Evaluation of Policy Implementation for Monitoring and Controlling Goods Overloading at the UPPKB Weighbridge in Seumadam, Aceh Tamiang

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Abstract
Overloading violations in freight transport remain a serious problem in road transport management in Indonesia, including at the Seumadam Aceh Tamiang Weighbridge. Overloading causes road damage, reduces safety, and weakens the effectiveness of enforcement policies. This study aims to evaluate the implementation of supervision and control policies for freight overloading using four indicators based on Langbein's theory: weighing requirements and regulations, penalties for violations, supervision service procedures, and service time. This study uses an evaluative, qualitative approach through observation, interviews, and documentation. The results show that the policy implementation has not been optimal. Not all freight vehicles are weighed in accordance with SOPs due to officers' lack of assertiveness and inconsistent implementation of procedures. Sanctions for overloading violations are also not enforced as stipulated, with drivers receiving only warning letters and no firm follow-up. In addition, the supervision process is not yet effective as vehicles with loads exceeding the limit are still allowed to continue their journey. The irregular behavior of some drivers also causes service times to exceed standards. This study concludes that there is a need to improve SOPs, strengthen enforcement of sanctions, and enhance officers' facilities and capacity to monitor overloading more effectively.

Keywords: *Overloading, Freight Transport, Weighbridge*

Abstrak
Pelanggaran kelebihan muatan dalam transportasi barang masih menjadi masalah serius dalam manajemen transportasi jalan di Indonesia, termasuk di Timbangan Seumadam Aceh Tamiang. Kelebihan muatan menyebabkan kerusakan jalan, mengurangi keselamatan, dan melemahkan efektivitas kebijakan penegakan hukum. Studi ini bertujuan untuk mengevaluasi implementasi kebijakan pengawasan dan pengendalian kelebihan muatan barang menggunakan empat indikator berdasarkan teori Langbein: persyaratan dan peraturan penimbangan, sanksi pelanggaran, prosedur layanan pengawasan, dan waktu pelayanan. Studi ini menggunakan pendekatan evaluatif kualitatif melalui observasi, wawancara, dan dokumentasi. Hasil penelitian menunjukkan bahwa implementasi kebijakan belum optimal. Tidak semua kendaraan barang ditimbang sesuai dengan SOP karena kurangnya ketegasan petugas dan implementasi prosedur yang tidak konsisten. Sanksi untuk pelanggaran kelebihan muatan juga tidak ditegakkan sebagaimana mestinya, dengan pengemudi hanya menerima surat peringatan dan tidak ada tindak lanjut yang tegas. Selain itu, proses pengawasan belum efektif karena kendaraan dengan muatan melebihi batas masih diizinkan untuk melanjutkan perjalanan. Perilaku tidak teratur beberapa pengemudi juga menyebabkan waktu pelayanan melebihi standar. Studi ini menyimpulkan bahwa ada kebutuhan untuk memperbaiki SOP, memperkuat penegakan sanksi, dan meningkatkan fasilitas serta kapasitas petugas untuk memantau kelebihan beban kerja secara lebih efektif.

Kata Kunci*: Overloading, Freight Transport, Weighbridge*

INTRODUCTION

Overloading violations in freight transport remain a crucial issue in Indonesia's road transport management. The Directorate General of Land Transportation of the Ministry of Transportation has inspected 2,514,244 freight vehicles or logistics transport related to over-

dimension and overloading (ODOL) issues at all Motor Vehicle Weighing Implementation Units (UPPKB) from January to November 2025, with 588,984 vehicles found to be in violation. Despite the implementation of various regulations and monitoring mechanisms, ODOL practices continue to be found in several UPPKBs, including the Seumadam Aceh Tamiang UPPKB. This situation not only exacerbates damage to road infrastructure but also compromises traffic safety and the effectiveness of the freight transport control system. These problems indicate that implementing policies to monitor and control overloading still face obstacles in technical, procedural, and field supervision areas.

