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KEY PLANNING RECOMMENDATIONS FOR LOGISTICS MULTIMODAL TRANSPORT INSTITUTIONS: LESSONS LEARNED FROM TANJUNG PRIOK PORT IN INDONESIA

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ABSTRACT

Logistics activities urgently require integration from both infrastructure and management aspects, while logistics activities are currently partial and the development is spread across various Ministries. Therefore, strong governance is needed to support the effective implementation of coordination and to harmonize and integrate all national logistics system development policies. The purpose of this study is to identify the actors participating in the management of the multimodal logistics transportation system, examine the challenges associated with multimodal transportation institution coordination, and determine the function of each actor in multimodal transportation. The success of multimodal transportation in Tanjung Priok's port as the biggest port in Indonesia has been proven to be hampered due to elements of conflict of interest and adverse selection of informal institutions, according to the findings of the analysis related to the role of actors and problems related to multimodal transportation institutions at ports in Indonesia. Therefore, it is necessary to develop strategies from short to long terms, such as creating a special coordination forum or institution that is ad-hoc in nature for 2-3 years until the core problems of multimodal logistics are completed with the form of the institutional structure being structural and functional, developing a code of ethics to ensure consistent implementation of the long-term agenda, including commitments from institutional coordination of multimodal transport, and to establish permanent institutions as coordination platforms and 'network' organizations to facilitate the strategy of the 'long-term relational contract' concept where the network's focus on practical coordination should be widened and deepened to include more policy coordination until the core problems of multimodal logistics are resolved through institutional forms in the form of Constitution.

Introduction

The logistics sector is vital as an element forming connectivity for national competitiveness and people's welfare (Budisiswanto, 2022). Until now, Indonesia's logistics sector is still weak, which can be seen from various indicators issued by international institutions as well as from various problems that arise in the field (Rita & Capah, 2017). In the few years since it was established, the implementation of Sislognas still faces many obstacles. This can be seen from the level of achievement of the Guide Map /Road Map, Implementation Stages, and Action Plans set out in the National Sislognas. Several phenomena also indicate problems related to logistics, including Indonesia's high logistics costs, stock availability and price fluctuations for basic and

strategic commodities, price disparities in eastern Indonesia, and Indonesia's Logistics Performance Index (LPI) which is low and below several countries (Deswati & Muhadjir, 2015). other ASEAN. In addition, various problems also arise in the field and are difficult to resolve, such as what happened at Tanjung Priok Port (dwelling time, YOR, etc.), long queues of trucks that occur every year at Merak Ferry Port, traffic jams, road damage, and so on (Fithra, 2017).

For industry, problems that arise related to logistics are logistics costs and delivery times. One of the portraits of Indonesian logistics performance is shown in the high price of goods that consumers must pay, as well as the disruption of competitiveness. According to data from the Ministry of Trade, Indonesia's logistics costs in 2010 reached Rp. 1,402 trillion or around 26% of the total GDP, where the highest was for transportation costs which reached 60% (Rita & Capah, 2017). Among the logistics sector, high transportation costs and minimal infrastructure conditions are inhibiting factors in increasing product competitiveness, especially for horticultural products in Indonesia (Fizzanty, 2012).

Other variables that contribute to high logistical costs include: (1) less supporting information and communication technology in the process of monitoring the flow of goods across areas, which has the potential to raise expenses, (2) expensive facilities in terms of procurement of truck and ship transportation equipment (taxes and fees). high interest), (3) unintegrated logistics regulations; overlapping central-regional regulations, widespread official levies in the regions, (4) low competence of logistical human resources, (5) unfit fleets to continue operating (Hartati et al., 2016).

Multimodal logistics transportation is a multi-actor network management, where actors have different market forces in the logistics transportation system. There are various success factors of the multimodal transportation system but there are also obstacles from multimodal transportation systems that are institutional problems, namely weak coordination between actors involved in multimodal transportation (Andika, 2018).

