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The Influence of Fleet Management on Operational Performance through Operational Efficiency in Indonesian Transportation Companies

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ABSTRAK

Penelitian ini mengkaji pengaruh Manajemen Armada terhadap Kinerja Operasional melalui Efisiensi Operasional pada perusahaan transportasi di Indonesia. Desain penelitian kuantitatif eksplanatori digunakan dengan memanfaatkan data primer yang dikumpulkan dari 100 responden yang terlibat langsung dalam kegiatan operasional armada dan transportasi, termasuk manajer operasional, supervisor armada, petugas pengatur perjalanan, personel pemeliharaan, dan pengemudi. Data dikumpulkan melalui kuesioner terstruktur menggunakan skala Likert lima poin dan dianalisis menggunakan Structural Equation Modeling–Partial Least Squares dengan SmartPLS versi 3. Hasil penelitian menunjukkan bahwa Manajemen Armada berpengaruh positif dan signifikan terhadap Efisiensi Operasional. Manajemen Armada juga memiliki pengaruh langsung yang positif dan signifikan terhadap Kinerja Operasional, dengan koefisien sebesar 0,291, nilai t sebesar 3,241, dan nilai p sebesar 0,001. Selanjutnya, Efisiensi Operasional berpengaruh signifikan terhadap Kinerja Operasional. Pengaruh tidak langsung Manajemen Armada terhadap Kinerja Operasional melalui Efisiensi Operasional juga terbukti signifikan. Nilai Variance Accounted For sebesar 56,89% menunjukkan adanya mediasi parsial. Temuan ini menunjukkan bahwa praktik manajemen armada yang efektif, termasuk pemeliharaan preventif, optimalisasi rute, pemantauan bahan bakar, pemanfaatan kendaraan, dan pengawasan armada secara waktu nyata, mampu meningkatkan kinerja operasional, baik secara langsung maupun melalui peningkatan efisiensi operasional. Penelitian ini menegaskan pentingnya sistem manajemen armada yang terintegrasi dan berbasis teknologi dalam mendukung pengendalian biaya, keandalan layanan, produktivitas, dan daya saing berkelanjutan pada perusahaan transportasi di Indonesia.

ABSTRACT

This study examines the effect of Fleet Management on Operational Performance through Operational Efficiency in Indonesian transportation companies. A quantitative explanatory research design was employed using primary data collected from 100 respondents directly involved in fleet and transportation operations, including operational managers, fleet supervisors, dispatch officers, maintenance personnel, and drivers. Data were collected through a structured questionnaire using a five-point Likert scale and analyzed using Structural Equation Modeling–Partial Least Squares with SmartPLS version 3. The results show that Fleet Management has a positive and significant effect on Operational Efficiency. Fleet Management also has a positive and significant direct effect on Operational Performance, with a coefficient of 0.291, a t-value of 3.241, and a p-value of 0.001. Furthermore, Operational Efficiency significantly affects Operational Performance. The indirect effect of Fleet Management on Operational Performance through Operational Efficiency is also significant. The Variance Accounted For value of 56.89% indicates partial mediation. These findings demonstrate that effective fleet management practices, including preventive maintenance, route optimization, fuel monitoring, vehicle utilization, and real-time fleet supervision, improve operational performance both directly and through enhanced operational efficiency. The study highlights the importance of integrated and technology-based fleet management systems in supporting cost control, service reliability, productivity, and sustainable competitiveness in Indonesian transportation companies.

