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The Effect of Transportation Supplier Performance, Loading and Unloading Performance, and Logistics Service Quality on Transportation Performance and Their Implications for the Operational Performance of Paket Pos Kilat Khusus at the Kendari Main Branch Office

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Abstract: This research analyzes the influence of transportation supplier performance, loading and unloading operations, and logistics service quality on transportation performance and their implications for operational performance of Special Express Parcel service at the Kendari Main Branch Office of PT Pos Indonesia. Using a quantitative approach with Structural Equation Modeling (SEM) based on Partial Least Squares (PLS) via SmartPLS software, data were collected from 142 respondents across various operational units. The research reveals that transportation supplier performance has the strongest impact on transportation performance (β = 0.580), followed by loading and unloading performance (β=0.496) and logistics service quality (β=0.089). The model explains 98.4% of transportation performance variance, demonstrating exceptional predictive capability. All hypotheses were statistically significant ($p<0.05$), with t-statistics exceeding the critical value of 1.977. However, transportation performance explains only 5.5% of operational logistics performance variance, suggesting additional influencing factors. The findings indicate persistent operational challenges at KCU Kendari, including 100% delayed truck arrivals (averaging 30 minutes 26 seconds), 12.02% misrouting in loading and unloading operations, and 29.30% unresolved customer complaints. The research recommends implementing integrated supplier management systems, investing in automated handling equipment, strengthening customer service processes, and deploying advanced fleet management technologies to achieve sustainable operational improvements and maintain competitive advantage in Indonesia's dynamic logistics industry.

Keyword: Transportation Supplier Performance, Loading Unloading Operations, Logistics Service Quality, Transportation Performance, Operational Logistics Performance

INTRODUCTION

PT Pos Indonesia (PT PosInd) is a logistics service company that provides postal mail delivery services, parcel services, financial services, and agency services to customers across

Indonesia. One of the Technical Implementation Units of PT PosInd in Sulawesi Island is the Kendari Main Branch Office (KCU). One of the services provided by KCU Kendari to customers in Kendari is the Special Express Parcel (PPKH) service. KCU Kendari PT Pos Indonesia is an organizational entity that operates with the objective of achieving operational efficiency and effectiveness through optimal resource management to generate maximum value for customers.

Modern organizational theory emphasizes that effective organizations require systematic coordination among individuals to achieve operational efficiency, customer satisfaction, value creation, and long-term sustainability through clear objectives, structured hierarchy, competent personnel, adequate technology, standardized processes, and supportive culture (Robbins & Coulter, 2021). Operational management necessitates implementing planning, organizing, leading, and controlling functions to achieve efficient coordination across all organizational elements, forming the foundation for supply chain management strategies that maximize total profitability through integrated product, information, and financial flows (Robbins & Coulter, 2021; Chopra & Meindl, 2021). Supply chain management aims to maximize customer value, reduce costs, enhance coordination among stakeholders, improve market responsiveness, and create competitive advantage by integrating suppliers, manufacturing, warehousing, distribution, and end customers.

Effective logistics implementation requires understanding logistics as functional activities managing material flows from conversion to customer delivery (Sutarman, 2020). Christopher (2023) defines logistics as integrating goods, information, and financial flows to meet customer needs through the "seven rights" concept while achieving lowest system costs and sustainable competitive advantage. Activities encompass inbound logistics (procurement, transportation, receiving) and outbound logistics (order processing, distribution, delivery) supported by quality service, inventory management, warehousing, purchasing, and information systems. Transportation supplier performance represents providers' ability to deliver consistent, reliable, cost-effective, and timely services that meet customer logistics requirements through delivery reliability, fleet condition, flexibility, and compliance dimensions (Mangan et al., 2020).

