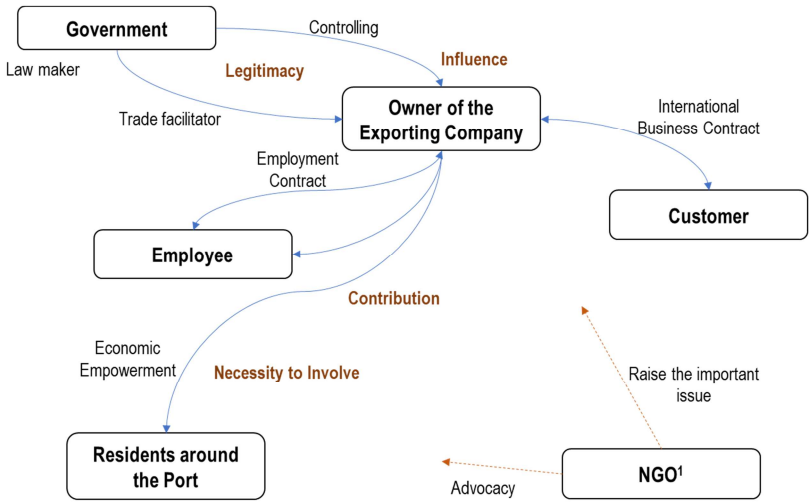

Fig. 3 Visualization of Relations among Stakeholders of Cross-border Freight Transportation

This stakeholder analysis uses the Analytical Network Process (ANP) method, which is the improvement of the Analytical Hierarchical Process (AHP). Based on the elaboration of the stakeholder analysis above, the writer proposes the following steps as follows:

- Identification
- Determination Clusters and Nodes
- Making ranks by using the ANP method
- Determining the ranks of significantly influential stakeholders

Stakeholder mapping analysis is further applied in the freight transportation of marine product commodities with the export purpose through the land transportation mode of inter provinces between West Kalimantan and Sarawak State, Malaysia. Based on the identification and analysis section in Fig. 2, we can make a pattern of the relationship between stakeholders and their respective roles which can be seen in Fig. 3.

From the literature mentioned above, six entities/institutions potential to be significantly influential stakeholders (alternatives) are formulated as follows:

- Government
- Company Owners
- Employees
- Customers
- Residents around the harbor
- NGOs

We can visualize the relationship between stakeholders on cross-border freight transportation, which can be seen in Fig. 3. In Fig. 3, the government has three functions as a lawmaker, controlling and trade facilitator. What the government does concerning the three things above, can have a positive impact, which is to accommodate and increase the opportunities for company owners to do business. However, it cannot be denied; regulations and supervision also create restrictions that affect the level of performance in the cross-border freight transportation system. The owner company is a stakeholder whose position is in the middle of the cross-border freight transportation system. The owner company, namely the shipper and carrier must carry out regulations issued by the government, has a good contract with workers and a profitable contract with the customer/buyer. Workers, namely longshoremen, can be included in the category of passive stakeholder where their contribution is needed, but do not have a significant voice in decision making in cross-border freight transportation. Customers, namely buyers from destination countries, are stakeholders who are not bound by the commodity's country of origin and are only bound by contracts with the shipper and carrier of the origin country. Customers are automatically bound by law in their home country in their business activities. Resident around the port is affected communities who might benefit from commodity export activities that occur in the port area but may receive negative impacts. NGOs are non-profit organizations that carry out important issues in freight transportation, cross-border freight transportation, and oversee the implementation of regulations that favor the business community and the public.

III. Result and Discussion

A. Investigating Stakeholder Relationship with ANP

The parameter that will be used as a reference to make ranks consists of categories and sub-categories known in ANP as clusters and nodes [25]. Primary data is collected through brainstorming and questionnaire method. The questionnaire used in this research is the ANP method that consists of five questionnaires. The cluster and node in the analytical process (ANP) method can be seen in Table I below.

TABLE I
Cluster and Node in ANP Method

Cluster	Node
1 Contribution	1-1 Persuasive Skill
	1-2 Experience
	1-3 Level of Knowledge
2 Influence	2-1 Bargaining Power
	2-2 Reputation
	2-3 Institution/Business Scale
3 Legitimacy	3-1 Activeness
	3-2 Legal Formal Status
	3-3 Authorities to make regulations
4 Necessity to Involve	4-1 Interactions among stakeholders
	4-2 Problem Complexity
	4-3 Appropriate (Involvement) Flow

