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A Literature Review of Transportation Logistics Policy Models in the Nusantara Capital City Region to Support National Economic Growth

Eko Agus Susanto[1], Muhammad Zilal Hamzah[2], Eleonora Sofilda[3]
[1]Universitas Trisakti, Jakarta, Indonesia, ekoagus1975@gmail.com
[2]Universitas Trisakti, Jakarta, Indonesia, ekoagus1975@gmail.com
[3]Universitas Trisakti, Jakarta, Indonesia, ekoagus1975@gmail.com

Corresponding Author: ekoagus1975@gmail.com

Abstract: The purpose of this study is to review and analyze several previous studies theoretically related to 1) The impact of Logistics Transportation Policy and spillover effects on National Economic Growth, 2) Some problems from the implementation of the Logistics Transportation Policy in a region, 3) Logistics Transportation Policy Model that can support National Economic Growth. The method used uses qualitative research, exploratory or interpretative systems with a systematic deductive process (Top-Down), guided by some empirical evidence obtained from the author's experience in the field of transportation and logistics, as well as qualitative interactions with several stakeholders and previous research. The results found are 1) in some countries, logistics policies have succeeded in having a positive impact on regional and national economic growth, 2) the ineffectiveness of a logistics policy is caused by high logistics costs, dysfunctional systems, unsupportive regulations, unsupportive human resources and infrastructure and weak coordination between stakeholders, and 3) a transportation logistics policy model that supports national economic growth must be able to involve stakeholders so that it can have a multiplier effect on the economic sector and national economic growth.

Keyword: transportation; logistics activities; economic growth; economic sector; spillover effect

INTRODUCTION

Logistics is an important activity that involves the movement and storage of raw materials, semi-finished materials, finished goods, and accompanying information to meet the needs of goods about timeliness and cost efficiency while maintaining the condition of the goods (Gattorna & Walters, 1996). Logistics activities in a production cycle of goods and services are also part of the strategic management aspect, considering that logistics activities also have a cost burden that must be incurred and considered in commodity production. Logistics activities and a region's economy must be connected because logistics activities can encourage other sectors to grow. Logistics performance, of course, affects not only commodity production activities but also development activities, where construction costs in Indonesia can

be affected by the performance of logistics activities that still need to be improved. Logistics activities in Indonesia face enormous challenges due to Indonesia's geographical conditions, which consist of thousands of islands with existing infrastructure disparities. Indonesia is also classified as the country with the highest ranking in total logistics costs to GDP. When compared to other ASEAN countries (Santoso et al., 2021). The momentum of the development of the Capital City of the Nusantara (IKN) as a new capital city to replace DKI Jakarta, of course, can be the first step in structuring transportation logistics affairs by building a model from the start so that IKN can later become a trigger point for new economic growth centres outside Java with the hope of becoming a new policy model that can cut logistics costs by up to 50%.