The implementation of multimodal transportation in developed countries is relatively fast growing as indicated by the increase in container use which can reduce transshipment time, transport relatively quickly, reduce document formality, and reduce costs to reduce the price of goods and increase competitiveness. Until now the implementation of multimodal transportation systems in Indonesia is still relatively slow. Multimodal logistics transportation is a multi-actor network management, where actors have different market forces in the logistics transportation system. There are various success factors of the multimodal transportation system but there are also obstacles from multimodal transportation systems that are institutional problems, i.e. weak coordination between actors involved in multimodal transportation. This study examines institutional coordination in a multimodal transportation service system that supports the realization of the logistics system at Tanjung Priok Port from the TCT perspective (Transaction Cost Theory) and PAT (Principal Agent Theory).

The transportation system in Indonesia has a specificity, as a maritime country, transportation uses all available modes, namely land, sea, and water, as well as air.

Broadly speaking, the provision of infrastructure involves two basic principles, namely better access to the infrastructure itself and the price of products resulting from the use of infrastructure, because, with better access productivity increases, input costs decrease, and subsequently for consumers a decrease in the cost of living. Infrastructure has been defined in terms of physical facilities (roads, airports, ports, terminals, railroads, and means of transportation), and services (transportation systems) that flow from these facilities. In Indonesia, road infrastructure plays a very vital role in the transportation of goods, which dominates 90% of the various modes based on the national origin survey. On the other hand, the cost of road transportation in Indonesia is still relatively more expensive where for a distance of more than 100 km, the cost of road transportation is Rp. 11.480/km (Berawi et al., 2013).

The role of the logistics system is to ensure the smooth flow of goods. What is meant by a national logistics system is how to transfer raw materials to the final product into the hands of end-users (consumers). Therefore, the Government is currently implementing a corridor system in Indonesia through MP3EI (Lesmini, Didiet, & Hidayat, 2018). The existence of six economic corridors has a strategic function to generate a national economic impact, especially leading regional industries, and to encourage national economic growth of 7% per year with 92% of private financing sources (domestic, foreign, community) and the rest of the government (Lesmini et al., 2018).

In terms of road transportation, the existing infrastructure is still considered inadequate. Based on data up to 2013, the total length of roads in Indonesia is 508,000 km, there are 38,570 kilometers of national highways, 53,642 kilometers of province highways, and 415,788 kilometers of district/city highways. Of the 508,000 km long road, only 287,926 km have asphalt pavement (Kementerian Perhubungan Republik Indonesia. 2014. Perhubungan Darat Dalam Angka 2013).

Logistics activities are in dire need of integration both in terms of infrastructure and management, while logistics activities are currently partial and their development is spread across various Ministries. Such conditions can potentially cause problems related to aspects of coordination, alignment, and integration of various elements involved in logistics activities. Therefore, strong governance is needed to support the effective coordination implementation and harmonize and integrate all national logistics system development policies (Aulia, Ninvika, Junitasari, Nurfitriani, & Sahara, 2023).

The absence of a national logistics institutional system is also one of the obstacles to implementing the National Logistics System because there is no permanent institution that has authority over ministries/agencies in implementing the National Logistics System. The absence of this institution has also resulted in the emergence and recurrence of various problems, such as problems in the port and airport sectors that emerged recently. As a result, efforts are required to actualize the appropriate collaborative idea of multimodal transportation institutions to support a low-cost, quick, and secure logistics system in Indonesia.

For logistics at the Port of Tanjung Priok's port which can be used to formulate key planning Departing from the concept of coordination, this research explores the dynamics and range of roles between factors, then the strategies and policies that have been and must be carried out and what factors can sustain the success and sustainability of multimodal transport institutional coordination recommendations for multimodal transportation institutions in Indonesia. The purpose of this study is to identify the actors participating in the management of the multimodal logistics transportation system, examine the challenges associated with multimodal transportation institution coordination, and determine the function of each actor in multimodal transportation institutions.

Research Methods

Analysis Stakeholders are described as a way to describe the structure of the actor's viewpoint, which will serve as the framework for this study's in-depth interview-based research.

The explanation (Bryson, J.M. 2004), is that transaction costs must seek decision-makers perceptions of them and that these perceptions are confined in social settings and social constructions underpin the appropriateness of transaction cost theory and the Q-sort approach. In other words, because this study is in the perceptual domain, using the Q-methodology approach is appropriate. According to research (Bryson, J.M. 2004), (Brown SR. 1980), the Q-Methodology is a qualitative-quantitative middle-ground method.

