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Evaluation of the Indonesian Government Policy Regarding the Age of Freight Transport Vehicles (Trucking - Land Transportation)

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Abstract: This study employs a SWOT analysis to evaluate the policy on age restrictions for freight vehicles in Indonesia. This method was chosen due to its ability to identify and analyze both internal and external factors that comprehensively influence policy implementation. Primary data were collected through in-depth interviews and focus group discussions (FGD) with key stakeholders, while secondary data were gathered from policy documents, statistical reports, and relevant scientific publications. The SWOT analysis involved evaluating internal factors (strengths and weaknesses) and external factors (opportunities and threats) impacting the policy, with weighting determined through expert judgment. The analysis revealed that PT XYZ is positioned in Quadrant III, indicating that the company faces more external threats than opportunities, although internal factors suggest adequate strengths. Recommended strategies include advocating for vehicle age restrictions, operational digitization, service diversification, and the implementation of sustainability efforts to improve competitiveness. The implementation of these strategies is expected to enhance efficiency, customer satisfaction, and corporate reputation. Collaboration with the government and logistics business associations will be crucial for successfully implementing these strategies to ensure sustainable growth.

Keywords: SWOT Analysis, Vehicle Age Restrictions Policy, Digitization, Service Diversification, Sustainability, Competitiveness

INTRODUCTION

A mid global efforts to address the challenges of climate change, Indonesia has taken significant steps in formulating policies aimed at reducing emissions in the transportation sector (KLHK, 2023). One of the key focuses of these policies is the age of freight transport vehicles, which serves as a crucial aspect in designing a more sustainable transportation system (Umweltbundesamt Austria, 2022). Globally, the 2015 Paris Agreement has encouraged nations to take concrete actions in reducing greenhouse gas emissions (Delbeke et al., 2019). Indonesia has committed to reducing emissions by 29% through its own efforts and up to 41% with international support by 2030 (Direktorat Jenderal Pengendalian Perubahan Iklim, 2022). The

transportation sector is a primary focus, given its contribution of 28% to the nation's total emissions (Kinerja & Ppn, 2023)

In the ASEAN region, the ASEAN Green Transportation Strategy 2018–2025 serves as a regional framework encouraging member states to adopt environmentally friendly transportation policies (ASEAN, 2019). Singapore, for instance, has implemented strict vehicle age policies through the Certificate of Entitlement system, which limits the maximum vehicle age to 10 years. Indonesia's commitment to environmental protection and emission reduction is reinforced by Law No. 32 of 2009 on Environmental Protection and Management (PPLH). This regulation provides a comprehensive legal framework for environmental protection and management, including air pollution control in the transportation sector (Government of the Republic of Indonesia, 2009). The law also mandates that all business activities possess environmental documentation and manage their environmental impacts, including those related to the transportation and logistics sectors.

In addition UU No.22, (2009) on Road Traffic and Transportation (LLAJ) serves as the primary legal framework (Government of the Republic of Indonesia, 2009a, 2009b Data from the Ministry of Transportation (2023) indicates that approximately 65% of freight transport vehicles in Indonesia are over 10 years old. A study by ITB revealed that vehicles older than 10 years consume 25% more fuel compared to newer vehicles (Wirawan et al., 2018) WHO, (2023) reported that air pollution from motor vehicles causes approximately 7 million premature deaths globally each year. Research by the Ministry of Environment and Forestry (2023) showed that older vehicles emit 30–40% more CO2 compared to newer models. Additionally, a study by the LIPI Transportation Research Center (2023) found that older vehicles produce PM2.5 emissions that are 2.5 times higher, NOx emissions that are 1.8 times higher, and SO2 emissions that are twice as high as those from newer vehicles.

In the context of achieving the SDGs, Indonesia has made significant progress, particularly in Goal 13 (Climate Action) with a 24.7% reduction in emissions in 2023, surpassing the interim target of 20% (Bappenas, 2024). For Goal 11 (Sustainable Cities and Communities), Indonesia successfully reduced urban air pollution by 15.3% compared to the baseline year of 2015 (KLHK, 2023). These achievements are supported by various environmentally friendly policies, including the implementation of Euro 4 emission standards for new vehicles since 2021, a program to convert fossil fuel-powered vehicles to electric vehicles, the development of rail-based mass transportation in six major cities, and the restriction of vehicle age for operational fleets. According to the 2023 Voluntary National Review (VNR), Indonesia is on track to achieve 76% of its environmental SDG targets by 2030 (United Nations in Indonesia, 2024). However, challenges remain in implementing green transportation policies, particularly regarding the renewal of freight transport fleets with older vehicles (Ministry of National Development Planning, 2024).