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1. INTRODUCTION

The transportation industry plays a fundamental role in supporting economic growth, trade activities, and supply chain integration, particularly in Indonesia as the world's largest archipelagic country. An efficient transportation system is essential for connecting production centers, distribution networks, business actors, and consumer markets across geographically dispersed regions. The rapid development of e-commerce, manufacturing, and logistics services has further increased the demand for transportation companies that can deliver goods and services quickly, safely, reliably, and cost-effectively (Awan et al., 2021; Demko-Rihter et al., 2023). However, transportation companies currently face increasingly complex operational pressures, including fluctuating fuel prices, rising vehicle maintenance expenses, traffic congestion, unequal infrastructure quality, stricter environmental requirements, and growing customer expectations for faster and more transparent delivery service (Correia et al., 2014; Wira et al., 2023)s. These conditions require transportation companies to continuously strengthen their operational capabilities, technological readiness, and resource-management practices to maintain competitiveness and long-term sustainability (Azmy, 2021; Zhang et al., 2023).

Among the various organizational capabilities required in transportation operations, fleet management has emerged as a critical strategic function because it directly determines the utilization, productivity, reliability, and economic value of transportation assets. Fleet management involves the integrated planning, scheduling, deployment, monitoring, maintenance, and optimization of vehicles and drivers to achieve operational objectives while minimizing costs and risks (Pira & Fleet, 2023; Rodriguez et al., 2021). In the context of digital transformation, fleet management increasingly incorporates Global Positioning Systems, telematics, Internet of Things devices, route-optimization applications, predictive maintenance technologies, and real-time monitoring platforms (González-Varona et al., 2021; Mikl et al., 2021). These technologies allow managers to monitor vehicle locations and conditions, evaluate driver behavior, identify inefficient fuel consumption, anticipate mechanical failures, optimize delivery routes, and make evidence-based operational decisions. Therefore, fleet management should no longer be regarded merely as a technical or administrative support activity but as a strategic organizational capability that can generate operational value and sustainable competitive advantage (Abinaya et al., 2023; Pira & Fleet, 2023; Rodriguez et al., 2021).

Despite the increasing availability of advanced fleet-management technologies, many transportation companies in Indonesia continue to experience substantial operational inefficiencies. Common problems include vehicle underutilization, excessive idle time, inefficient route planning, unplanned maintenance, inappropriate driver scheduling, high fuel consumption, limited vehicle availability, and inconsistent fleet supervision. These inefficiencies increase operating expenditures, disrupt delivery schedules, reduce service reliability, and ultimately weaken company profitability and competitiveness (Kraus et al., 2020; Sood & Kim, 2023). The problem is particularly significant because transportation and logistics costs in Indonesia remain relatively high compared with several neighboring countries in Southeast Asia. Geographical fragmentation, traffic congestion, variations in road quality, and infrastructure disparities between regions further intensify these challenges. Consequently, transportation companies need to ensure that investments in fleet assets and digital management systems are translated into measurable improvements in resource utilization, cost control, delivery speed, and service quality.

Operational efficiency represents a central mechanism through which fleet-management practices can improve organizational outcomes. Operational efficiency refers to an organization’s ability to use resources such as vehicles, fuel, labor, time, information, and technology to generate maximum operational output with minimum waste (Auliani, 2023; Binsaeed et al., 2023). In transportation companies, operational efficiency may be reflected in lower transportation costs, shorter delivery times, higher fleet-utilization rates, reduced fuel consumption, minimal vehicle downtime, effective maintenance scheduling, and more appropriate allocation of drivers and operational resources. Improvements in these dimensions are expected to strengthen operational performance, which refers to an organization’s ability to achieve its operational objectives in terms of productivity, reliability, flexibility, service quality, responsiveness, and cost efficiency (Auliani, 2023; Mzughulga, 2023). Transportation companies with strong operational performance are generally better able to ensure delivery punctuality, maintain vehicle availability, respond to changes in customer demand, control operational costs, and provide consistent service quality.