This study argues that uncovering the determinants influencing actors' perceived transaction costs and 'why-how' explanations of their effects on coordination is critical. By those questions, Q-Methodology facilitated this research to draw a simpler structure of actor perception about multimodal transport institutional coordination and in particular about collaboration transaction costs. This simplified perception structure will advantageously build a systematic basis for the analysis of the elements of transaction costs perceived by actors and specifically answer the first research question about what determinants influence actors' perceptions of transaction costs on institutional coordination of multimodal transport.

Q-Methodology is used to study the subjectivity and perception of actors by following statistical procedures and is usually applied to qualitative research questions, what are the dominant perceptions and salient opinions that arise in certain groups on certain subjects and issues are. Transaction Cost Theory, which is the basis for analyzing the problem of coordination of multimodal transportation institutions, is related to the extent to which institutions play a role in the port logistics system from here, a theoretical foundation, namely Principal-Agent Theory, is required to supplement the role of how to understand more deeply about the contract in the interaction that occurs and how the contract should be designed. Higher levels of trust result in lower levels of agency costs, according to the link between agency theory and coordination. because information sharing further combines knowledge, resources, and information sharing.

Data Collection

The main instrument that will be used to collect data is through in-depth interviews, questionnaires, and secondary data collection. The interviews were done in a semi-structured manner to outline why the interviewees had sorted the items/statements as they had and to get them to explain the meaning of the significant statements which consisted of salient perceptual patterns. Interviews were conducted with resource persons who were perceived to have mastered the problem in this study.

In addition, the semi-structured interview also aims to gain a broader understanding from the resource persons regarding the problem of institutional coordination of multimodal transportation and related transaction costs. The interviews were then recorded and the data resulting from the interviews were treated and analyzed using pattern-matching techniques to enable a solid understanding of the relationship between the key barriers and related transaction cost elements and how the key barriers affect multimodal transport institutional coordination issues.

The need for secondary data is obtained from various sources of documents, statistical data, and research results, as well as various regulations related to analysis interests. To minimize errors in understanding the phenomenon under study, Neuman believes that a research design must be able to establish the level and unit of analysis (Neuman, W.L. 1997). Looking at the type and nature of the data used, the methods used are several descriptive qualitative approaches. This research stage was carried out with the following stages (Creswell, John W. 2010):

1. Collecting raw data through interviews, literature review, or desk study
2. Data transcript, namely the process of describing the data from interviews and environmental observations,
3. Making coding, the process of rereading all data and sorting out important things to be marked (coding),
4. Data categorization is the process of simplifying data by embedding important concepts in categories.
5. The temporary inference is the process of making temporary conclusions.
6. Triangulation or cross-checking is important in qualitative research. This triangulation technique is to answer quantitative criticism which always emphasizes the principle of objectivity in scientific research. Cross-checking is carried out in data collection and at the time of making conclusions. Cross-checking by making comparisons of sources, and comparisons of time and place.
7. The conclusion is the research decision-making process

Analysis of Stakeholders

Stakeholders are individuals, groups, and organizations with an interest in and the ability to influence an organization's actions and goals, research, or policy direction (Brugha, R., Varvasovszky, Z. 2000). Stakeholder Analysis (Stakeholder Analysis) is an analytical tool used to identify groups that affect or are affected by an action to be taken

and group them according to the impact of the action to be taken. Stakeholder analysis is used to determine whether or not actors are relevant to the study. Stakeholder analysis aids in the description of players' positions, interests, impact, linkages, networks, and other key aspects.