Loading and unloading performance reflects cargo transfer effectiveness and efficiency directly affecting transportation cycle time, equipment utilization, and labor productivity via time efficiency, productivity, and handling accuracy (Murphy & Knemeyer, 2021). Logistics service quality encompasses customer perception of how well services meet needs, expectations, and specifications across timeliness, accuracy, communication, and goods condition through order accuracy, goods condition, and complaint handling dimensions (Mentzer et al., 2021). Transportation performance represents companies' ability to provide cost-effective, timely, and safe delivery throughout supply chain networks via timeliness, reliability, flexibility, and safety dimensions (Coyle et al., 2021). Operational logistics performance defines organizational capability to effectively manage transportation, storage, material handling, and distribution activities meeting customer needs with optimal quality, speed, and cost through delivery reliability, speed, flexibility, cost efficiency, and information quality dimensions (Wisner, 2022). This integrated theoretical framework enables comprehensive understanding of how transportation supplier performance, loading and unloading operations, and delivery performance simultaneously influence transportation performance and operational outcomes for Special Express Parcels at KCU Kendari PT Pos Indonesia.

Table 1. PPKH Delivery Performance at KCU Kendari

Year	Month	Total Deliveries	Successful Deliveries	Achievement
2024	January	36,591	33,236	90.8%
	February	35,191	31,126	88.4%

	March	40,213	34,123	84.9%
	April	30,532	26,234	85.9%
	May	31,234	29,066	93.1%
	June	34,995	29,396	84.0%
	July	54,347	48,000	88.3%
	August	56,531	50,691	89.7%
	September	44,088	38,670	87.7%
	October	43,577	39,254	90.1%
	November	41,506	37,339	90.0%
	December	40,184	35,949	89.5%
2025	January	35,064	30,345	86.5%
	February	31,930	27,830	87.2%
	March	41,135	37,153	90.3%
	April	22,232	18,610	83.7%
Total		619,350	547,022	88.32

Source: PPKH Delivery Performance Data KCU Kendari (2025)

The PPKH delivery performance at KCU Kendari from January 2024 to April 2025 achieved 88.32% of the 100% target. This information indicates delivery performance problems. Since delivery activities are part of the logistics operational activities organized by KCU Kendari, the existence of delivery performance problems proves the existence of problems in Operational Logistics Performance (Moeheriono, 2023). Logistics Operational Performance is the ability of logistics organizations to manage logistics operational activities efficiently and effectively, such as transportation, distribution, and goods delivery to customers to meet customer needs with optimal quality, speed, and cost (Wisner, 2022). Wisner's explanation reinforces Moeheriono's (2023) opinion that delivery performance is part of logistics operational activities. Other operational activities besides goods delivery to customers include transportation activities from KCU to Sub-Branch Offices (KCP) located in districts.

Table 2. Transportation Performance at KCU Kendari

Month	Total Arrivals	Delay Frequency	Average Delay
January	31	31	37 min 57 sec
February	28	28	12 min 22 sec
March	31	31	33 min 31 sec
April	30	30	33 min 38 sec
May	31	31	34 min 46 sec
Total	151	151	30 min 26 sec

Source: PPKH Transportation Performance Data KCU Kendari (2025)

Between January and May 2025, all inbound trucks carrying Special Express Parcels from sub-branch offices arrived late at KCU Kendari, resulting in an overall average delay of 30 minutes and 26 seconds. These persistent delays disrupt unloading schedules and highlight weaknesses in transportation performance. Camur (2022) demonstrates that delayed vehicle arrivals directly reduce logistical throughput. Fehn et al. (2022) show that integrating transport with delivery networks can mitigate but not eliminate, such delays. Omoush (2022) finds that operational inefficiencies in transportation translate into higher downstream handling costs. Rosnan (2024) confirms that improvements in supplier scheduling and vehicle maintenance shorten average delays. In contrast, Fernández, et al. (2022) reports no significant link between transport punctuality and overall logistics performance in European airport settings. Dadsena et al. (2023) and Goswami et al. (2020) both identify supplier performance as a critical factor for on-time delivery in road freight, while Inkinen and Hämäläinen (2020) emphasize low-emission fleet reliability.