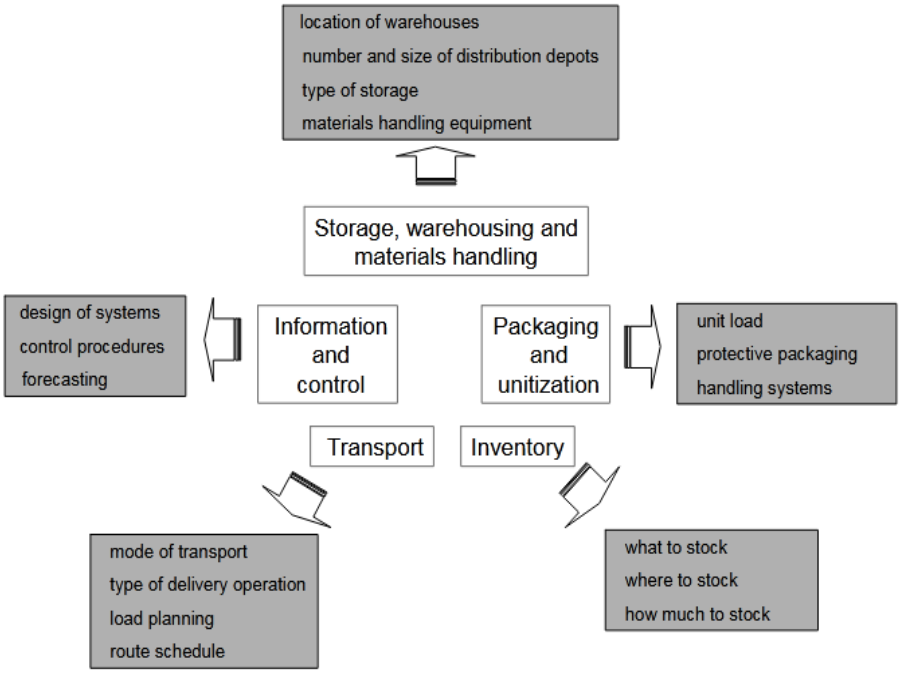
Some studies that connect regional economies and logistics activities with a causal relationship include L. Guo and H. Guo (2020), Li and Chen (2021) in China, S.-Y. Kim, H. Park, H.-M. Koo, and D.-K. Ryoo (2015) in South Korea, Munim and Schram (2018) in Europe, T. Tsekeris (2016) in Greece, Resa (2013) in Indonesia and Hayaloglu (2015) OEDC countries, Prijayati and Haryanto (2015) in nine countries. Meanwhile, the results of research that describe the extensive homework for a logistics policy are 1) lack of coordination between stakeholders can hamper logistics activities and locations by Tsekeris (2016) in Greece, Gong et al. (2021) in China, Li and Jian (2023) and Cao and Deng (2019) in China. 2) activities in logistics efficiency due to logistics costs, including by Kennedy (2019), Barata (2020), Subianto and Suyoto (2020) in Indonesia, Somuyiwa (2010) in Nigeria, Dumitrescu et al. (2013) in West and Central Africa, Wen and Du (2015) in China. The mandate of Law no. 3 of 2022 concerning IKN, in general, explains that the relocation of the national capital is expected to provide benefits, including 1) being a solution to equitable development by encouraging the formation of new economic centres in IKN and the National Economy in general, 2) accelerating inclusive economic growth; and 3) supporting the creation of the economic transformation needed to achieve Indonesia's vision 2045, namely Advanced Indonesia where the Indonesian economy is in the top five in the world. To fulfil this, the transportation and logistics design are expected to be able to encourage the economic sectors of cities in Kalimantan and eastern Indonesia, which have a dependence on transportation logistics as the blood and locomotive of all activities. The existence of IKN will affect the logistics evolution space regionally and nationally. He M et al. (2018) explain that five factors can explain the evolution of logistics space well: land prices, traffic accessibility, market demand, agglomeration advantages, and government policies. Naviskas (2011) explains that logistics activities directly impact logistics costs, short travel times, and business development. The purpose of this research is to review and analyze several previous studies related to 1) The impact of Logistics Transportation Policy and spillover effects on National Economic Growth, 2) Some problems from the implementation of the Logistics Transportation Policy in a region, 3) Logistics Transportation Policy Model in the Nusantara Capital Region that supports National Economic Growth.

METHOD

This research uses qualitative, exploratory or interpretative research using a systematic deductive process approach (Top-Down), guided by some empirical evidence obtained from the author's experience in the field of transportation and logistics, as well as qualitative interactions with several stakeholders found in the work (Bottom-Up). The literature review was used to synthesize the research concepts found and the search for some research results related to the problem under study, reviewing all of them with a level of detail that is considered sufficient and looking for the original aspects to ensure objectivity and avoid interpretation bias.

LITERATURE REVIEW

Transportation, in general, is transporting or carrying goods, including passengers, from one place to another effectively, efficiently, safely and safely. Meanwhile, logistics is the science that controls the movement of goods, energy, information, and other resources. So, in general, transportation is part of logistics because logistics also includes information integration, inventory, warehousing, reserve logistics, and packaging. Logistics is an important activity that contains the movement and storage of raw materials, semi-finished materials, finished goods, and accompanying information to meet the needs of goods concerning timeliness and cost efficiency while maintaining the condition of the goods. (Tang & Gattorna, 2017). The concept of logistics is the movement of natural resources to processing locations into semi-finished materials, which are sent again to processing locations into finished goods, and finally, the distribution of the finished goods to locations where consumers need the finished goods. Hesket et al. (1973) explain that logistics distributes goods from producers to end users for consumption, focusing on cost efficiency. The logistics system requires sufficient transportation infrastructure to achieve its functions by the desired objectives.