Several previous studies have examined the effectiveness of overloading monitoring at various weighbridges (Ruktiningsih & Prakoso, 2017) found that the weighing SOP in West Java has not been optimally implemented, so not all loaded vehicles are weighed. (Abuzar et al., 2022) showed that on the island of Lombok, ODOL supervision is hampered by infrastructure and low compliance among business actors. Research (Noormaya, 2022) also revealed inconsistencies in policy implementation and weak enforcement of sanctions. However, these studies have not specifically evaluated policy implementation at the Seumadam Aceh Tamiang UPPKB, which has different operational characteristics, weighing procedures, and implementation challenges.

The novelty of this research lies in its focus on evaluating policy implementation at the Seumadam UPPKB using indicators based on Langbein's theory, thereby enabling a more comprehensive measurement of compliance with SOPs. In addition, this study specifically highlights the gap between normative provisions and field practices, including officer behaviour, the forms of sanctions imposed, and patterns of service delays that have not been widely analysed in previous studies. Thus, this study makes a new contribution by identifying local and contextual implementation factors that explain why ODOL supervision remains suboptimal in this location.

Specifically, this study aims to evaluate the implementation of policies on the supervision and control of overloaded freight transport at the Seumadam Aceh Tamiang UPPKB using indicators such as weighing requirements, penalties for violations, service procedures, and service times. This evaluation is expected to provide a comprehensive picture of the effectiveness of policy implementation and offer relevant recommendations for improvement to the government and the UPPKB.

METHOD

This study utilised a Qualitative-Evaluative Method with the primary objective of assessing the implementation of policies regarding the supervision and control of overloading at the Seumadam UPPKB in Aceh Tamiang, by comparing field conditions with the normative standards set out in Minister of Transportation Regulation No. 18 of 2021. Key informants were selected using purposive sampling, with the five most relevant parties identified: the Head of the Service Unit, the Head of Enforcement and JTO, Truck Drivers, and Seumadam Area Residents. The evaluation framework focused on four leading indicators of the regulation:

1. Weighing Requirements
2. Violation Sanctions (Levels I, II, III)
3. Service Procedures
4. Service Time

Data was collected through a combination of observation, in-depth interviews, and documentation, while data validity was ensured using triangulation techniques (sources and methods). Qualitative data analysis followed Creswell's six steps, from data management to interpretation of findings, and was conducted concurrently with data collection to ensure in-depth, contextually rich results.

DISCUSSION

1. Overview of UPPKB Seumadam Aceh Tamiang

UPPKB Seumadam Aceh Tamiang is a vehicle load monitoring unit that was established in 1983, has been fully operational since 2004, and was structurally transferred to the Ministry of Transportation in 2017 as part of the national agenda to improve safety and control road damage. This unit aims to support safe, efficient, and sustainable land transportation. The UPPKB has an area of approximately 1000 m² and operates 24 hours a day with four teams and two work shifts. The Seumadam Aceh Tamiang UPPKB has 49 human resources, as shown in Table 1.

Table 1. Human Resources at UPPKB Seumadam, Aceh Tamiang

No	Position	Employment Status	Number (persons)
1.	Head of Service Unit (Wasatpel)	Civil Servant	**1**
2.	Civil Servant Investigator (PPNS)	Civil Servant	**3**
3.	Vehicle Weighing Officer	Civil Servant	**2**
4.	Health and Safety Officer (K3)	Civil Servant	**1**
5.	Traffic Officer	PPNP	**1**
6.	Office Administration Officer	2 Civil Servant, 1 PPNP	**3**
7.	Financial Administration Officer	PPNP	**1**
8.	General Administration Office	PNS	**1**
9.	Recording/Basic Testing Office	1 PNS, I PPNP	**2**
10.	Compilation and reporting officer	1 PNS, 1 PPNP	**2**
11.	Vehicle inspector	PPNP	**2**
12.	Technician	PNS	**1**
13.	Information Technology Officer	PPNP	**1**
14.	Security Officer	PPNP	**4**
15.	Cleaning Staff	PPNP	**15**
16.	**Volunteer Service**	**PPNP**	**9**

Key facilities include weighbridges, storage warehouses, administration rooms, and the integration of Online Weighbridges (JTO), which are technically designed to improve weighing accuracy and facilitate digital documentation.