Stakeholder analysis is carried out to identify and map the problem structure, and actors based on their level of interest and influence in the management and utilization of resources and coordination mechanisms that occur in ports. The ultimate goal is to identify a complicated multi-actor system and classify the key players in Indonesia's multimodal logistics transportation. The results of this analysis are only the initial analysis in the study and will be the input for determining the next analysis. The interests and viewpoints of various actors in research and development research are diverse (Tipping, J.W., Zeffren, E., Fusfeld, A.R. 1995). It is therefore very important to bring together different actors to create consensus among themselves about the direction and future of securing their commitment to the research results (Elias, A.A., Cavana, R.Y., Jackson, L.S. 2002)

Stakeholder analysis, as used in policy research, focuses on the interrelationships between groups and organizations, as well as their impact on policy. The third application of stakeholder analysis has been formed as a result of the development and intersection of management and policy research streams - applications to research and program development. “In planning and implementing research, the support or opposition of the parties involved or influenced by research is an important factor in determining its success or failure” (Brugha, R., Varvasovszky, Z. 2000). (King, W., Cleland, D. 1978), were the first to propose a stakeholder analysis method. Since then, the subject of research management has continued to grow, and the number of distinct stakeholder analysis approaches is currently immense.

The primary goal of this study's stakeholder analysis is to identify the actors, their perspectives, and their positions. The next phase is for actors to participate in the consensus-building process based on their individual qualities and perspectives. As a result, the stakeholder analysis for this study may be broken down into three steps: identifying players, categorizing actors, and developing intervention plans. The authors opt to rely on resource persons in the multimodal transportation ecosystem who are skilled and large enough to detect the bulk of important actors for actor identification. Requests for suggestions for suitable actors were made to research partners, and an initial database of actors was created. The author, on the other hand, has the freedom to expand it by interviewing new relevant actors or soliciting new proposals from sources.

Results and Discussion

Research Findings, Actors Identification

In the implementation of Multimodal Transportation, several groups of actors play distinct roles. The following is the explanation. There are at least ten powerful players in the port, including:

1. Shipper/exporter. The major actors are the shippers and consignees. They are the ones who stand to gain the most from improved multimodal transportation. They may be able to save money as a result of this.
2. Consignee/importer. They are frequently in charge of informing customs organizations about the shipments they receive.
3. Freight Forwarder (merchant haulage). Forwarders and third-party logistics providers are two types of third-party logistics providers. These businesses serve on behalf of the freight forwarder and play a crucial role. These businesses may benefit from multimodal transportation since it allows them to provide more efficient transportation to their clients. It may be a limitation of some freight forwarders' activity linked to customs.
4. Shipping line agent/logistics service provider (carrier haulage).
5. Banks and insurance. Insurance and banks can contribute to Multimodal Transportation because they can guarantee that they will provide shipping information that is not available anywhere else. Furthermore, when multimodal transport can supply more and better information regarding shipping, financing and ensuring transportation may be easier.
6. Carriers/Transporters. These businesses transport containers to and from the port. They are participants in Multimodal Transport because greater data availability may have an impact on their work. Because they do not create additional data other than trip information, their significance in multimodal transportation may be restricted.
7. Shipping lines. Shipping lines handle the majority of international shipping and, in many circumstances, interior logistics and transportation as well. They are also key linkages in data flows since they are the ones that gather data from the sender and deliver it to other parties in the majority of situations. They are key actors because of their prominent role in multimodal transportation.
8. PT. IPC (Pelindo) and dozens of Terminal operators. All firms at the port that have activities linked to containers, mostly container terminals, but also certain warehousing activities, are referred to as port companies. These businesses play an essential role in transportation and information transfer. Better cargo information may also assist loading and unloading firms (PBM), allowing them to better organize their activities.
9. Customs (Customs). Customs is an important factor because it has the authority to enter and issue goods.
10. Port Authority (Regulatory authorities). Because the port is where cargo is traded and the majority of inspections take place, the port authority is an important player. Several port administrations are also working to build data processing systems for port communities. This method has a lot of potential for Multimodal Transportation. The port also benefits from a more efficient inspection system, which improves the port's competitiveness. One of the primary benefactors of multimodal transportation is government entities. The concept of multimodal transportation as a risk-based system and methodology is aimed specifically towards customs agencies. Other

inspections might also benefit from the added knowledge. One disadvantage for these companies might be that multimodal transportation does not cover all of their information demands, making it more difficult to meet all of their needs. Governments are actors because they create laws and regulations that make multimodal transportation possible or impossible

11. The potential benefits to the above actors from improving the quality of multimodal transport are substantial. There is a core role or business model for each party involved such as Forwarders focusing on optimizing the flow of containers managed by freight forwarders, Shippers focusing on service optimization, Terminal Operator Companies focusing on improving terminal efficiency, Land Transportation Companies focusing on optimizing trucks, Shipping lines, focus on loading and unloading of containers Port Authority focus on enforcement of rules and integration of multiple modes to reduce congestion.