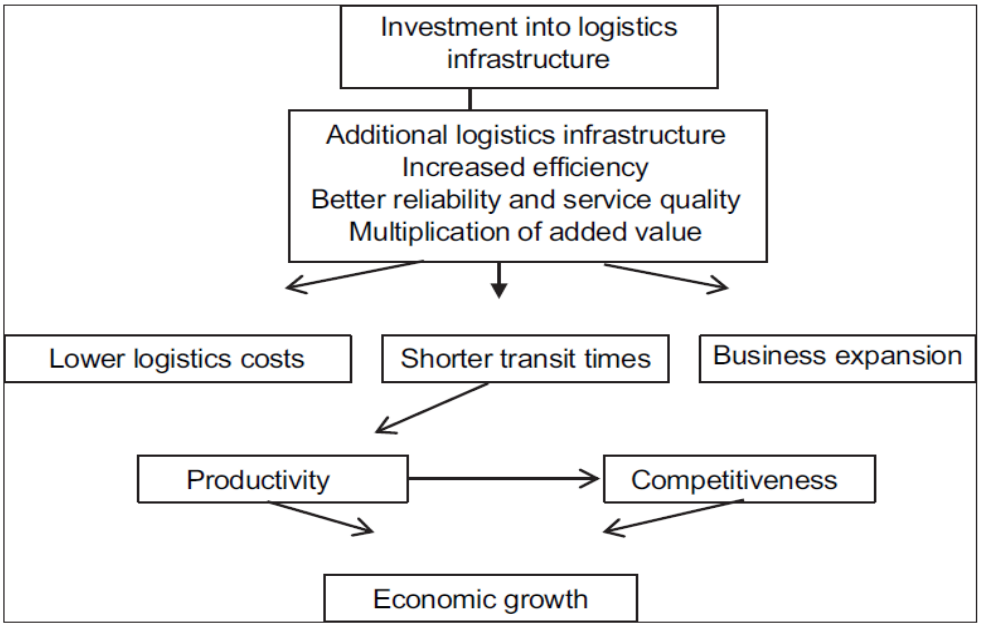


Source: Rusthon et al. (2010)

Figure 1. Components of Logistics and Distribution System

The concept of logistics can be described as the more efficient movement of goods and modes of transportation by choosing various transportation modes, choosing the route to be followed, and choosing the departure schedule and estimated time of arrival at the destination, especially the hub (the centre of distribution of an item that is passed / port).

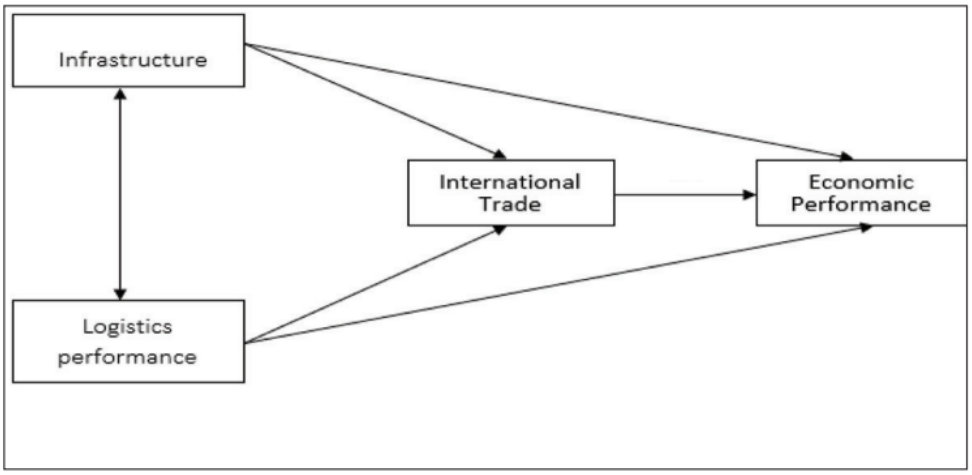
Figure 2 shows the role of transportation in a unified logistics system, according to Rushton et al. (2010). According to Naviskas (2011), the impact of logistics and transportation on a region's economic growth can be explained as shown in Figure 2. From Naviskas' (2011) view, investment in logistics-related transportation infrastructure directly impacts logistics costs, short travel times and business development.