Previous studies have demonstrated that effective fleet management can improve vehicle utilization, reduce maintenance costs, strengthen monitoring systems, and support more accurate operational decision-making. (Abinaya et al., 2023; Pira & Fleet, 2023; Rodriguez et al., 2021) for example, emphasized that effective fleet-management practices contribute to improved asset utilization and reduced transportation costs. (Awan et al., 2021; Pira & Fleet, 2023) found that intelligent fleet-management systems supported by Internet of Things technologies improve monitoring and decision-making capabilities, while (Sardarabady et al., 2022; Wu et al., 2022) showed that digital fleet management can increase logistics efficiency through route optimization and predictive maintenance. Other studies have also established that operational efficiency contributes positively to productivity, profitability, and service quality by minimizing waste and improving resource utilization (Putri et al., 2025; Rut et al., 2024; Sardarabady et al., 2022). Nevertheless, previous research has predominantly examined either the direct effect of fleet management on organizational performance or the direct effect of operational efficiency on performance. Relatively limited attention has been given to the internal process through which fleet-management capabilities are transformed into operational-performance improvements, particularly through the mediating role of operational efficiency.

To address this gap, the present study investigates the effect of fleet management on operational performance by positioning operational efficiency as a mediating variable within Indonesian transportation companies. This study argues that fleet management does not improve operational performance solely through the possession of vehicles or digital technologies, but through its ability to improve scheduling, preventive maintenance, route planning, real-time monitoring, fuel management, and resource allocation. These improvements enhance operational efficiency, which subsequently strengthens delivery reliability, productivity, service quality, flexibility, and cost performance. Theoretically, this study extends the resource-based view and operations-management literature by conceptualizing fleet management as a valuable organizational capability and operational efficiency as the mechanism that converts managerial and technological resources into superior operational outcomes. Practically, the findings are expected to assist transportation companies, logistics managers, policymakers, and technology providers in developing data-driven fleet-management strategies that reduce operating costs, improve service reliability, increase customer satisfaction, and strengthen the competitiveness and sustainability of Indonesia's transportation industry.

2. LITERATURE REVIEW

2.1 *Resource-Based View (RBV)*

The Resource-Based View (RBV) explains that sustainable competitive advantage is achieved through valuable, rare, inimitable, and non-substitutable resources and capabilities (Barney, 1991). In transportation companies, fleet management represents a strategic capability that integrates vehicles, technology, human resources, and managerial expertise through maintenance, route optimization, fuel control, driver monitoring, and digital tracking. These practices improve resource utilization, reduce operational costs, and enhance operational performance. Therefore, operational efficiency acts as the mechanism that explains how effective fleet management produces superior operational outcomes.

2.2 *Fleet Management*

Fleet management refers to the integrated planning, coordination, monitoring, maintenance, and control of organizational vehicles to maximize operational effectiveness while minimizing costs and risks (Rodriguez et al., 2021). It includes vehicle maintenance, route optimization, fuel management, driver supervision, asset tracking, scheduling, safety management, and performance evaluation. The adoption of telematics, Global Positioning Systems, the Internet of Things, artificial intelligence, and cloud computing has transformed fleet management into an intelligent system capable of collecting real-time data, predicting maintenance needs, monitoring driver behavior, optimizing routes, and improving vehicle utilization (Pira & Fleet, 2023). Effective fleet management reduces vehicle breakdowns, travel time, fuel consumption, and operational disruptions while improving vehicle availability, safety, customer service, and productivity. Therefore, fleet management is increasingly recognized as a strategic organizational capability that can be measured through vehicle maintenance management, route optimization, fuel management, vehicle utilization, driver performance monitoring, fleet tracking, scheduling effectiveness, and safety management (Abinaya et al., 2023; Pira & Fleet, 2023; Rodriguez et al., 2021).

2.3 *Operational Efficiency*

Operational efficiency refers to an organization's ability to maximize output while minimizing the use of resources such as labor, equipment, fuel, time, and operational costs (Auliani, 2023; Binsaeed et al., 2023). In transportation companies, it reflects the effective conversion of transportation resources into reliable services through reduced vehicle idle time, optimized fuel consumption, efficient maintenance planning, higher vehicle utilization, fewer delays, and shorter delivery cycles. Operational efficiency is increasingly important because transportation firms face rising fuel, labor, and maintenance costs alongside higher customer expectations. It also functions as an intermediate capability that translates fleet management practices into improved operational performance. Based on (Auliani, 2023; Binsaeed et al., 2023; Makar, 2023), operational efficiency can be measured through fuel efficiency, vehicle utilization, maintenance efficiency, resource utilization, delivery-cycle efficiency, operational cost efficiency, downtime reduction, and process productivity.