2. Policy Implementation Analysis

The evaluation of the implementation of overloading supervision and control policies was conducted using an approach that emphasised the alignment between Standard Operating Procedures (SOPs) and field practices. This evaluation framework specifically focuses on four primary indicators in accordance with Langbein's theory, namely: Weighing Requirements, Violation Sanctions (Levels I, II, III), Supervision Service Procedures, and Service Time.

The study's results show a significant gap between the normative obligations stipulated in the SOP and their actual implementation at the Seumadam UPPKB. The most fundamental form of inconsistency is the failure to meet the Weighing Requirements standard, in which not all trucks enter the weighing area, even though, according to the SOP, all freight trucks must be weighed. This inconsistency is caused by internal and external factors, including:

a. Lack of Assertiveness of Field Officers
   Human resources plays a vital role in the failure of this procedure. Based on observations, officers on duty at the entrance do not always show a firm attitude in directing loaded vehicles to enter the weighbridge. This permissive attitude often arises during peak hours or outside regular operating hours, leading drivers to feel free to drive through the UPPKB without inspection.
b. Low Awareness and Compliance of Drivers
   Driver behaviour is a significant internal obstacle. Many truck drivers deliberately avoid weighing areas to avoid penalties. This was confirmed in interviews, where driver informants stated: 'If we can use the side lane, we will, rather than having to unload our cargo there (at the UPPKB)'. This quote confirms that non-compliance is a calculated action to avoid the risk of unloading cargo, not a result of ignorance.
c. Existence of Alternative Routes (Rat Trails)
   The physical environment around the Seumadam UPPKB exacerbates weak supervision. Driver non-compliance is facilitated by the existence of alternative routes that allow them to avoid the weighing lane. These routes provide overloaded vehicles with a way out, allowing them to avoid detection by officers, making the weighing process a voluntary choice rather than a binding obligation.
d. Limitations of Supervision at Certain Hours
   The implemented supervision system has not been able to close the time gap during which violations occur. Officer supervision is not evenly distributed throughout the 24 hours, especially during vulnerable times such as the night or the early morning. This gap in supervision is strategically exploited by drivers with excessive loads, who know that the probability of inspection at these hours is very low.

Regulatory-wise, under the provisions governing UPPKB operations (*Peraturan Menteri Perhubungan Republik Indonesia Nomor 18 Tahun 2021 Tentang Pengawasan Muatan Angkutan Barang Dan Penyelenggaraan Penimbangan Kendaraan Bermotor Di Jalan*, 2021), several types of vehicles are indeed exempt from weighing requirements, including empty trucks, containers, and vehicles transporting hazardous materials. However, in practice, these exemptions are often abused. These findings are consistent with a previous study (Asie et al., 2022), which concluded that low driver compliance and weak enforcement of SOPs are key factors in cargo supervision failures.

3. Effectiveness of Violation Sanctions

Within the framework of Standard Operating Procedures (SOP) and applicable regulations, any violation of load and dimension limits detected at the Motor Vehicle Weighing Unit (UPPKB) must be subject to strict and uncompromising legal and operational action. Standard procedures require officers to impose multiple sanctions, including direct ticketing. To unload excess cargo on the spot and record it in the national violation database system. All of these mechanisms are designed to provide substantial legal and financial consequences, thereby creating a strong deterrent effect for transport operators and drivers.

However, findings from research conducted at the Seumadam UPPKB reveal significant disparities between normative provisions and actual practices in the field. The dominant and most frequently applied sanction by officers to violators, even when they are proven to have

significantly exceeded load limits, is merely an administrative Warning Letter (SP). The imposition of these lenient administrative sanctions, rather than consistently issuing fines and dismantling loads, indicates a dilemma of loose enforcement.