Source: Naviskas (2011)

Figure 2. Impact of Infrastructure on Economic Growth

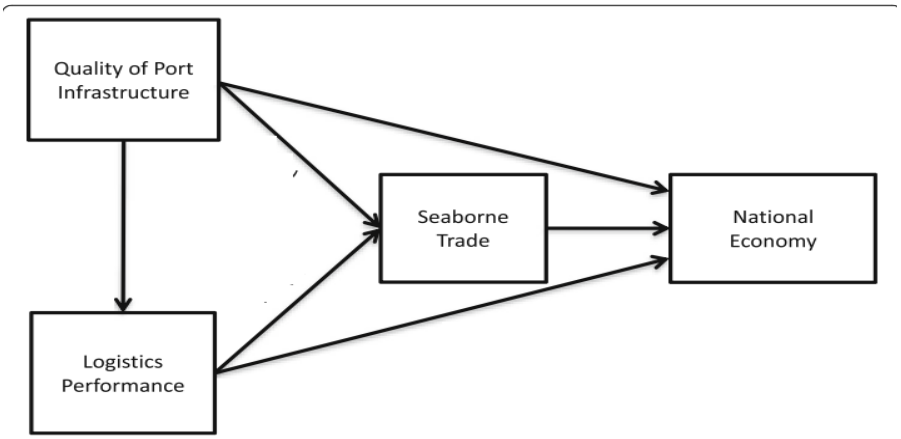
According to Yeo, Deng, and Nadiedjoa (2020), the relationship between transportation infrastructure, logistics, and economic development of a region is that improving infrastructure and logistics performance can increase the sustainable growth of middle-income countries by increasing the volume of international trade.



Source: Yeo, Deng and Nadiedjoa (2020)

Figure 3. Infrastructure, Logistics and Economic Development

Meanwhile, research from Munim and Schram (2018) explains that developing countries must continue to improve the quality of port infrastructure because it contributes to logistics performance and results in higher economic growth, as shown in Figure 4.



Source: Munim and Schram (2018)

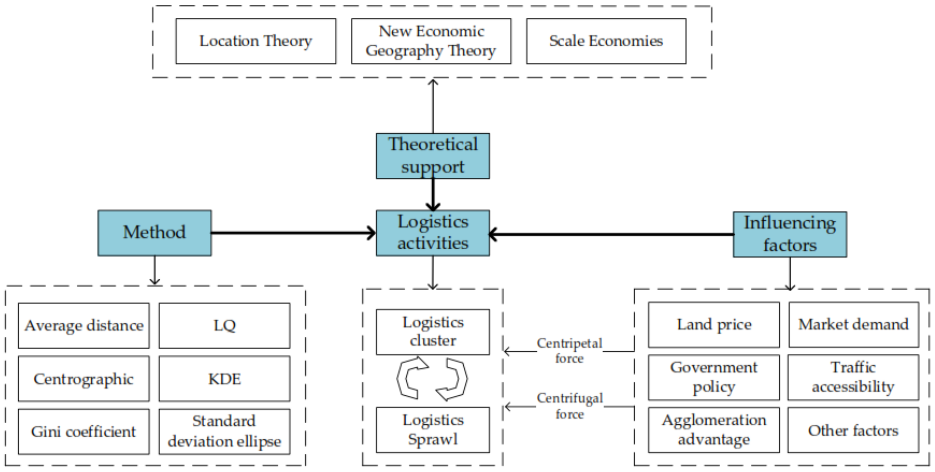
Figure 4. Port Infrastructure, Logistics and Economic Development

The benefits of investing in transportation infrastructure are not limited to travel time savings (Banister & Berechman, 2001). Lakshmanan (2011) shows that improved shipping services lead to trade growth, increased labour supply and technical diffusion. Yochum and Agarwal (1987) concluded that some firms in Hampton, USA, would suffer severe economic penalties due to port shortages. Bottasso et al. (2013) analyzed the impact of ports on local employment using a sample of 560 regions in 10 Western European countries. Chang et al. (2014) revealed that the South African economy could suffer a 17% loss due to a one-unit shortage in port activity.