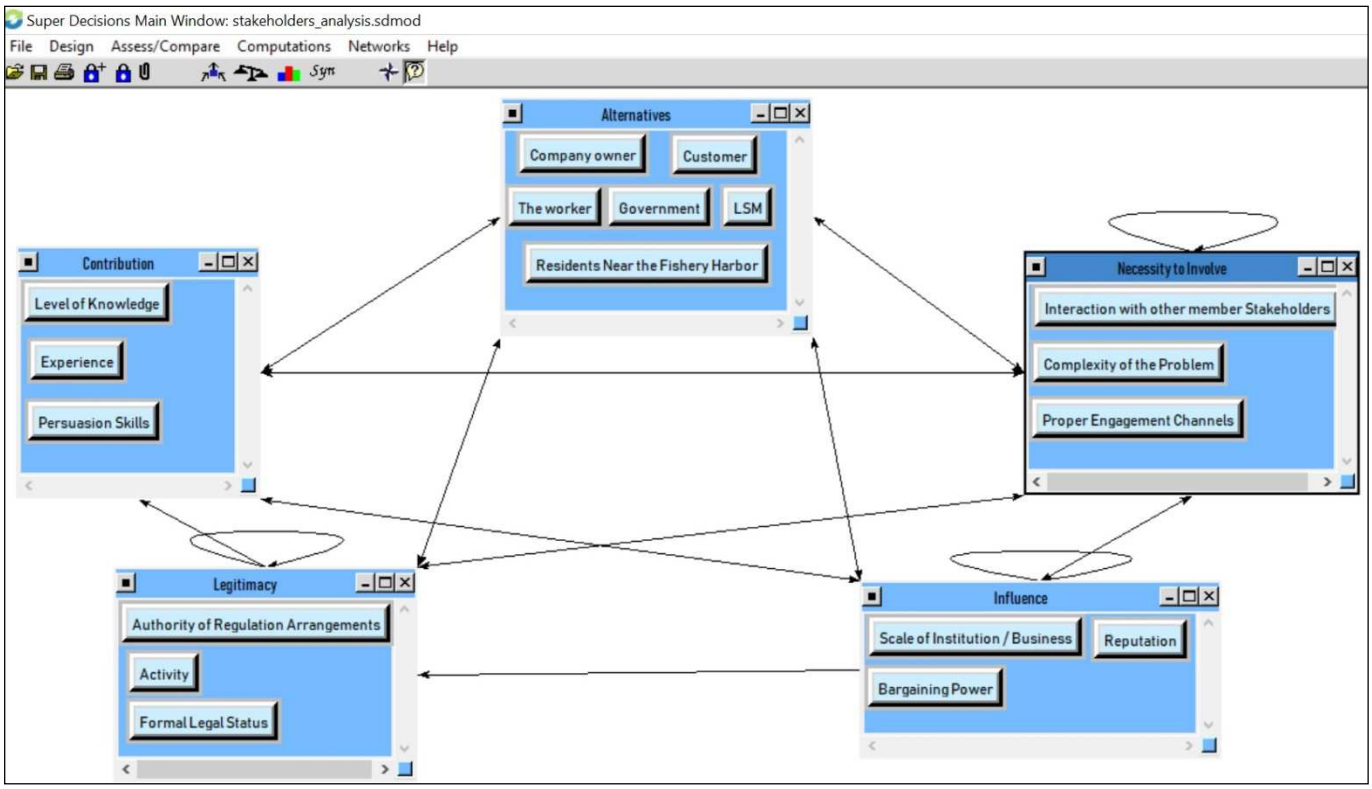

Fig. 4 The flow of analytical network process (ANP) of stakeholders of cross-border freight transportation

Fig. 4 shows the construction model with the super decision software, where this software enables the inner dependence within a set (clusters) of elements. With these five parameters, the stakeholders having a significant role based on the parameter explained above are the company owners followed by the government and other stakeholders as can be seen in Table II. We can break down four stakeholders with the highest ranks, as can be seen in Table III. We based to reference [26] who has identified and made a flowchart from the process of the truck moving to pass the United States of America and Mexico. Hence, we can make the flowchart with some adjustment in this study area as can be seen in Fig. 5.