The implementation of vehicle age limitation policies faces challenges, such as resistance from business owners, as reflected in a survey by the Indonesian Truck Entrepreneurs Association (2023), which revealed that 67% of business owners oppose vehicle age restrictions. Bank Indonesia (2023) reported that only 45% of transport entrepreneurs have access to banking credit. The Ministry of Transportation (2023) noted that official workshop coverage reaches only 60% of operational areas. The World Bank (2022) emphasized that the successful implementation of vehicle age limitation policies requires multi-stakeholder collaboration. This coordination has led to concrete programs, such as the establishment of a national air pollution control coordination team (Coordinating Ministry for Maritime Affairs and Investment, 2023).

Bappenas (2023) projects that the implementation of the vehicle age limitation policy could reduce transportation sector emissions by 20% by 2030. The International Energy Agency (2023) estimates that Indonesia could save up to USD 5.4 billion per year in healthcare costs

through this policy. The Center for Transportation and Logistics Studies (2023) predicts that the policy could create 500,000 new jobs in the automotive industry and its supporting sectors. The Directorate General of Land Transportation (2023) has developed a roadmap for transportation sector emissions reduction from 2020 to 2060, which includes a vehicle scrapping program. The Ministry of Finance (2023) supports this program through a fiscal incentive scheme offering up to a 30% tax reduction for purchasing new vehicles.

Regarding the situation experienced by PT XYZ, a company operating in the land transportation sector, specifically in container transport since 2014, the company faces unfair competition due to the application of transportation tariffs for vehicles over 20 years old, compared to fleets with much younger vehicles, yet the tariffs applied are relatively the same. The company is required to always provide the best quality service to its clients, who demand that goods transported to and from ports be carried in vehicles in prime condition with relatively younger ages. PT XYZ eventually realized that the government's lack of firmness in this matter inadvertently created competitors for the company itself. This occurs when PT XYZ renews its fleet and must sell its older vehicles, which are then purchased by new players in the industry.

As a business operator, PT XYZ strongly hopes that the government will engage in dialogue with business operators and work towards limiting the operation of fleets older than 20 years in DKI Jakarta, especially for port access, given the frequent incidents related to the poor condition of older fleets. These older vehicles often cause severe traffic congestion in port areas due to classic issues arising from their age.

METHOD

This study employs a SWOT analysis approach to evaluate the policy on age restrictions for freight vehicles in Indonesia. This method was chosen due to its ability to identify and analyze both internal and external factors that comprehensively influence policy implementation.

Research Design and Approach

The research is conducted by combining the collection of primary and secondary data to ensure the validity and reliability of the analysis results. Primary data is obtained through in-depth interviews with key stakeholders and focus group discussions (FGD) involving four main groups: regulators, business practitioners, environmental experts, and transportation practitioners. Meanwhile, secondary data is collected from various policy documents, statistical reports, and relevant scientific publications.

Data Collection and Analysis

The process of primary data collection is carried out through structured interviews with at least 20 key informants representing various stakeholders. The interviews focus on identifying SWOT factors based on each informant's experience and perspective. Subsequently, four FGD sessions are held with two participants per group to validate and deepen the findings from the individual interviews. Secondary data is gathered from various official sources, including policy documents from the Ministry of Transportation, Ministry of Environment and Forestry (KLHK), statistical data from BPS, and technical reports from research institutions and international organizations. These documents are systematically analyzed to identify trends, patterns, and factors relevant to policy implementation.

SWOT Analysis Framework

SWOT analysis is conducted by identifying and evaluating internal factors (strengths and weaknesses) as well as external factors (opportunities and threats) that affect policy implementation. Internal factors include aspects under the control of policymakers, such as the

regulatory framework, implementation capacity, and monitoring systems. External factors encompass aspects outside the direct control of policymakers, such as technological developments, global economic conditions, and political dynamics.

Weighting and Assessment

Each factor in the SWOT analysis is assigned a weight and value based on its level of importance and impact on policy implementation. Weighting is done using a 1-4 scale, where 4 represents very important and 1 represents less important. This process involves expert judgment from the specialists involved in the research to ensure objectivity and validity of the results.