Table 3. Loading and Unloading Performance at KCU Kendari

Year	Month	Mail Bags	Misrouted Items	% Misrouted
2024	January	31	5	16.13
	February	28	4	14.29
	March	31	5	16.13
	April	30	5	16.67
	May	31	4	12.90
	June	30	4	13.33
	July	31	3	9.68
	August	31	3	9.68
	September	30	4	13.33
	October	31	3	9.68
	November	30	3	10.00
	December	31	2	6.45
2025	January	31	2	6.45
	February	28	2	7.14
	March	31	4	12.90
	April	30	5	16.67
	May	31	4	12.90
Total		**516**	**62**	**12.02**

Source: Loading and Unloading Performance Data KCU Kendari (2025)

Out of 516 loading and unloading operations at KCU Kendari, 62 (12.02%) were misrouted, yielding an overall performance rate of 87.98%. This indicates a clear deficiency in loading and unloading efficiency. Gharehgozli et al. (2022) found that delays and inaccuracies in terminal handling directly slow downstream transport flows. Carlan et al. (2023) demonstrated that investment in automated loading systems reduces misrouting by improving precision. Chen et al. (2024) showed that optimized scheduling in container terminals cuts idle times, thereby lowering the rate of handling errors. Li et al. (2025) applied reinforcement learning to bulk cargo operations and achieved notable gains in unloading accuracy. Gao et al. (2021) highlighted that better yard-truck coordination minimizes container misplacement and accelerates turnaround.

Table 4. Customer Complaint Handling Performance at KCU Kendari

Month	Customer Complaints	Successfully Resolved	Achievement Percentage
January	129	90	69.77
February	52	45	86.54
March	87	60	68.97
April	85	55	64.71
May	77	54	70.13
Total	430	304	70.70

Source: Customer Complaint Handling KCU Kendari

Between January and May 2025, KCU Kendari received 430 customer complaints but resolved only 304 (70.70%), leaving 29.30% unresolved, a clear indication that service recovery processes need strengthening to meet customer expectations (Irsheidat, 2019). Bandittayarak (2021) found that prompt and empathetic complaint handling significantly raises perceived service quality, suggesting KCU Kendari should streamline its feedback mechanisms. Lin (2023) demonstrated that integrating digital tracking for complaint resolution can boost resolution rates by improving transparency. Sann et al. (2024) emphasized the role of dedicated customer-service teams in reducing unresolved cases, while Taifa and Twaha (2025) showed that ongoing staff training in complaint management techniques directly correlates with higher resolution percentages. These findings support the hypothesis that

logistics service quality, as reflected in effective complaint handling, positively influences transportation performance.

METHOD

The Kendari Main Branch Office (KCU) of PT Pos Indonesia employs three complementary methodological approaches. The quantitative method is grounded in the positivist paradigm, examining measurable reality through numerical–statistical data to confirm hypotheses. The quantitative design was chosen because it provides an objective, measurable depiction of relationships among variables through numerical data collected from respondents. Four variables are examined, transportation supplier performance (X1), loading and unloading performance (X2), and delivery performance (X3) as independent variables, transportation performance (Z) as a mediating (intervening) variable, and Special Express Parcel operational performance (Y) as the dependent variable.

The verificative method then empirically tests the causal relationships among constructs: (1) the partial and simultaneous effects of transportation supplier performance, loading and unloading performance, and logistics service quality on transportation performance, and (2) the impact of transportation performance on operational logistics performance.

Variable definitions are drawn from contemporary logistics literature, there are transportation supplier performance emphasizes service reliability (Mangan et al., 2020); loading and unloading focuses on time efficiency and handling accuracy (Murphy & Knemeyer, 2021), logistics service quality assesses timeliness, goods condition, and complaint handling (Mentzer et al., 2021), transportation performance encompasses timeliness, cost, flexibility, and safety (Coyle et al., 2021) and operational logistics performance considers speed, reliability, flexibility, cost, and information quality (Wisner et al., 2022). Primary data were collected via questionnaire, interviews, and observation; secondary data were obtained from institutional documents and scholarly literature. A stratified random sampling technique was used to ensure representation across all work units. This integrated methodological framework is expected to yield valid, generalizable findings on the key determinants of logistics performance within PT Pos Indonesia.