Table 1
Business Model of Actors Involved in Multimodal Transportation

Actors	Main Role (Bussiness Model)
Forwarders	Focus on optimizing the flow of containers managed by freight Forwarders
Shippers	Focus on optimizing certain supply chains
Terminal Operator Companies	Focus on improving terminal efficiency
Land Transportation Companies	Focus on optimizing trucks
Shipping lines	Focus on loading and unloading of containers
Port Authority	Focus on enforcement of rules and integration of various modes to reduce Congestion

Source: Analysis Results, 2021

Identification of Actors

There are several classifications of actors in Port operations, which are explained as follows:

Table 2
Actors per category identified in Multimodal Transportation

Group	Entities
Commercial Group	Seller or Supplier or shipper; Buyer or customer or consignee (recipient)
Grup Organizing	Shipping line/sea carrier; Forwarders (3PL); Logistics service provider (4PL)
Physical Group	Shipping line/sea carrier; Sea Port Terminal Operator; carrier inland transport, ie, road transport, rail operator; Dry port Operators; Third-Party Logistics service provider (3PL)

Authority Group	Port Authority: Customs
Financial Group	Bank; Insurance Companies

Source: Analysis Results, 2021

The commercial group (1) consists of businesses that deal with the manufacturing and distribution of goods, as well as trade routes where commercial transactions (buying and selling) take place. These businesses have the expertise and a direct interest in providing products to customers, and they are in charge of the quantity and quality of the goods. They employ the logistical services supplied by the second and third categories for product transportation. The organizational group (2) is mostly made up of middlemen who coordinate cargo transportation, while the physical group (3) is in charge of the actual movement. These two groups are generally less concerned with the product (cargo) and more concerned with the operational efficiency of cargo movement. The authorized group (4) is in charge of inspecting and monitoring cargo flows to implement security and economic laws. Finally, the financial group (5) enables the movement of money by facilitating financial transactions between transportation firms. These five groups are intertwined in the pursuit of their objectives.

Coordination Problems in Ports and Actors Involved

Ports are logistical nodes that have a very dynamic nature where many actors and relationships influence each other. Pelindo (IPC), Syahbandar, and the Port Authority (OP) are the three actors who manage the port. Syahbandar covers shipping safety and security matters. Meanwhile, the Port Authority covers business regulation and supervision. Strengthening the functions, roles, and revenue allocation of Actor Port management changes with changes in authority. For example, during the ministerial period, non-tax state revenue (PNBP) was directed to the state treasury, but during the ministerial period, it was directed to the state-owned enterprise operator (Pelindo) treasury. This means that institutional strengthening is highly dependent on policy trends. There are various involvements of each actor in general coordination problems which are described in table 2.

Table 3
General Coordination Problems and Actors Involved in

Coordination Problems	Actors
Unclear container data information causes poor planning	Container shipping lines, Operator Company Port Terminals, freight forwarders, trucking, railroad companies
Land Ownership	Pelindo, Port Terminal Operator Companies
New transportation services require basic volume but the logistics actors are not committed to using the new services	Freight forwarder, shipper, container shipping line
Lack of transporting and storing empty containers planning	Port Terminal Operator Companies, train operators, container, and shipping lines
Customs in administrative and physical inspections that are less effective cause delays	Freight forwarders, Customs (Customs), tracking, and the railway company

Unclear information about container licensing from customs	*Freight forwarder, Customs, Shipper / Consignor*

The table above presents general coordination problems on modes relevant to the problem coordination between rail and truck transportation such as the Exchange of information and inadequate coordination between Container Shipping Lines, Terminal Operating Companies (TOC) / terminal operator companies, and road and rail transportation companies, as well as a lack of commitment by cargo businesses to employ newly established transportation services, resulting in a lack of based volume.