Strategy Development

Based on the results of the SWOT analysis, four categories of strategies are developed: SO (Strength-Opportunity), WO (Weakness-Opportunity), ST (Strength-Threat), and WT (Weakness-Threat). These strategies are designed to optimize existing strengths and opportunities while minimizing weaknesses and anticipating potential threats in policy implementation.

Research Outputs

This research produces three main outputs: (1) A comprehensive SWOT matrix mapping key factors in policy implementation, (2) A set of strategic recommendations for short, medium, and long-term actions, and (3) An implementation roadmap, complete with a timeline, milestones, and measurable success indicators.

Execution Schedule

The research is carried out over a period of two to three months, with the breakdown as follows: one month for data collection, two weeks for SWOT analysis, two weeks for result validation, and two weeks for the preparation of recommendations and final report completion. This schedule is designed considering resource availability and the complexity of the required analysis

RESULT AND DISCUSSION

Transportation Transformation for Climate Change Mitigation

Climate change has become an urgent global issue since the 2015 Paris Agreement, with the target of limiting global temperature rise to below 2°C, ideally to 1.5°C. The transportation sector, which contributes 24% of greenhouse gas emissions, plays a crucial role in achieving the target of reducing emissions from 7.7 gigatons to 2–3 gigatons per year by mid-century. Indonesia, through its Enhanced NDC, targets a 31.89% emission reduction without international support and 43.20% with international support by 2030. The IPCC's Avoid-Shift-Improve strategy, supported by the ASEAN Green Transportation Strategy 2018–2025, is expected to reduce transportation sector emissions by up to 50% by 2050 compared to the 2010 baseline.

A green economy approach based on a circular economy (reduce, reuse, recycle) shows significant potential, such as the creation of 4.4 million new jobs by 2030, savings in healthcare costs, and productivity improvements up to USD 5.4 billion annually. However, significant challenges remain, such as the dominance of old vehicles, resistance from business actors, limited financing, and inadequate infrastructure. Nevertheless, great opportunities arise from the decreasing cost of green technologies and sustainable investment. An integrated transportation system transformation, supported by regulations, technology, and innovative

financing, can lead Indonesia towards a more environmentally friendly future, enhancing the quality of life and supporting comprehensive sustainable development.

SWOT Analysis

Table 1. SWOT Analysis

Category	Description
Strength	1. A strong regulatory framework through Law No. 32/2009 and Law No. 22/2009 2. High government commitment to emission reduction 3. International support for the implementation of NDC
Weaknesses	1. Limited supporting infrastructure for environmentally friendly vehicles 2. Suboptimal vehicle emissions monitoring system 3. Limited access to financing for fleet renewal (45% of businesses)
Opportunities	1. Development of electric and hybrid vehicle technology 2. Potential for green financing and carbon pricing 3. International cooperation in technology transfer
Threats	1. Resistance from transportation business actors (67% oppose) 2. Economic instability affecting investment 3. Political priority changes that could hinder policy implementation

Source: Research data (2024)

IFAS

Table 2. IFAS Analysis

Internals Factors	Value	Rating	Score
Strengths			
A strong regulatory framework through Law No. 32/2009 and Law No. 22/2009	0.15	4	0.6
High government commitment to emission reduction	0.2	4	0.8
International support for the implementation of NDC	0.2	3	0.6
Sub Total	0.55		2
Weaknesses			
Limited supporting infrastructure for environmentally friendly vehicles	0.15	3	0.45
Suboptimal vehicle emissions monitoring system	0.15	1	0.15
Limited access to financing for fleet renewal (45% of businesses)	0.15	2	0.3
Sub Total	0.45		0.9
Total	1		2.9

Source: Research data (2024)

Strengths

PT XYZ has consistently renewed its fleet, demonstrating dedication to operational standards and customer service. This enhances the company's reputation among clients who value service quality and safety. This strength aligns with client demands for vehicles in prime and safe condition. However, this strength has not yet fully provided a competitive advantage due to the lack of fair market regulation.

With years of experience, PT XYZ possesses expertise in managing land transportation for container hauling. While this experience provides an operational advantage, this strength is not fully optimized without government policy support.

Weakness

The significant investment required for fleet renewal presents a challenge, especially when operational rates in the market do not reflect the quality of service. When old fleets are sold, buyers (who are often new competitors) exploit these fleets to operate without high standards, creating competitors that worsen PT XYZ's market position.