RESULTS AND DISCUSSION

This research results begin with a mapping of respondent characteristics to ensure sample representativeness, followed by instrument quality testing (validity and reliability) and analysis of inter-variable relationships. This order of presentation emphasizes that the collected data meet statistical requirements, allowing the structural findings including path coefficients, significance, and model explanatory power to be interpreted reliably in the context of logistics performance at the Kendari Main Branch Office.

Table 5. Respondent Job Titles at KCU Kendari

No	Job Title	n	%
1	Manager	8	5.63
2	Assistant Manager	5	3.52
3	Operational Staff	2	1.41
4	Counter Officer	11	7.75
5	Delivery Officer	82	57.75
6	Driver Officer	3	2.11
7	Mobile Officer	5	3.52
8	Head of Sub-Branch Office	26	18.31
Total		142	100.00

Source: Questionnaire (2025)

Delivery Officers constitute the majority of respondents (57.75%), indicating that front-line operational staff dominate the sample, while Operational Staff represent the smallest group (1.41%).

Table 6. Respondent Gender

Gender	n	%
Male	102	71.83%
Female	40	28.17%
Total	142	100%

Source: Questionnaire (2025)

Male employees (71.83%) outnumber female employees (28.17%), reflecting a gender imbalance at KCU Kendari.

Table 7. Respondent Age Groups

Age Group	n	%
≤ 20 years	4	2.82%
21–25 years	18	12.68%
26–30 years	30	21.13%
31–35 years	28	19.72%
36–40 years	26	18.31%
41–45 years	18	12.68%
46–50 years	10	7.04%
51–55 years	8	5.63%
Total	142	100%

Source: Questionnaire (2025)

The largest cohort is aged 26–30 years (21.13%), while employees ≤ 20 years old form the smallest group (2.82%), indicating a relatively young workforce.

Table 8. Respondent Education Level

Education Level	n	%
High School	2	1.41%
Diploma III	121	85.21%
Bachelor's Degree	16	11.27%
Master's Degree	3	2.11%
Total	142	100.00%

Source: Questionnaire (2025)

Diploma III holders dominate (85.21%), suggesting most staff have mid-level vocational qualifications, while only 1.41% hold a high-school certificate.

Table 9. Respondent Monthly Income

Salary Range	n	%
≤ Rp 4,000,000	92	64.79%
Rp 4,001,000–Rp 6,000,000	30	21.13%
Rp 6,000,001–Rp 8,000,000	20	14.08%
Total	142	100.00%

Source: Questionnaire (2025)

Most employees (64.79%) earn up to Rp 4,000,000 monthly, while the highest bracket (Rp 6,000,001–8,000,000) is least represented at 14.08%.

Table 10. Validity Test Results

Variable	Outer Loading Range	Threshold	Decision
Transportation Supplier Performance	0.777 – 0.916	≥ 0.700	Valid
Loading and Unloading Performance	0.782 – 0.892	≥ 0.700	Valid
Logistics Service Quality	0.933 – 0.980	≥ 0.700	Valid
Transportation Performance	0.734 – 0.899	≥ 0.700	Valid
Operational Logistics Performance	0.891 – 0.987	≥ 0.700	Valid

Source: Questionnaire processed with SmartPLS (2025)

All constructs exhibit outer loadings above the 0.700 benchmark, confirming that each indicator reliably measures its intended latent variable (Waskito, 2023; Hasnita, 2021).

Table 11. Reliability Test Results

Variable	Cronbach's α	rho_A	Composite Reliability	AVE	Decision
Loading and Unloading Performance	0.956	0.957	0.963	0.741	Reliable
Operational Logistics Performance	0.991	0.996	0.992	0.899	Reliable
Transportation Supplier Performance	0.964	0.964	0.969	0.757	Reliable
Transportation Performance	0.956	0.959	0.963	0.743	Reliable
Logistics Service Quality	0.991	0.991	0.992	0.932	Reliable

Source: Questionnaire processed with SmartPLS (2025)

Each construct exceeds the recommended reliability thresholds, Cronbach's α, rho_A, and composite reliability >0.700 and AVE >0.500, demonstrating consistent internal measurement (Waskito, 2023; Hasnita, 2021).