Level of Actor's Role

Coordination of multimodal transportation institutions aims to develop the integration in multimodal transportation operations at ports. The parties involved must be willing to collaborate and trust one another to achieve this coordination. These two requirements are not always met in today's multimodal transportation systems.

Three factors are used to determine the actor's position. First and foremost, there are interests. Actors' motivations for constructing multimodal transportation and associated infrastructure. Actors who stand to gain from multimodal transportation usually have a strong feeling of self-importance. Second, there's influence. The impact of specific parties on multimodal transportation deployment. Actors with a high level of influence can impact the implementation of multimodal transportation or influence the conduct of other multimodal transportation actors. The relevance of the actor's position in the execution of Multimodal Transportation is the third factor. Actors with a high level of urgency are those who make it difficult to design and execute multimodal transportation.

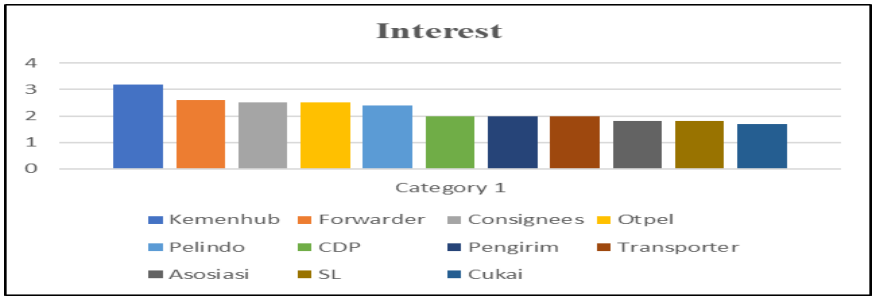

Figure 1. Actor’s level of interest. Source: the result of the analysis

The highest interest is in government institutions. This is to be expected, given that the concept of multimodal transportation was developed by a government agency, the Ministry of Transportation. Another group of actors who show high urgency are freight forwarders as logistics service providers, then consignees or goods recipients, followed by port authorities and port operators (Pelindo) Association, shipping line, and customs do not show high urgency, in the sense that they require good implementation of multimodal transportation.

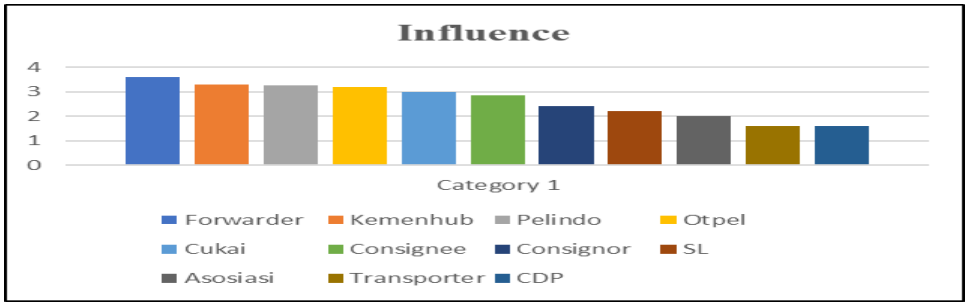

figure 2. Actor's level of influence. Source: the result of the analysis

The influence of the actors on the overall outcome is considered substantial. On a four-point scale, some groups of actors scored more than 2.5. Freight forwarders, MTOs, and port operators are the actors having the largest impact on outcomes. These forwarding businesses are undoubtedly interested in the smooth operation of multimodal transportation and frequently interact with customs, port authorities, and operators. They have a lot of influence because of their high interest and network. The Ministry of Transportation is influential because it has the policy and political will to implement multimodal transportation. The government, in this case, the Ministry of Transportation, can directly influence implementation through laws and regulations that may or may not allow this multimodal transportation system to work.

The consequences of multimodal transportation deployment are thought to be unaffected by the transporter and CDP. Because they are less involved in the broader freight transportation network and sometimes just handle domestic transportation, transporters are less well-known. CDP can indirectly build support for multimodal transportation, but because CDP already has multimodal infrastructure in place, it will have a limited impact on actual implementation at ports.