Meanwhile, Sezer and Abasiz (2017) found that developing the logistics industry in OECD countries is one of the most critical determinants of economic growth. For example, the services provided by transportation infrastructure, an essential aspect of the logistics industry, play an important role in national economic activity. Investment in this area will reduce transportation costs and increase the movement of commodities and services, promoting trade development.

Logistics activities are greatly influenced and affected by logistics space. Logistics space is a kind of industrial space that refers to projecting urban logistics activities (professional market, logistics enterprises, logistics nodes, logistics infrastructure) in a geographic space (Hu & Cao, 2016). Poor logistics system planning only accelerates urbanization, exacerbating the increasingly prominent contradictions in urban land use. On the other hand, it causes a waste of logistics resources and does not affect economic growth, only adding externalities. Land availability and its cost, transportation infrastructure, and government policies are essential factors that affect the evolution of logistics space. Giuliano and Kang (2018) categorized the factors affecting the spatial dynamics of California's logistics industry into economic development policies, metropolitan size, economic structure, and physical geography. Kumar (2017) found that transportation infrastructure positively impacts transportation and logistics clusters. By studying traditional logistics disciplines, economics and transportation science do not have in-depth research on logistics space, and logistics is still relatively undeveloped from the perspective of logistics space as an essential part of industrial space, some researchers study the spatial aggregation and distribution of logistics industry from industrial space (He and Fu. 2017). According to Heitz (2017), activities in the Logistics space are divided into two types, namely 1) Logistics Sprawl. The activities of urbanization of cities and populations and the expansion of logistics gradually emerged in the urban development of various countries, including newly established urban cities. Logistics sprawl, the spatial deconcentration of logistics facilities and distribution centres, is the trend of outward movement of logistics facilities from inner urban areas to suburban and outer city areas. "Logistics polarization" and "logistics suburbanization" are also used to describe the phenomenon of logistics facilities from

the city centre to the periphery; 2) Logistics Clustering. Clustering is standard in the process of developing an industrial park. Rivera and Sheffi (2014) define a logistics cluster as a geographical concentration of third-party logistics (3PLs), transportation operators, and storage and forwarding companies that provide logistics services. The most apparent benefit for logistics clusters is combining transportation flows, often saving transportation costs.

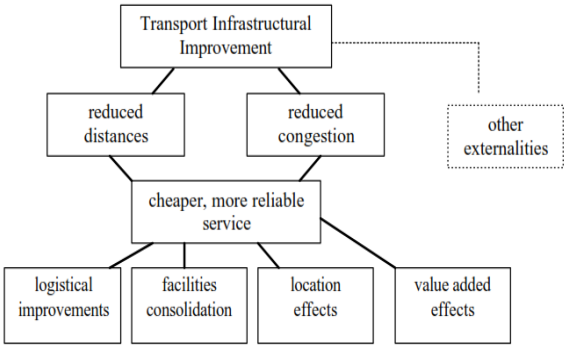


Source: He M, et al. (2018)

Figure 5. Evolution of the Logistics Space

He M et al. (2018) explain that five factors best explain the evolution of the logistics space: land price, traffic accessibility, market demand, agglomeration advantages, and government policies. In addition, industry structure, labour force level, and e-commerce logistics are also important factors that influence the evolution of the logistics space.