TABLE II
THE RESULT OF ALTERNATIVE RANKINGS OF ANP METHOD

Graphic	Alternatives	Total	Normal	Ideal	Rangking
	Customers	0.0338	0.0942	0.2241	4
	NGOs	0.0187	0.0521	0.1240	5
	Employess	0.0529	0.1475	0.3510	3
	Government	0.0893	0.2490	0.5925	2
	Company Owners	0.1507	0.4202	1.0000	1
	Residents aroound the port	0.0133	0.0370	0.0881	6

TABLE III
KEY STAKEHOLDERS IN THE CROSS-BORDER FREIGHT TRANSPORTATION (EXPORT OF MARINE PRODUCT TO SARAWAK, MALAYSIA)

Key Stakeholders	
1 Company Owners	
a.	Owners of the fishing vessel
b.	Truck owners [Some shipowners are also the owners of dispatch trucks]
c.	Trucking Association in Indonesia [There is an association of trucks with the different activeness levels in different provinces and regencies.]
d.	Trucking Association in Malaysia
2 Government	
a.	Syahbandar (harbormaster) Indonesia [An official who supervises operations in a harbor area and administers its rules]
b.	Customs and Quarantine in Indonesia The combination of Directorate of Customs under the Ministry of Finance as well as the quarantine under the Ministry of Marine and Fishery
c.	Ministry of Trade and Industry of Indonesia [The party issuing a set of regulations/laws]
d.	Department of Industry and Trade of Province of West Kalimantan, Indonesia
e.	National Border Management Authority (BNPP) of the Ministry of Domestic Affairs (Indonesia)
f.	Customs and Quarantine in Malaysia
g.	Authority of Inland Port Malaysia
h.	Ministry of International Trade and Industry of Malaysia
3 Workers	
a.	Indonesian Truck Drivers
b.	Indonesian Longshoreman's/worker [Porter works to move cargo from ships to trucks (in Indonesian territory) and from trucks belonging to Indonesian carriers to trucks belonging to Malaysian carriers at Tebedu Land Port]
c.	Broker; [person who arranges transaction or export/import document (Indonesia)]
d.	Malaysian truck drivers
e.	Malaysian worker
4 Customer	
a.	Direct customers: Association/Trucking actors in Malaysia [Indonesian trucking companies collaborate with Malaysian trucking companies that have contracts with customers/buyers in Malaysia]
b.	Indirect customers [Restaurants, households in Malaysia]

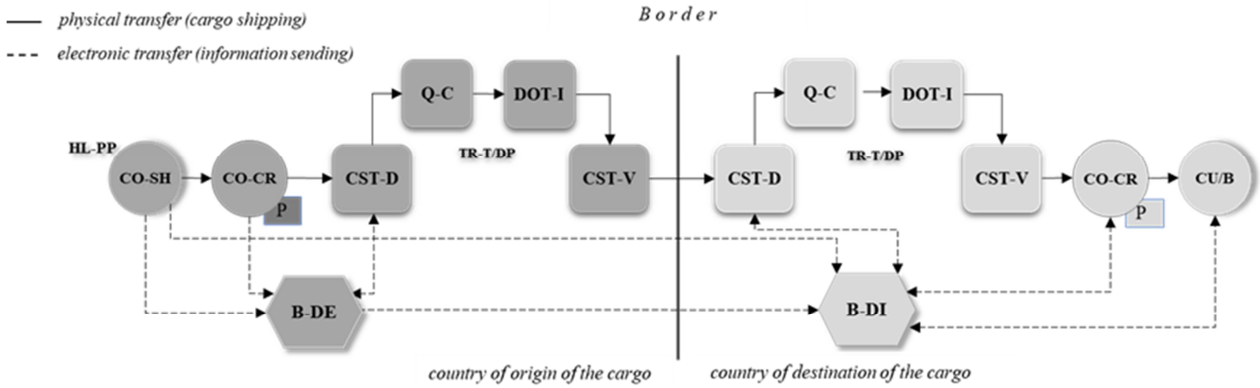

Fig. 5 Process scheme of commodity and information movements in cross-border freight transportation (modified from [26])

Fig. 5 shows the movement of cargoes and information on the cross-border freight transportation system. There are two kinds of movements that occur, namely physical flow and electronic current. The first, physical transfer, starts from HL-PP, which is the hinterland or production point where the system starts with the shipper company (CO-SH) as the first actor to take on the role. With the selection based on the characteristics of the carrier company (CO-CR), then the existing contract is made to transport the cargo of marine products across national borders.

The marine commodity brought in subsequently underwent a series of checks, successively examining documents by the customs (CST-D), cargo inspection by the quarantine staff (QC), inspection at the weighbridge for trucks by the department of transportation (DOT-I) and final inspection by customs of vehicles crossing border-points (CST-V). Longshoreman, namely loading and unloading workers, work at the initial stage of transportation, where the commodity is loaded, and at the end of the journey, where the commodity is unloaded. The process of cargo inspection by quarantine is carried out at the truck terminal or dry port, which is equipped with cargo inspection facilities.

Electronic transfers involve brokers who assist in the handling of export documents that help both the shipper, the carrier of the country of origin of the cargo, and connecting with the carrier and shipper in the destination country. Brokerage services are used in this cross-border freight transportation because, in addition to those who can interact with customs and quarantine in the border area, there is also the complexity of the documents required to export marine products.