An analysis of UPPKB performance trends shows that enforcement effectiveness has declined dramatically since the end of 2023, compared to the period from 2022 to mid-2023, when sanctions were still relatively strict, including fines and demolitions. This shift from repressive to persuasive sanctions has serious consequences, including a High Recidivism Rate. Because the sanctions imposed are only written warnings with no significant financial or operational consequences, truck drivers do not feel there is a strong disincentive to comply. This has led to:

a. Very high recidivism rate
   The same trucks can commit repeated violations without any vehicle impoundment or unloading of excess cargo. This situation reinforces the perception that the risk of violation is lower than the economic benefits of overloading
b. Increased Road Infrastructure Damage
   Weakened enforcement of sanctions means that Over Dimension and Over Load (ODOL) trucks can travel freely on the roads without having to reduce their loads. This situation undermines the policy's purpose and directly contributes to the escalation and spread of structural damage to national roads, ultimately burdening the state maintenance budget.
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The phenomenon of failure to enforce sanctions, which undermines the deterrent effect, is very much in line with the principles of public policy management. (Bahri, 2011) argues emphatically that a public policy will lose credibility and authority in the eyes of the public if the accompanying sanctions are not consistently, firmly, and without compromise. Therefore, consistent enforcement of sanctions, including issuing fines and imposing cargo dismantling, is the key to restoring the authority and effectiveness of the UPPKB as a supervisory institution.

4. Supervision Service Procedures: Technical Challenges and Facility Limitations

The monitoring procedure includes document checks, weighing, and follow-up on violations. However, its effectiveness is hampered by:

a. Many lorries escape without being weighed
   One of the most significant dysfunctions is the large number of freight vehicles that manage to escape without going through the mandatory weighing process. This phenomenon of monitoring leakage occurs for two main reasons: officers' negligence or indecisiveness, or drivers deliberately manoeuvring to avoid the weighing lane, often via rat runs. This means that the freight tonnage data recorded in the JTO (Online

Weighbridge) system does not reflect the actual traffic volume, thereby defeating the primary purpose of monitoring.

b. Technical constraints of weighing equipment
Frequent functional disruptions or errors in the leading weighing equipment are a chronic issue that undermines data reliability. These technical constraints not only affect the accuracy of vehicle weight measurements but also delay service flow, as the weighing process must be repeated or performed manually with less accurate tools. Limited preventive maintenance and technology upgrades contribute to a decline in the integrity of the weighing system.

c. Data input errors (Human Error)
Although a digital system assists the weighing process, data inaccuracies due to human error are still found when officers input data into the JTO system. Errors in recording vehicle type, load weight, or company identity can affect the validity of violation data integrated into the centre, thereby reducing confidence in the overall supervision performance report.

d. Lack of warehouses for cargo unloading
This is the most crucial structural obstacle. The limitation or even absence of adequate storage warehouses for evidence or excess cargo means that cargo unloading sanctions (cargo transfer) are often technically impossible to implement Without adequate physical facilities to accommodate cargo that exceeds the limits officers are forced to release trucks that have been proven to be in violation back onto the road The failure to enforce these sanctions directly invalidates the entire enforcement process, rendering the weighing procedure meaningless.

e. Uncooperative drivers
The effectiveness of the monitoring procedure is also often hampered by drivers' uncooperative attitudes and resistance to enforcement. This behaviour includes refusing to show documents, prolonged protests against weighing results, or deliberately slowing down the vehicle during inspections. These behavioural obstacles significantly consume officers' time and energy, disrupting the smooth running of daily operations.

Limited warehouse space often makes it impossible to unload cargo, thereby disrupting the entire enforcement process. This also reinforces the argument (Zulkarnaen, 2011) that organizational and facility capacity are crucial to the successful implementation of policies.