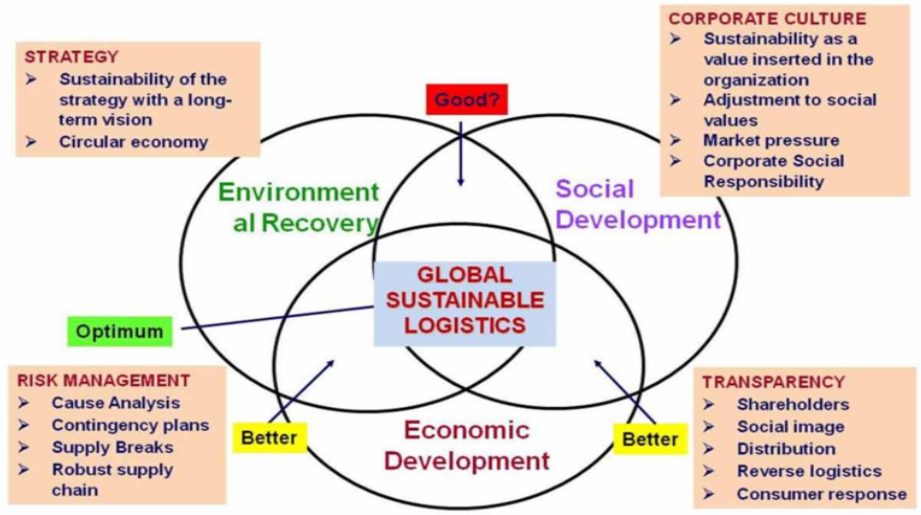
Logistics activities and economic growth are inseparable. Logistics services play a critical role, and the challenges of providing adequate logistics support are increasing as countries move to more complex and higher value-added manufacturing and production processes (Mangan & Lalwani, 2016). For developing countries, improved logistics depends on their infrastructure, customs procedures, logistics skill levels and regulations. Yeo's (2020) research shows that international trade can mediate the relationship between infrastructure and economic performance, logistics performance and economic performance in middle-income countries. This implies that lower-middle-income countries must improve their infrastructure and logistics to improve economic performance. Laksmanan.TR and Anderson WP (2022) illustrate the relationship between transportation infrastructure, logistics activities, and the macroeconomy, as shown in Figure 7. Logistics companies use transportation in response to lower costs, time savings, increased accessibility of improvements and increased possibilities by realizing additional economic benefits from reorganizing logistics functions.



Source: Laksmanan TR and Anderson WP (2022)

Figure 6. Transportation Infrastructure, Logistics Activities with Macroeconomics

Logistics sustainability and supply chain management at the global level is a strategy of transparent integration of the organization's social, environmental, and economic objectives in a system of coordination of key business processes between organizations, with the goal of improving the long-term economic results of each company and its supply chain (Carter & Rogers, 2008).



Source: Fernández-Villacañas (2008), adaptation of Carter & Rogers (2008)

Figure 7. Logistics Sustainability

The concept of sustainability, associated by many socio-economic actors exclusively with practices that respect the environment, has evolved to include other dimensions, such as responsible and ethical social behaviour, new consumer requirements, or sustainable economic well-being, understood globally in the analysis of international competitiveness. Sustainability has become an essential factor in competitive advantage for industrial manufacturing companies. Sustainability has become an important factor in competitive advantage for industrial manufacturing companies (Le et al, 2013). Logistics costs include all costs associated with moving products, including costs incurred during raw material procurement, order delivery, and all steps in between. Logistics costs are strongly influenced by cost factors related to transportation and warehousing costs. Limited transportation infrastructure can cause logistics costs to exceed production activities. Bharata's research (2020) states that many factors cause expensive logistics costs: 1) Unsupportive infrastructure, 2) Poor logistics system; 3) the amount of product supply is evenly distributed, 4) Unsupportive and overlapping regulations; 5) Inadequate human resources; and 6) Technological innovation is not yet comprehensive.

RESULTS AND DISCUSSION

Logistics activities and the regional economy

Logistic activities and the regional economy have a causal relationship, as explained by L. Guo and H. Guo (2020) that the relationship between the development of the logistics industry can continue to drive stable regional economic growth and provide sustainable energy in driving the transformation of regional economic growth patterns, encouraging industrial structure adjustments, increasing regional competitiveness, and accelerating the regional economy, Li and Chen (2021) in China concluded that the development of the logistics industry can not only increase local economic growth but also encourage the economic growth of surrounding areas, while research in South Korea by S.-Y. Kim, H. Park, H.-M. Koo, and D.-