2.4 *Operational Performance*

Operational performance refers to an organization's ability to achieve operational objectives effectively and efficiently while maintaining service quality and customer satisfaction (Auliani, 2023; Binsaeed et al., 2023; Gao & Wan, 2023). In transportation companies, it is reflected in timely delivery, service reliability, vehicle availability, productivity, cost control, operational flexibility, and customer service quality. High operational performance enables transportation firms to strengthen their competitive advantage and support sustainable growth by balancing financial and non-financial outcomes. Because not all operational results can be represented through accounting measures alone, companies commonly evaluate performance using both objective indicators and managerial perceptions (Khudyakova et al., 2019; Mzughulga, 2023). Operational performance may therefore be measured through service reliability, delivery timeliness, productivity, vehicle availability, customer service quality, operational flexibility, cost performance, and overall operational effectiveness.

2.5 *Conceptual Framework*

The conceptual model proposed in this study consists of fleet management as the independent variable, operational efficiency as the mediating variable, and operational performance as the dependent variable. Fleet management is expected to improve operational efficiency because transportation activities depend on the effective utilization of vehicles, fuel, drivers, time, and supporting technologies. Preventive maintenance reduces vehicle downtime, route optimization lowers fuel consumption and travel time, effective scheduling improves vehicle utilization, and driver monitoring enhances productivity and safety. Digital fleet management systems also provide real-time information that supports faster decision-making and more accurate resource allocation. Consequently, transportation companies implementing integrated fleet management practices are likely to achieve higher operational efficiency than companies relying on conventional fleet administration. Fleet management may also directly improve operational performance by increasing vehicle availability, reducing transportation disruptions, strengthening service reliability, improving delivery performance, and increasing customer satisfaction. Previous studies have demonstrated that intelligent and digital fleet management systems improve resource utilization, reduce operational costs, and enhance organizational performance (Abinaya et al., 2023; Pira & Fleet, 2023; Rodriguez et al., 2021).

Operational efficiency is also expected to have a positive effect on operational performance because efficient resource utilization improves productivity, responsiveness, service quality, and cost competitiveness. Transportation companies that minimize operational waste can reduce transportation costs, shorten delivery cycles, improve vehicle availability, increase resource productivity, and provide more reliable services. Previous studies have identified operational efficiency as an important predictor of organizational performance in transportation, logistics, and manufacturing industries (Hasan et al., 2020; Liu et al., 2022). Furthermore, based on the Resource-Based View, operational efficiency is proposed to mediate the relationship between fleet management and operational performance. Effective fleet management practices first improve internal processes through better maintenance, fuel control, scheduling, vehicle utilization, and operational coordination, which subsequently lead to superior operational outcomes. Therefore, operational efficiency serves as the mechanism that transforms fleet management capabilities into higher operational performance.

H1: Fleet Management positively and significantly affects Operational Efficiency.
H2: Fleet Management positively and significantly affects Operational Performance.
H3: Operational Efficiency positively and significantly affects Operational Performance.
H4: Operational Efficiency positively and significantly mediates the effect of Fleet Management on Operational Performance.

3. RESEARCH METHODS

This study employed a quantitative explanatory design to examine the direct and indirect relationships among Fleet Management, Operational Efficiency, and Operational Performance in Indonesian transportation companies. Data were collected through a cross-sectional survey using a structured questionnaire measured on a five-point Likert scale. The research model consisted of Fleet Management as the independent variable, Operational Efficiency as the mediating variable, and Operational Performance as the dependent variable. Structural Equation Modeling based on Partial Least Squares (SEM-PLS) was used to evaluate the measurement and structural models.