5. Service Time Effectiveness

The ideal service time for the weighing process is 11 minutes, but observations show that the duration can reach 30 minutes, especially when:

a. Vehicle documents are incomplete
Delays often occur at the initial stage of administrative checks. Many drivers arrive without complete vehicle documents, such as a Vehicle Registration Certificate (STNK) or an expired KIR test certificate. Officers are required to verify each document's validity. This process requires additional time to confirm data in the system or may even result in an initial administrative action. This delayed verification process directly disrupts the speed of the weighing process for other vehicles queuing behind, which should only require a short time for data scanning.

b. Overloading occurs
Overloading violation enforcement process when initial weighing results show that a vehicle exceeds the permitted load tolerance limit (overloading), the standard weighing process is automatically stopped. Emergency procedures are activated. The offending vehicle must be immediately directed to a special enforcement area. This series of

enforcement processes is very lengthy, including more detailed reweighing and the issuance of a Warning Letter (SP). And the most severe sanction, namely the unloading of excess cargo (cargo transfer). Handling a single violating vehicle can involve intensive negotiations and complex administration, which substantially delays and slows the queue of other compliant vehicles, creating a severe bottleneck.

c. The JTO system is experiencing technical difficulties
Technical Issues and System Integrity The operational UPPKB currently relies entirely on the functionality of the information technology system, namely the Online Weighbridge (O), which is integrated with the national data centre. UPPKBs located in regional areas often experience serious technical problems, including server downtime caused by centre-maintained system maintenance and unstable internet connections. Or malfunctions in digital weighing sensors. When the JTO system experiences technical problems, the entire weighing process must be switched to offline or manual mode. This manual mode is much slower, requires repeated data entry, is prone to human error, and substantially extends service time. The absence of an effective failover system exacerbates this condition.

d. Long queues during peak hours
Traffic Volume Fluctuations and Long Queues during Peak Hours. Although the SOP has set an efficient time target per vehicle, freight traffic volume through the Seumadam UPPKB is fluctuating and often experiences unexpected surges. During peak hours, there is a build-up of vehicle queues at the UPPKB entrance. The physical capacity limitations of the Seumadam UPPKB, which was not designed to handle these volume spikes optimally, cause congestion on the weighing lanes. In addition, long queues and long waiting times are the main factors driving drivers to avoid weighbridges by taking alternative routes, which adds to the complexity of monitoring and reduces compliance rates.

This time, efficiency is crucial to user satisfaction. The instability in service duration indicates that SOPs are not being consistently implemented.

6. Impact of Overloading on Infrastructure and Safety

6.1 Impact on Infrastructure

Overloading causes excessive pressure on road pavements and impacts:

a. Structural cracks (Fatigue Cracking).
Structural cracks are the earliest indication of pavement integrity failure. Repetitive stress from axle loads exceeding the pavement's elasticity limit causes fatigue cracks to appear on the road surface. These cracks are initially small and scattered, but under high stress, they will spread and connect, forming a pattern resembling alligator skin (alligator cracking). These open cracks serve as pathways for surface water to seep into the lower layers of the pavement, including the base course and subgrade, significantly weakening the bearing capacity of the road foundation by decreasing the CBR (California Bearing Ratio) value.

b. Potholes
When water seeps through structural cracks and the road foundation layer becomes saturated, the binding force between the materials, especially in the upper foundation layer, is reduced. It will decrease dramatically. Continuous overloading then exerts strong shear forces, causing materials to break loose and be thrown from the pavement, leaving large depressions or potholes. The formation of these potholes not only physically damages the road but also reduces driving safety and causes operational inefficiencies due to traffic slowdowns.

c. Permanent deformation (Rutting)
Extreme overloading, especially under high road surface temperatures, causes asphalt pavement to undergo significant plastic deformation. This deformation forms elongated depressions that follow the wheel tracks (rutting) and are permanent on the road surface. Rutting structurally reduces the adequate thickness of the surface layer and creates a hazard; ruts can collect water during heavy rainfall, drastically increasing the risk of aquaplaning or skidding and threatening the safety of motorists, especially at high speeds.