The third element determines the position of actors in the interest they have in the implementation of Multimodal Transport. The relevance of actors indicates how many different types of actors are required to execute multimodal transportation. Importance and influence can coexist, although this is not always the case. Actors are vital, yet they have minimal impact on the outcome.

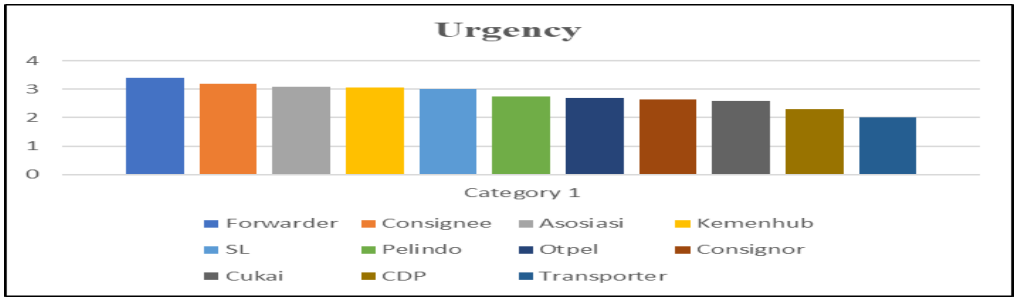

Figure 5. Actor's urgency level. Source: the result of the analysis

The most urgent actors for the operation of multimodal transportation are freight forwarder companies, consignees as goods owners as well as associations, and the

Ministry of Transportation, port companies, and port operators also occupy the highest urgency. The majority of the players are deemed urgent because they must modify the way they offer services or do business to facilitate multimodal transportation. is critical because multimodal transportation cannot be built without these players.

Because they are at the beginning and conclusion of the transportation network, consignees and shippers are critical. Because they are rarely directly involved in transportation and rely on network agents such as freight forwarders, transporters are regarded as slightly less significant than some of the other participants. Transporters are the least crucial player; they have limited connections to international transportation and multimodal transportation might still be designed and implemented without them.

Based on the problem structure and coordination barriers between actors in multimodal transportation institutions, As explained by (Miharja, M., Woltjer, J., et al. 2021), the implementation of multimodal logistics transportation is still weak because it is closely related to the many coordinating obstacles experienced by regulators, operators, logistics actors, and multimodal users at ports. As a result, the management of the Tanjung Priok Port becomes less efficient and complex, as explained by (Miharja, M., Woltjer, J., 2021). Research has explored patterns of perception (PP) identified related to transaction costs from coordination of multimodal logistics transportation institutions, including (1) PP1 related to the lack of clear and consistent law enforcement in implementation, this is reinforced by (Budidiswanto, N., Miharja, Miming., 2020). Furthermore, in institutional coordination, PP1 pays close attention to the similarity of objectives across government agencies and between the public and private sectors, (2) PP2 explains the lack of coordination due to unequal perceptions related to multimodal logistics transportation, (3) PP3 which explains the lack of comprehensive understanding on the long-term benefits of multimodal freight transport has contributed substantially to the perceived higher transaction costs, and (4) PP4 about the lack of consensus on multimodal transport objectives may also make the coordinating negotiation and decision-making process more complex, which can increase negotiation costs.

Furthermore, (Budisiswanto, N., Miharja, M.,2018) also explain that this coordination problem is caused by the complexity of the characteristics of the logistics system in Indonesia which has multi-sectoral characteristics. Multimodal transportation in Indonesia is only covered by doubt, ministerial regulations, and government regulations.

Conclusion

Government regulations on actor coordination do not provide clear guidelines regarding reward and punishment for non-compliance with regulations. Adverse selection is related to government uncertainty regarding licensing and agent monitoring due to the dualism of licensing. To gain resources, actors may be lured into acting opportunistically by deliberately distorting information about their true type. Freight forwarders and the Ministry of Transportation are two actors with a high level of urgency, influence, and significance, and who profit the most from multimodal transportation. Meanwhile, the

Port Authority and Pelindo are two important and influential actors in coordination. Various groups of actors with different behavioral characteristics and goals are not only complex but will require the availability of strong institutions as initiators and implementers.