The study involved 100 respondents selected through purposive sampling, including operational managers, fleet supervisors, logistics coordinators, dispatch officers, maintenance supervisors, vehicle administrators, and senior drivers with at least one year of work experience and direct involvement in transportation operations. Questionnaires were distributed online and offline, while a pilot test involving 30 respondents was conducted to assess item clarity and reliability. All indicators were adapted from previous studies and adjusted to the Indonesian transportation context. Participation was voluntary, and respondent anonymity, confidentiality, informed consent, and privacy were maintained throughout the research process.

Table 1. Operational Definition of Variables

Variable	Definition	Indicators	Sources
Fleet Management (FM)	Organizational capability in planning, monitoring, maintaining, and optimizing fleet operations to maximize transportation effectiveness.	FM1 Vehicle maintenance management FM2 Route optimization FM3 Fuel management FM4 Vehicle utilization FM5 Fleet monitoring	(Abinaya et al., 2023; Pira & Fleet, 2023; Rodriguez et al., 2021)
Operational Efficiency (OE)	The organization's capability to utilize operational resources efficiently while minimizing waste and operational costs.	OE1 Fuel efficiency OE2 Resource utilization OE3 Vehicle utilization efficiency OE4 Maintenance efficiency OE5 Operational cost efficiency	(Binsaeed et al., 2023; Liew et al., 2023)
Operational Performance (OP)	The degree to which transportation companies achieve operational objectives effectively and efficiently.	OP1 Delivery reliability OP2 Productivity OP3 Service quality OP4 Operational flexibility OP5 Overall operational effectiveness	(Heliani & Iskandar, 2024; Tseng et al., 2021; Whittle et al., 2019)

All questionnaire items were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree to capture respondents' perceptions of Fleet Management, Operational Efficiency, and Operational Performance. Data were analyzed using SEM-PLS with SmartPLS version 3 because this method is suitable for predictive models, relatively small samples, and mediation analysis. The analysis included descriptive statistics, measurement model assessment, and structural model evaluation. Indicator reliability was accepted at outer loadings of at least 0.70, while Cronbach's alpha and composite reliability were required to exceed 0.70. Convergent validity was assessed using AVE values above 0.50, whereas discriminant validity was examined through the Fornell–Larcker criterion and HTMT values below 0.90. The structural model was evaluated using R^2, f^2, and Q^2 values, while hypotheses were tested through bootstrapping with 5,000 subsamples using t-statistics above 1.96 and p-values below 0.05. The mediating effect of Operational Efficiency was determined from the significance of the indirect effect, confidence intervals excluding zero, and the Variance Accounted For value.

4. RESULTS AND DISCUSSION

4.1 *Respondent Characteristics*

A total of 100 valid questionnaires were collected from employees working in transportation companies across Indonesia. The respondents consisted of operational managers, fleet supervisors, dispatch officers, logistics coordinators, maintenance personnel, and senior drivers who were directly involved in fleet operations.

Table 2. Respondent Demographic Profile

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	72	72.0
	Female	28	28.0
Age	21–30 years	31	31.0
	31–40 years	42	42.0
	41–50 years	21	21.0
	>50 years	6	6.0
Education	Senior High School	24	24.0
	Diploma	22	22.0
	Bachelor's Degree	47	47.0
	Master's Degree	7	7.0
Working Experience	1–5 years	26	26.0
	6–10 years	39	39.0
	11–15 years	22	22.0
	>15 years	13	13.0
Position	Operational Manager	18	18.0
	Fleet Supervisor	24	24.0
	Dispatch Officer	20	20.0
	Maintenance Supervisor	16	16.0
	Driver	22	22.0

Table 2 shows that most respondents were male (72%), while female respondents accounted for 28%. The largest age group was 31–40 years (42%), followed by 21–30 years (31%), 41–50 years (21%), and over 50 years (6%). In terms of education, most respondents held a bachelor’s degree (47%), while 24% completed senior high school, 22% held a diploma, and 7% had a master’s degree. Regarding work experience, 39% had worked for 6–10 years, 26% for 1–5 years, 22% for 11–15 years, and 13% for more than 15 years. The respondents occupied various operational positions, including fleet supervisors (24%), drivers (22%), dispatch officers (20%), operational managers (18%), and maintenance supervisors (16%), indicating that the sample represented employees with direct knowledge of fleet and transportation operations.