This damage was found around the Seumadam area and has become a source of complaint among the community. This reinforces the research (Atiya et al., 2014), which confirms that overloading is the leading cause of premature damage to national roads.

6.2 Safety Impact

Over Dimension and Over Load (ODOL) trucks pose various serious risks, including:

a. Blind Spot
Increased Blind Spots and Side-Collision Risks. When trucks are loaded beyond their permitted capacity, dimension violations (over-dimensioning) often occur, particularly in height and width. These significantly enlarged truck dimensions increase blind spots (areas that the driver cannot see through the rear-view mirror or windows). This limited visibility increases the probability of fatal accidents. Truck drivers may not be aware of the presence of small vehicles, such as motorcycles or passenger cars, beside or behind them, thereby increasing the risk of collision when manoeuvring or turning. Alternatively, changing lanes, especially in congested urban environments, can be challenging.

b. Inability to climb steep inclines (Performance Failure on Ascent)
Excessive loads carried by trucks drastically reduce the vehicle's power-to-weight ratio. This causes trucks to struggle when traversing steep inclines. As a result, the truck's speed decreases dramatically, causing significant delays that disrupt the flow of traffic behind it. In extreme conditions, excessive loads can cause trucks to come to a complete stop or even roll backward on an incline. This situation creates hazardous conditions and triggers the risk of multiple-vehicle collisions from vehicles travelling at normal speeds behind them, which is one of the causes of fatal accidents on the Sumatra route, including around Aceh Tamiang.

c. Braking system degradation
Trucks carrying excessive loads place significant additional inertial and thermal loads on the braking system. This excess load directly reduces braking effectiveness, increases the braking distance required to stop the vehicle, and increases the risk of brake fade and brake failure. When the driver is unable to control the truck properly, for example, when faced with an unexpected situation, the possibility of a collision becomes very high because the truck is unable to stop within the required safe distance.

d. Rollover Risk
As a result of an increased centre of gravity, overloaded trucks, especially if the load is stacked too high (overdimension violation), will experience a significant increase in their centre of gravity. This increase in the centre of gravity makes the vehicle unstable, especially during dynamic manoeuvres such as sharp turns. Sudden lane changes or crossing roads with less-than-ideal superelevation. This condition increases the risk of a lorry overturning or rolling over on the motorway, which can result in serious single-

vehicle accidents and pose a significant hazard to the driver, passengers, and other road users in the vicinity.

e. Damaging the road
Road Damage that Contributes to Accidents. Although this is also an infrastructure impact (as described in point 6.1). Road damage caused by excessive loads, in the form of large potholes and deformations, directly triggers accidents for other road users. Small vehicles, especially motorcycles, are highly susceptible to losing control, skidding, and falling when passing through potholes created by overloaded trucks. Thus. The cost of road repairs due to overloading is not only a financial burden for the government, but also a social and humanitarian cost due to the high fatality rate in serious accidents.

CONCLUSION

Research on the evaluation of the implementation of overloading supervision and control policies at the Seumadam Aceh Tamiang UPPKB concluded that its implementation has not been optimal due to a significant gap between SOPs and field practices. The core findings indicate non-compliance with procedures: vehicles often pass without being weighed, officers are not strict enough, and sanctions are weakly enforced, with warning letters failing to deter. In addition, service inefficiencies (service times exceeding standards) occur due to technical constraints in the JTO system and uncooperative driver behaviour, exacerbated by structural limitations such as a lack of loading and unloading warehouses. Considering these evaluation results, it is recommended that SOPs be strengthened and officer capacity be improved to ensure consistent enforcement of regulations, that support facilities and infrastructure (especially the JTO system and warehouses) be improved, that inter-agency coordination (UPPKB, Police, Dishub) be strengthened, and that ongoing education be provided for road users. As a suggestion for further research, an in-depth study of driver behaviour factors and a cost-benefit analysis of the ODOL policy could make an important contribution to refining future policies.

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