Table 12. Descriptive Statistics (Likert Scale Means)

Variable	Mean	Interpretation	Suitability
Loading and Unloading Performance	3.30	Fairly good	Suitable for research
Operational Logistics Performance	3.31	Fairly good	Suitable for research
Transportation Supplier Performance	3.24	Fairly good	Suitable for research
Transportation Performance	3.32	Fairly good	Suitable for research
Logistics Service Quality	2.72	Fairly good	Suitable for research

Source: Questionnaire processed with SmartPLS (2025)

All variables record mean scores within the "fairly good" range (0.10–3.40), indicating they are appropriate for further analysis and highlighting opportunities for improvement (Waskito, 2023).

Table 13. Path Coefficients

Influence Path	Coefficient
Loading and Unloading → Transportation Performance	0.496
Transportation Supplier → Transportation Performance	0.580
Transportation Performance → Operational Logistics	0.248
Logistics Service Quality → Transportation Performance	0.089

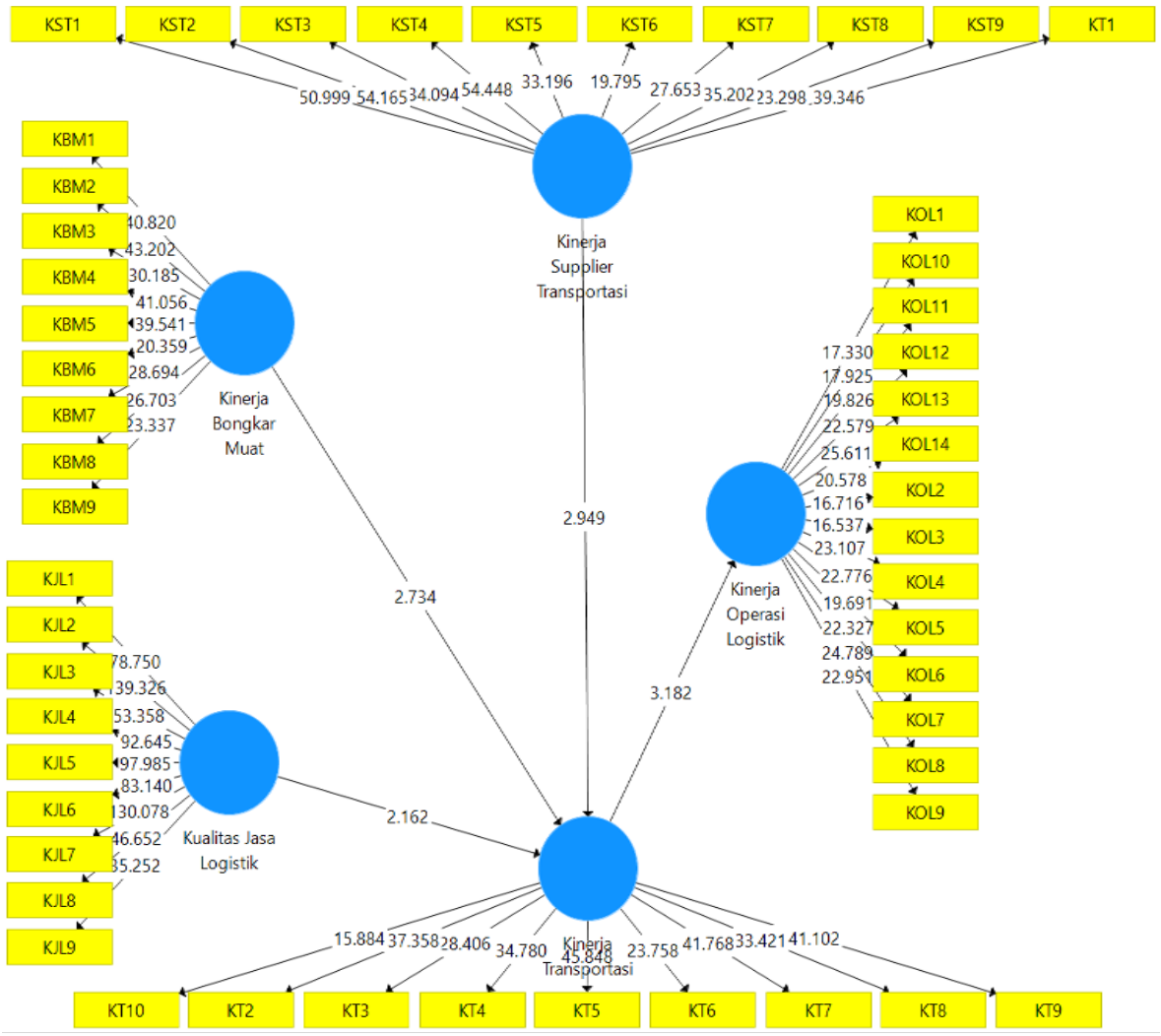
Source: Questionnaire processed with SmartPLS (2025)