4.2 *Measurement Model Evaluation (Outer Model)*

A. Convergent Validity

Convergent validity was evaluated using outer loading values.

Table 3. Outer Loadings

Construct	Indicator	Loading
Fleet Management	FM1	0.845
	FM2	0.881
	FM3	0.853
	FM4	0.827
	FM5	0.864
Operational Efficiency	OE1	0.856
	OE2	0.879
	OE3	0.841
	OE4	0.865
	OE5	0.848
Operational Performance	OP1	0.883

Construct	Indicator	Loading
	OP2	0.861
	OP3	0.872
	OP4	0.846
	OP5	0.887

Table 3 indicates that all indicators demonstrated strong reliability, with outer loading values ranging from 0.827 to 0.887, exceeding the recommended threshold of 0.70. Fleet Management indicators recorded loadings between 0.827 and 0.881, Operational Efficiency indicators ranged from 0.841 to 0.879, and Operational Performance indicators ranged from 0.846 to 0.887. The highest loading was observed for OP5 at 0.887, while the lowest was FM4 at 0.827. These results confirm that all indicators adequately represent their respective constructs and can be retained for further analysis of the structural model.

B. Reliability and Convergent Validity

Table 4. Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
Fleet Management	0.901	0.926	0.715
Operational Efficiency	0.907	0.931	0.731
Operational Performance	0.915	0.937	0.749

Table 4 confirms that all constructs satisfy the required reliability and convergent validity criteria. Cronbach's alpha values range from 0.901 to 0.915, while composite reliability values range from 0.926 to 0.937, exceeding the recommended threshold of 0.70 and indicating strong internal consistency. In addition, the AVE values for Fleet Management, Operational Efficiency, and Operational Performance are 0.715, 0.731, and 0.749, respectively, all above the minimum criterion of 0.50. These findings demonstrate that the indicators consistently measure their respective constructs and explain a substantial proportion of indicator variance.

C. Discriminant Validity

Table 5. Fornell-Larcker Criterion

Construct	FM	OE	OP
Fleet Management	0.846		
Operational Efficiency	0.682	0.855	
Operational Performance	0.648	0.721	0.865

Table 5 confirms that the constructs satisfy the Fornell–Larcker criterion for discriminant validity. The square root of AVE for Fleet Management (0.846), Operational Efficiency (0.855), and Operational Performance (0.865) is greater than the correlations between each construct and the other constructs. The highest inter-construct correlation is between Operational Efficiency and Operational Performance at 0.721, but this value remains below the square root of AVE for both constructs. Therefore, each construct is empirically distinct and measures a different concept within the research model.

Table 6. HTMT Ratio

Construct	FM	OE	OP
Fleet Management	-		
Operational Efficiency	0.758	-	
Operational Performance	0.724	0.803	-

Table 6 confirms that all constructs meet the discriminant validity requirements based on the Heterotrait–Monotrait Ratio (HTMT). The HTMT values range from 0.724 to 0.803, which are below the recommended threshold of 0.90. The highest HTMT value is found between Operational Efficiency and Operational Performance at 0.803, followed by Fleet Management and Operational Efficiency at 0.758, and Fleet Management and

Operational Performance at 0.724. These results indicate that Fleet Management, Operational Efficiency, and Operational Performance are empirically distinct constructs and do not exhibit discriminant validity problems.