From interviews with several shippers who prefer to sell their products to the domestic market, the perception of the complexity of the export administration of goods (physically and electronically) is one of the factors they do not sell to foreign markets even though they can obtain more profits. From the process in Fig. 5, almost the same thing happened at the stage since the commodity crossed the border post of the origin country of the commodity, then entered the border post of the destination country to the endpoint where the customer or buyer received the commodity.

B. Actor-based in the Cross-border Freight Transportation

So far, we have mapped and analyzed actors in the cross-border freight system and their respective role. After getting the result, we go through the freight transport model or an international trade model. At this stage, several important stakeholders will be elaborated further below.

1) Government: The first stakeholder, which is Government with its role in the regulation aspect, is reflected in the international trade known as the gravity model and its regulation as well as trade barrier. The gravity equation is used to analyze the trade in Asia border region mainly by putting the variable of the regional trade agreement [27]–[29]. The other researchers analyzed the gravity model related to the regional trade [30]–[32]. The example is the Government Regulation of the Republic of Indonesia Number 34/2019, which regulates Border Trade. The contents of this regulation, among others, regulate the two Border Trade Areas. Imports and releases of goods into customs areas and outside customs areas through Cross Border Posts in the framework of Border Trade are excluded from fulfilling export or import documents that are regulated in the provisions of statutory regulations in the trade sector, reads Article 12 of this Government Regulation. Whereas the entry and/or release of Goods into customs and/or outside the customs area through a Cross-Border Post outside the Border, according to this Government Regulation, applicable provisions of the laws and regulations in the field of export and import.

One of the roles of the government in cross-border trade is entering into agreements with neighboring countries aimed at regulating trade activities that occur. A formula was proposed that included a trade agreement between the two countries in the gravity model [27], as follows.

$$\ln M_{ijt} = \beta_0 + \beta_1 \ln Y_{it} + \beta 2 \ln Y_{jt} + \beta_3 \ln d_{ij} + \beta_4 l_{ij} + \beta_5 c_{ij} + \beta_6 a_{ijt} + \sum \theta^k r_{ij}^k + \varepsilon_{ijt} \quad (1)$$

Where:

M_{ijt} = logarithm of country j import from country i during year t

Y_{it} = GDP of the importing country

Y_{jt} = GDP of the exporting country

d_{ij} = the distance between the capital cities of countries *i* and *j* which proxies transportation costs for trade between the two countries

l_{ij} = dummy variable defined as unity when any two countries speak a common language and zero otherwise

c_{ij} = indication of whether two countries share a common border.

r^k_{ij} = is a key variable from Lee and Bae's research, which examines the effects of regional borders on trade.

2) Company Owner: Company owners related to policy analysis are shippers and carrier.

- Shipper. The shipper is the stakeholder who have the role as a cargo sender. This stakeholder is one of the actors who has a behavior that affects the freight transportation system. The analysis tool used for shipper choice is the discrete choice. Discrete choice models are choices of theoretical models made by people among a limited set of alternatives [33], [34] The scope of the analysis on the shipper includes the selection of alternatives, including distribution channel and mode choice research [35], [36]. This study applied the utility concept [35] that proposed choices among discrete sets of alternatives by the shipper with the equation:

$$P_k = \frac{exp^{(\gamma' k x Z_S)}}{\sum_{k=1}^{2} exp^{(\gamma' k z_S)}} \quad (2)$$

Where:

P_{sk} = probability of a shipment *s* belonging to segment *k*

Z_s = a vector of shipment attributes that influences the propensity of belonging to segment *k*

γ'k = vector of estimable coefficients

- Carrier. Carriers as the entities of companies carrying loads or commodities, are also the actors where their characteristics are studied. In the transportation study, carrier research has a close relation to the mode choice, shipment size, and truck size choice. Considering that fact, the tool most widely used in research on carriers is the discrete choice [37], [38]. To determine the firm's shipment size and the net benefit, conditional on vehicle choice are given respectively by the following formula [37]:

$$q^*_v = \beta_v X + u_v \quad (3)$$

$$U^*_v = \gamma_v Z + \epsilon_v \quad (4)$$

Where *q* is the optimum shipment size, *X* is variables that affect shipment size, *v* is the value of commodity per ton. U^*_v is the reduced-form expression for the net-benefit from the choice of different vehicle types. *Z* is observable factor that determine the net-benefit function. β_v and γ_v are parameters to be estimated. u_v dan ϵ_v are idiosyncratic terms. With this approach, the mode of freight transportation that selected is one that has greater utility value, or we can write as follows $U^*_v > \max(U^*_j)$. [37] propose the probability equation that vehicle *v* is preferred, which is given by P_v:

$$P_v = \frac{\exp(\gamma_v Z)}{\sum_v \exp(\gamma_v Z)} \quad (5)$$

Carrier is one of the key stakeholders whose analysis of behavior is needed in freight transportation studies. In describing the importance of analyzing the role of actors who make logistical decisions using an activity-based approach, it is required to involve the characteristics of the shipper and the carrier [39].