K. Ryoo (2015) states that the Logistics Industry at the Port has a high level of regional employment and impacts significant economic growth. Munim and Schram (2018), in Europe, explained that the quality of port infrastructure positively influences logistics performance in developing and developed countries; the quality of port infrastructure only affects the national economy in developed countries. However, the mediating effect of port infrastructure quality on the national economy through logistics performance and sea trade is quite significant in developing countries. In addition, logistics performance also positively impacts the national economy of both developed and developing countries. Research by T. Tsekeris (2016) in Greece explains many significant indirect (spatially lagged) impacts on regional export trade, including highway corridor trade. Agglomeration economies have a positive impact on manufacturing exports via ships and trucks in their prefectures while manufacturing specialization has a significant impact on sea transportation. Research in Indonesia also shows the same. Resa (2013) explains that logistics plays a vital role in supporting and maintaining economic growth, where economic growth has a significant demand-pull effect on logistics, while Prijayati and Haryanto (2015), in their research in 9 random countries, concluded that capital stock variables, air transportation, rail transportation, sea transportation, internet users, warehousing and labour have a significant effect on economic growth, and Hayaloglu (2015) OEDC countries that the relationship between the development of the logistics sector and economic growth changes depending on the variables used. Therefore, land transportation infrastructure investment is positive in all models used. In addition, the coefficients of road transportation, air transportation, MCS, FBIS variables, and internet users are positive, while the coefficients of telephone line variables are negative. There is no significant relationship between rail transportation and economic growth.

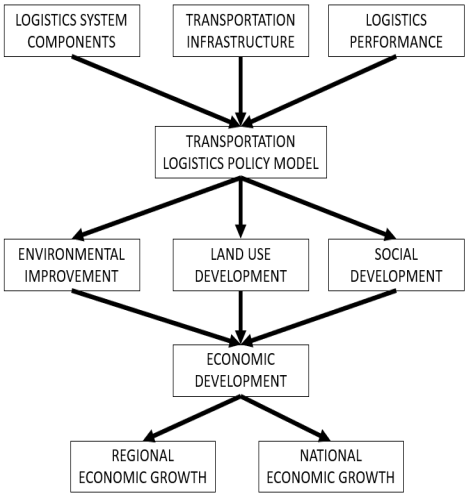
Barriers to Achieving Logistics Performance

Logistics policy implementation only sometimes achieves its goals effectively and efficiently. Some studies show implementation constraints. Tsekeris's research (2016) in Greece showed that the **weakness of coordination of** regional investment policies and land transportation system planning concerning the location of logistics centres has an impact on failure to take into account long-term estimates can significantly underestimate the impact of changes in distance to major transportation facilities on export volumes, significantly increased accessibility between regions and market potential has a significant impact on agricultural exports by road. Gong et al. (2021) in China found that weak coordination between stakeholders causes the logistics industry to be less able to promote the development of the manufacturing industry; in addition, regional differences are significant with a spatial evolution pattern of "high in the east and low in the west". Moreover, environmental factors affect the input efficiency of the logistics and manufacturing industries, especially the manufacturing industries. Research by Li and Jian (2023) in China explains that coordination weaknesses impact the gap in logistics environment construction, and logistics elements determine the difference in the final benefits of agricultural products so that not all regions experience progress in agriculture due to the impact of logistics activities. Another study in China by Cao and Deng (2019) found that industrial agglomeration, government intervention, and the level of openness to outsiders have a significant influence on improving the efficiency of the logistics sector. Logistics industry. Other problems found are **logistics inefficiencies due to logistics costs**. According to Kennedy (2019), companies experience stock and marketing constraints due to logistics problems and high costs. Barata (2020) found that many factors cause expensive logistics costs: 1) Unsupportive infrastructure, 2) Poor logistics system; 3) the amount of product supply is evenly distributed; 4) Unsupportive and overlapping regulations; 5) Inadequate human resources; and 6) Technological innovation is not yet comprehensive. Concrete actions that the government can take to overcome high logistics costs are infrastructure improvements to build logistics-based commodities, regulatory improvements,

and the provision of Economic Package Policy facilities. In their research in Indonesia, Subianto and Suyoto (2020) state that logistics costs related to human resources, human travel, and internal logistics carried out by companies affect the total cost of projects implemented. Somuyiwa (2010) in Nigeria stated that the location of warehouses, factories, and markets must consider transportation costs because transportation costs affect the total cost of production. Wen and Du (2015) said in China that the high logistics costs in the past that lasted long enough, tolls, last kilometre distribution, empty vehicles and city policies make warehouse location selection a burden and so on. It is necessary to improve this situation by optimizing the taxation system and making city policies more suitable for developing logistics companies. The government can also promote information technology collaboratively.