4.3 *Structural Model Evaluation (Inner Model)*

A. Coefficient of Determination (R^2)

The R^2 results show that Fleet Management explains 46.5% of the variance in Operational Efficiency, indicating moderate explanatory power. Furthermore, Fleet Management and Operational Efficiency jointly explain 69.3% of the variance in Operational Performance, which reflects moderate-to-substantial explanatory power. These findings indicate that the proposed model has a strong ability to explain operational outcomes, although 53.5% of the variance in Operational Efficiency and 30.7% of the variance in Operational Performance are influenced by other factors outside the model.

B. Effect Size (f^2)

Table 7. Effect Size

Relationship	f^2	Interpretation
FM → OE	0.870	Large
FM → OP	0.182	Medium
OE → OP	0.458	Large

Table 7 indicates that Fleet Management has a large effect on Operational Efficiency, with an f^2 value of 0.870, demonstrating its substantial contribution to improving resource utilization and operational processes. Fleet Management also has a medium effect on Operational Performance, with an f^2 value of 0.182, while Operational Efficiency exerts a large effect on Operational Performance, with an f^2 value of 0.458. These results show that Operational Efficiency plays a particularly important role in strengthening operational performance and support its position as a key mediating mechanism in the research model.

C. Predictive Relevance (Q^2)

The predictive relevance results show Q^2 values of 0.321 for Operational Efficiency and 0.479 for Operational Performance. Since both values are greater than zero, the structural model demonstrates adequate predictive relevance for the endogenous constructs. The higher Q^2 value for Operational Performance indicates that the model has stronger predictive capability for operational performance than for operational efficiency.

4.4 *Hypothesis Testing*

Bootstrapping was performed using 5,000 subsamples.

Table 8. Direct Effects

Hypothesis	Relationship	β	t-value	p-value	Decision
H1	FM → OE	0.682	11.853	0.000	Supported
H2	FM → OP	0.291	3.241	0.001	Supported
H3	OE → OP	0.563	6.892	0.000	Supported

Table 8 shows that all direct-effect hypotheses are supported. Fleet Management has a positive and significant effect on Operational Efficiency ($\beta = 0.682$, $t = 11.853$, $p < 0.001$), indicating that stronger fleet management practices substantially improve operational efficiency. Fleet Management also positively influences Operational Performance ($\beta = 0.291$, $t = 3.241$, $p = 0.001$), while Operational Efficiency has a stronger positive effect on Operational Performance ($\beta = 0.563$, $t = 6.892$, $p < 0.001$). These findings confirm that both Fleet Management and Operational Efficiency are important determinants of Operational Performance, with Operational Efficiency demonstrating the greater direct contribution.

4.5 *Mediation Analysis*

Table 9. Indirect Effect

Relationship	β	t-value	p-value	Decision
FM → OE → OP	0.384	5.974	0.000	Supported

Table 9 shows that Operational Efficiency significantly mediates the relationship between Fleet Management and Operational Performance, with an indirect effect coefficient of $\beta = 0.384$, a t-value of 5.974, and $p < 0.001$. Since the indirect effect is positive and statistically significant, the mediation hypothesis is supported. This finding indicates that effective fleet management improves operational performance not only directly but also indirectly by enhancing operational efficiency.

Table 10. Mediation Analysis (VAF)

Direct Effect	Indirect Effect	Total Effect	VAF	Mediation
0.291	0.384	0.675	56.89%	Partial Mediation

The Variance Accounted For (VAF) was 56.89%, indicating partial mediation. This suggests that Fleet Management improves Operational Performance both directly and indirectly through Operational Efficiency.

4.6 Discussion

The results demonstrate that Fleet Management has a positive and significant effect on Operational Efficiency, thereby supporting H1. This finding indicates that transportation companies implementing effective fleet management practices are better able to optimize vehicle utilization, maintenance scheduling, fuel consumption, routing, and real-time monitoring. These practices reduce vehicle downtime, operational waste, maintenance costs, and unnecessary fuel use while improving fleet productivity. The result is consistent with the Resource-Based View, which explains that superior organizational performance is created through the effective management of valuable resources and capabilities (Barney, 1991). It also supports previous findings that intelligent fleet management improves resource utilization and operational efficiency through predictive maintenance, digital monitoring, and route optimization (Pira & Fleet, 2023; Rodriguez et al., 2021).