IV. Conclusion

Stakeholder analysis is a step needed by transportation planners, especially in identifying the parties that influence and are affected by the cross-border freight transportation system. This step is fundamental in the analysis of freight transportation with an agent-based approach. Through the study of literature, we can determine the parties that influence and are hypothetically affected. Eight parties are consisting of owners, customers, employees, industry, community, environment, government, and civil society organizations. From observations in the field, we can adjust this long list so that it can be more conical to the activities that occur in the field. In this study where transportation is carried out on fresh seafood products, the industry is not included in the calculated stakeholders. Likewise, civil society organizations that are considered to influence authorities in policy have been represented by the government as regulators and policymakers, with the result being rule or regulation. By including these parties in the identification step, and conducting a literature study, we found that there were eight entities and four criteria (clusters) and twelve nodes as part of the sub-criteria mentioned earlier (Table 1).

ANP enables us to identify clusters and interactions among clusters in the forms of inner dependence and outer dependence relationships. This method is getting closer to the real condition since the relations among clusters may sometimes take place. Besides, the comparison analysis among clusters is also taken. Some research in the transportation field is involved in developing the criteria and sub-criteria for the ANP architecture. The model in the analysis of stakeholders of freight transportation in cross-borders, mainly the marine product commodities, consists of four criteria and 12 sub-criteria. Based on the analysis result using ANP and referring to four criteria, which are 1) Contribution, 2) Legitimacy, 3) Influence, and 4) Necessity to Involve, it is found that the company owners are the most influential party followed government, employees, and customers. This mapping result, the relation pattern shown in Fig. 5, will give a strong basis in the agent-based model needed to make a model of contemporary freight transportation whereas, in the agent-based model, the behaviors of company owners or the "strong" will be modeled. Fig. 5 shows three influential and significant stakeholders in the cross-border freight transportation, which are (i) company owners, shippers; (ii) government (and its apparatus); (iii) customers or buyers.

In modeling agent-based freight transportation with a micro-simulation approach, this third party will accept its role after the commodity making step, which is the choice of distribution channels (travel chain decisions), zones, shipment options, and size of shipping decisions [37]. This cross-border freight transportation study with marine products found that for export flows, three entities play a very important role, and we can investigate further by existing analytical methods. The government, with an emphasis on the regulatory role, is approached with tools such as the gravity model. Gravity models allow the role of the government to be included in the model. The role of the government concerning cross-border freight transportation, for example, is an agreement between countries that will

have an impact on the volume of commodity flows. Another thing is related to trade barriers. With a trade barrier, it is possible to reduce the number of commodities that can be traded or transported.

The second party, the shipper, is the party that has a role in determining the volume of the commodity being transported. The volume sent by the shipper depends on production from the hinterland. In this case, the magnitude of the generation of the hinterland, i.e., the fishing port, will be the next study. The method to be performed is multiple regression where certain independent variables will determine y or the amount of production or generation.

The third entity, namely the carrier, is the party that transports marine commodities. From the carrier side, the approach is also carried out, assuming the carrier will maximize the utility of several existing alternatives. The analytical aid also uses the discrete choice model. There are at least three things that are considered by the carrier, namely mode choice, shipment choice, and truck size choice, whereas the analysis of the truck size choice, is carried out in conditions where the truck is the only mode that used. Truck-only case is mostly found in cross-border transportation studies.

The previous study assumed that the type and volume sent are based on requests or orders by the customer/buyer. Besides, in the field, there is the fact that the total amount of commodities transported can be absorbed by neighboring markets, or in other words, the amount of demand is always higher than supply. The above, in the form of a relationship between the shipper and the customer and between the shipper and the carrier, will involve one variable, the size of the shipment which will be elaborated further in the next paper done with the assumption that the type and volume sent is based on requests or orders by the customer/buyer. Also, in the field, there is the fact that the total amount of commodities transported can be absorbed by neighboring markets, or in other words, the amount of demand is always higher than supply. The above, in the form of a relationship between the shipper and the customer and between the shipper and the carrier, will involve one variable that is the size of the shipment, which will be elaborated further in the next paper.

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