The results of the analysis show the complexity of changing behavior and policies because they are related to formal institutions. The impediments highlighted are deeply ingrained in formal institutional elements and take a long time to remove. Because the coordination of participants in multimodal transportation is not yet handled by a particular organization, the issue gets increasingly complicated. The transportation company (freight forwarder) is the initiator in implementing the most crucial coordination. Port authorities and terminal operators (Pelindo) also play a very important role. Consignees, freight forwarders, and the Ministry of Transportation are the actors with the most urgency, influence, and significance, and who profit the most from multimodal transportation. Meanwhile, Forwarders, Port Authority, and Pelindo are two important actors and have high influence in coordination.

Based on the limitations of the respondents among actors, the results obtained cannot represent the theory as a whole. For this reason, the author gives suggestions to further researchers who have an interest in analyzing the coordination of multimodal transportation institutions to use social network analysis to see how far the influence between the actors involved in the coordination of multimodal transportation institutions at Tanjung Priok's Port or calculate (real cost) quantitatively to compare research results with real data. Apart from that, the researcher also has suggestions so that further research can develop an interview method or direct observation of all relevant stakeholders from the Tanjung Priok's port to the hinterland area so that the information extracted can explain the actual situation in more detail and further.

Bibliography

Andika, Eko. (2018). Optimalisasi PP Nomor 8 Tahun 2011: Studi di Pelabuhan Panjang Bakauheni Lampung dalam Mendukung Biaya Logistik. *Warta Penelitian Perhubungan*, *30*(1), 13–22.

Aulia, Erlisa, Ninvika, Dhiwa Humaira, Junitasari, Yolanda, Nurfitriani, Indah Apsari Asmana, & Sahara, Siti. (2023). Dampak Perubahan Teknologi Sistem Logistik di Pelabuhan. *Jurnal Ilmiah Wahana Pendidikan*, *9*(14), 273–289.

Berawi, Mohammed Ali, Susantono, Bambang, Abdul-Rahman, Hamzah, Sari, Mustika, Sesmiwati, S., & Rahman, H. (2013). Integrating quality management and value management methods: creating value added for building projects. *International Journal of Technology*, *1*(2013), 45–55.

Budisiswanto, Nurullah. (2022). Menuju Model Kelembagaan Transportasi Terpadu Untuk Mendukung Sistem Logistik Di Indonesia. *Jurnal Darma Agung*, *30*(1), 652–674.

Deswati, Rismutia Hayu, & Muhadjir, Muhadjir. (2015). Dukungan aspek produksi dalam sistem logistik ikan nasional (SLIN) di Kota Kendari, Sulawesi Tenggara. *Jurnal Sosial Ekonomi Kelautan Dan Perikanan*, *10*(2), 191–202. https://doi.org/10.15578/jsekp.v10i2.1259

Fithra, Herman. (2017). *Konektivitas Jaringan Jalan Dalam Pengembangan Wilayah Di Zona Utara Aceh*. Sefa Bumi Persada.

Fizzanty, Trina. (2012). Pengelolaan Logistik Dalam Rantai Pasok Produk Pangan Segar Di Indonesia1. *Jurnal Penelitian Pos Dan Informatika*, *2*(1), 123605.

Hartati, Enny Sri, Listiyanto, Eko, Pulungan, Abdul Manap, Abdullah, Imaduddin, Yudhistira, Bhima, Firdaus, Ahmad Heri, & Abdullah, Rusli. (2016). *Kajian tengah tahun INDEF 2016: Evaluasi paket, evaluasi ekonomi*. INDEF.

Lesmini, Lies, Didiet, Raden, & Hidayat, Rahmat. (2018). Peranan Inland Port Dalam Meningkatkan Daya Saing Nasional. *Jurnal Manajemen Bisnis Transportasi Dan Logistik*, *4*(3), 281–288.

Rita, Rita, & Capah, Juren. (2017). Revitalisasi Layanan Intermoda Angkutan Laut Tanjung Tiram Ke Kuala Tanjung. *Jurnal Transportasi Multimoda*, *14*(1), 21–30.