Transportation supplier performance has the strongest direct effect on transportation performance (β = 0.580), followed by loading and unloading (β = 0.496) and service quality (β

= 0.089). Transportation performance also positively influences operational logistics (β = 0.248), confirming the model's integrated causal structure.

Before presenting the hypothesis testing results, statistical significance was evaluated using t-statistics and p-values, while model explanatory power was assessed through R-square coefficients (Kock, 2018; Ghozali, 2016).

The overall research findings are presented in the figure below:



Source: Data processed with SmartPLS (2025)

Figure 1. T-Statistics Values for Each Variable

Table 14. T-Statistics and P-Values Results

Structural Path	T-Statistics	P-Values	Decision
Loading and Unloading Performance → Transportation Performance	2.698	0.007	Positive and Significant Effect
Transportation Supplier Performance → Transportation Performance	2.916	0.004	Positive and Significant Effect
Transportation Performance → Operational Logistics Performance	3.077	0.002	Positive and Significant Effect
Logistics Service Quality → Transportation Performance	2.122	0.034	Positive and Significant Effect

Source: Data processed with SmartPLS (2025)

All hypotheses are statistically supported since the t-statistics exceed the critical value of 1.977 (for $\alpha = 0.05$) and p-values are below 0.05. Transportation supplier performance demonstrates the strongest statistical significance ($t = 2.916$, $p = 0.004$), followed by transportation performance's effect on operational logistics ($t = 3.077$, $p = 0.002$), indicating robust empirical support for the proposed structural relationships.

Table 15. R-Square Adjusted Results

Endogenous Variable	R-Square (R^2)	R-Square Adjusted
Operational Logistics Performance	0.061	0.055
Transportation Performance	0.985	0.984

Source: Data processed with SmartPLS (2025)

The model demonstrates exceptional explanatory capability for transportation performance, with 98.4% of its variance explained by the three predictor variables (supplier performance, loading and unloading, and service quality), leaving only 1.6% unexplained variation. Conversely, transportation performance explains merely 5.5% of operational logistics performance variance, suggesting that additional factors beyond transportation influence overall operational outcomes in the postal service context.

CONCLUSION

This research confirms that improving vendor performance, streamlining loading and unloading operations, and improving logistics service quality collectively strengthen transportation performance, which in turn drives overall operational efficiency at KCU Kendari PT Pos Indonesia. To sustain and build on these gains, the organization should deepen its partnerships with transport vendors by establishing clear performance agreements and regular audits, invest in advanced handling equipment and standardized protocols to minimize delays and damage during cargo transfers, and strengthen customer-focused processes such as digital feedback systems and proactive complaint resolution to elevate service reliability. Additionally, deploying integrated fleet-management and inventory-tracking technologies will further optimize scheduling, vehicle maintenance, and stock accuracy. By adopting these strategic and operational enhancements in concert, KCU Kendari can achieve lasting improvements in both transportation effectiveness and broader logistics performance.

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