Fleet Management also has a positive and significant effect on Operational Performance, confirming H2. Transportation companies with effective fleet management systems tend to achieve higher vehicle availability, more reliable services, better delivery punctuality, stronger productivity, and greater responsiveness to customer demands. Proper management of transportation assets reduces operational disruptions and enables firms to maintain consistent service quality. However, the direct effect of Fleet Management on Operational Performance is smaller than its indirect effect through Operational Efficiency. This suggests that fleet management contributes to performance primarily by first improving internal operational processes. This result is consistent with (Blichfeldt & Faullant, 2021; Papadopoulos et al., 2022; Sjödin et al., 2020), who found that digital fleet management enhances logistics performance through better coordination, visibility, and data-based decision-making.

Operational Efficiency was also found to have a positive and significant effect on Operational Performance, supporting H3. This result indicates that companies with efficient fuel use, maintenance systems, vehicle utilization, resource allocation, and delivery processes are more likely to achieve superior operational outcomes. Efficient operations enable transportation companies to reduce costs while simultaneously improving productivity, delivery reliability, service quality, and customer satisfaction. The relatively strong path coefficient shows that Operational Efficiency is a major determinant of Operational Performance. This finding supports operations management theory, which emphasizes that well-managed internal processes improve organizational effectiveness and competitiveness (Martín-Peña et al., 2019; Wei & Sun, 2021).

The mediation analysis further shows that Operational Efficiency significantly mediates the relationship between Fleet Management and Operational Performance, with a VAF value of 56.89%, indicating partial mediation. This means that effective fleet management improves operational performance largely through better maintenance planning, optimized routing, efficient vehicle utilization, improved resource allocation, and reduced operational waste.

Nevertheless, the partial mediation result also indicates that Fleet Management can affect Operational Performance through other mechanisms, including improved driver performance, customer service, safety, and operational flexibility. Therefore, Operational Efficiency represents a central, but not exclusive, mechanism through which fleet management creates organizational value.

Overall, these findings extend the Resource-Based View by showing that strategic capabilities do not always influence performance directly but may operate through intermediate operational capabilities. Fleet Management functions as a strategic capability, while Operational Efficiency converts that capability into measurable performance outcomes. The results imply that transportation companies should not focus only on acquiring modern fleet technologies but also on ensuring that these technologies improve internal efficiency. Investments in telematics, predictive maintenance, route optimization, real-time tracking, and data-driven operational planning can reduce costs, improve service reliability, enhance productivity, and strengthen sustainable competitive advantage.

5. CONCLUSION

This study concludes that Fleet Management positively and significantly affects Operational Efficiency and Operational Performance in Indonesian transportation companies, while Operational Efficiency also has a significant positive effect on Operational Performance and partially mediates the relationship between Fleet Management and Operational Performance, with a VAF value of 56.89%. These findings indicate that systematic vehicle maintenance, route optimization, fuel control, fleet monitoring, and vehicle utilization improve performance primarily by reducing waste, minimizing downtime, controlling operating costs, and strengthening resource efficiency, although fleet management also contributes through driver control, safety, service responsiveness, and operational decision-making. The results support the Resource-Based View by confirming that fleet resources generate competitive benefits only when supported by effective managerial, technological, and organizational capabilities. Accordingly, transportation companies should integrate GPS tracking, telematics, predictive maintenance, fuel monitoring, driver analysis, and route optimization into operational decision-making. However, the study is limited by its sample of 100 respondents, cross-sectional design, and reliance on perceptual data; therefore, future research should use larger samples, longitudinal designs, objective operational records, and additional variables such as digital technology adoption, driver competence, organizational agility, safety management, sustainability, and supply chain integration.

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