Logistics Transportation Policy Model to Support National Economic Growth

Based on some of the research results, the author tries to compile a framework for the Logistics Transportation Policy Model that supports Economic Growth by looking at how the Policy Implementation is according to George C. Edward III (Agustino, 2008). Edward III (Agustino, 2008) states that four factors or variables are the most essential conditions for the success of the implementation process. The four factors are communication factors, resources, bureaucratic attitudes and implementers, the organizational structure and workflow of the implementing bureaucracy, and some previous research results to form a framework model.

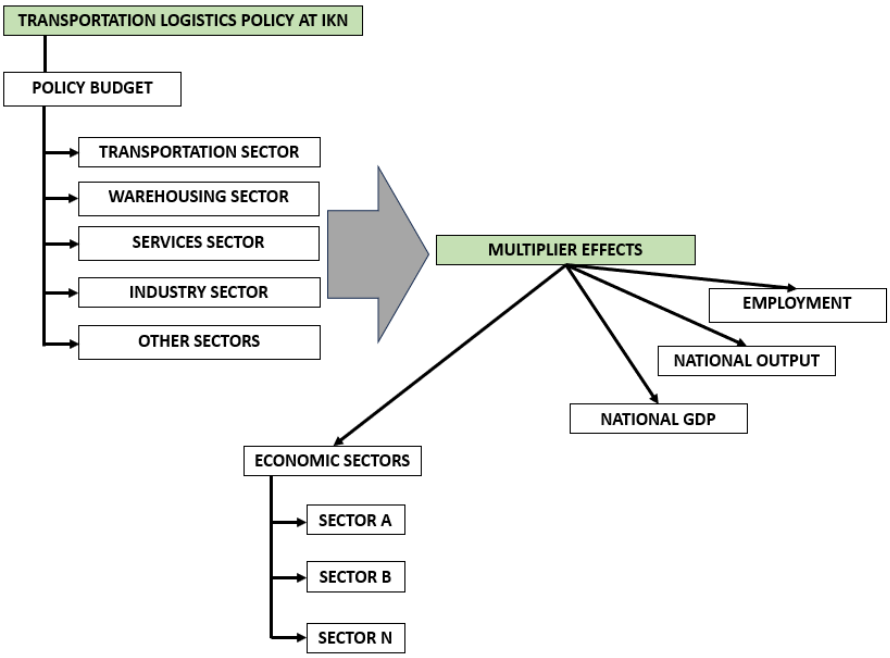


Source: Analysis, 2024

Figure 8. Framework Model

The development of the framework above can be approached through several analyses, such as Structural Equation Modeling (SEM) based on questionnaires to respondents to see the influence or relationship, analysis of in-depth interviews or Focus Group Discussions (FGD) to obtain input on the model provided, and the last, an analysis technique to see the macroeconomic impact with the input-output analysis method.

Input-output analysis is a mathematical model that examines the interrelated structure of the economy between economic sectors. Its principle is to identify and disaggregate all expenditure flows between various economic activities and consumers between economic activities and the provision of inputs in the trade structure of the economy.



Source: Analysis, 2024

Figure 9. Multiplier Impact Framework

CONCLUSION

The conclusion of this literature review can be explained that 1) In several countries in Asia, Europe and Africa, Logistics Policy has succeeded in having a positive impact on regional and national economic growth, encouraging all sectors to grow and move so that it has a spillover effect on all aspects and has a multiplier impact on the economic sector. 2) The ineffectiveness of a logistics policy is caused by high logistics costs, dysfunctional systems, unsupportive regulations, unsupportive human resources and infrastructure and weak coordination between stakeholders. 3) The Logistics Transportation Policy in IKN as a new Agglomeration area is expected to support National Economic Growth and the growth of newly formed agglomeration areas by involving stakeholders, both central and regional so that the causes of problems are known and get solutions and can measure the multiplier impact of the economic sector and national economic growth.

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