The lack of government support for fleet age restrictions is a major weakness, as the market does not provide incentives for companies investing in quality. This highlights how the government's indecision exacerbates unhealthy competition.

EFAS

Table 3. EFAS Analysis

External Factors	Value	Rating	Score
Opportunities			
Development of electric and hybrid vehicle technology	0.25	4	1
Potential for green financing and carbon pricing	0.2	4	0.8
International cooperation in technology transfer	0.15	3	0.45
Sub Total	0.6		2.25
Threats			
Resistance from transportation business actors (67% oppose)	0.15	3	0.45
Economic instability affecting investment	0.1	2	0.2
Political priority changes that could hinder policy implementation	0.15	2	0.3
Sub Total	0.4		0.95
Total	1		3.2

Source: Research data (2024)

Opportunities

Customers are increasingly aware of the importance of safety and efficiency in transportation. This creates an opportunity for PT XYZ to position itself as a provider of high-quality services. With supportive regulations, PT XYZ can leverage this opportunity to expand its customer base. The adoption of technology in fleet management can enhance efficiency and service transparency. With regulations supporting fleet age restrictions, PT XYZ can focus more on investing in technology that adds value.

Threats

The lack of firm policies regarding old fleets creates an unhealthy market. This threat is the main cause of the perceived unfairness for PT XYZ, where operational rates do not reflect quality investments. Old fleets often cause congestion and operational disruptions at ports. This issue worsens the overall industry image and may impact PT XYZ's reputation, despite their investments in quality.

Positioning

Based on the analysis using the external factor coordinate value X (-0.5) and the internal factor coordinate value Y (0.2), PT XYZ's position is in Quadrant III of the SWOT matrix. This position indicates that the company is facing an unsupportive external environment, with threats being more dominant than opportunities, while the internal factors suggest that the company has relatively sufficient strengths to cope with the situation.

Figure 1. Positioning

Strategy

PT XYZ needs to advocate for policies that limit the age of operational vehicles, particularly for those operating at ports, such as restricting fleets over 20 years old. This aligns with the study by Rahmasari et al. (2023), which shows that vehicle age regulations can significantly reduce emissions and improve transportation efficiency. Collaboration with the government and logistics business associations can strengthen the company's position in the industry.

PT XYZ can adopt digital technologies to improve operational efficiency by optimizing routes and monitoring fleets in real-time. According to Purbasari et al. (2023), the implementation of information technology in logistics has been proven to reduce operational costs by up to 15% and enhance customer satisfaction. Automating administrative processes can also accelerate service times, improving competitiveness amidst tariff competition. Service diversification is an important step to reduce dependence on container transportation. Research by Ginny (2019) emphasizes the importance of focusing on high-value segments, such as logistics for valuable or time-sensitive goods, to cope with price pressures in the conventional logistics sector. PT XYZ could also develop sustainability-based logistics services, which are increasingly in demand in the global market.

PT XYZ must be more strategic in managing the impact of selling old fleets. The strategy of selling vehicles outside of the primary operating regions refers to the findings of Chopra and Meindl (2019), which state that strategically managing physical assets can prevent the creation of unwanted competition. Additionally, exclusive contracts with key clients can help maintain customer loyalty.

CONCLUSION

The conclusion of this analysis indicates that PT XYZ faces significant challenges due to the imbalanced competition in the land transportation sector, particularly because of the use of old fleets with tariffs comparable to newer vehicles. This issue is exacerbated by regulations that are not yet strict in limiting the age of operational vehicles. Through IFAS and EFAS analysis, PT XYZ's strategic position is in a quadrant that highlights the need to focus on optimizing internal strengths to address external threats. The recommended strategies include advocating for vehicle age regulations, operational digitization, service diversification, rebranding the company, and implementing more integrated sustainability efforts to improve competitiveness in the face of market challenges.

The implementation of these strategies is supported by various international studies that show vehicle age regulations, technology adoption, and operational sustainability can positively impact efficiency, customer loyalty, and corporate reputation. With these steps, PT XYZ can not only strengthen its internal position but also mitigate the effects of unhealthy competition and create new opportunities in the competitive logistics market. Collaboration with the government, associations, and strategic partners will be key to successfully implementing this strategy for sustainable growth.

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