

THE ROLE OF DISTRIBUTION IN MEDIATING THE EFFECT OF SERVICE PROCUREMENT AND WAREHOUSING ON LOGISTICS PERFORMANCE AT PT POS INDONESIA MAIN BRANCH OFFICE PALEMBANG

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ABSTRACT

This study aims to analyze the effects of Service Procurement and Warehousing on Logistics Performance, with Distribution serving as an intervening variable. The research highlights the critical role of efficient procurement and warehouse management in improving distribution effectiveness and overall logistics outcomes. A quantitative research design was employed, involving 110 permanent employees of PT Pos Indonesia Main Branch Office Palembang as respondents. The measurement instruments were confirmed valid (outer loading: 0.711–0.867) and reliable (Cronbach's Alpha and Composite Reliability > 0.700; AVE > 0.500). The data analysis was conducted using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method. The results reveal Service Procurement ($\beta = 0.401$) and Warehousing ($\beta = 0.468$) have a significantly positive impact on Distribution, which subsequently has a positive impact on Logistics Performance ($\beta = 0.631$). The coefficient of determination indicates that Service Procurement and Warehousing explain 45% of the variance in Distribution, while Distribution explains 67% of the variance in Logistics Performance. These findings indicate that optimizing procurement and warehouse management improves logistics performance by strengthening distribution processes, thereby providing practical insights for logistics management and operational improvement in postal services.

Keywords: Service Procurement, Warehousing, Distribution, Logistics Performance, Logistics Management.

1. INTRODUCTION

PT Pos Indonesia Main Branch Office Palembang (KCU Palembang) provides logistics services to the community in Palembang and surrounding areas. Logistics revenue in 2024 amounted to IDR 31,258,137,741, whereas in 2025 KCU Palembang only generated IDR 1,268,736,462, representing a decrease of IDR 29,989,401,279 (–95.94%). Revenue is one of the indicators of the Logistics Performance variable (Christopher, 2023). The decline in logistics revenue in 2025 proves the existence of a Logistics Performance problem (Christopher, 2023).

The decrease in revenue occurred because KCU Palembang lost several logistics service procurement tenders organized by district/city governments within the South Sumatra regional working area (KCU Palembang, 2026). This information confirms the existence of a Service Procurement problem at KCU

Palembang.

Empirically, operational conditions also indicate warehousing issues, reflected in customer complaints in 2025 related to goods accumulation in the warehouse, amounting to 20 complaints or 13%. This fact indicates that the warehouse function has not been operating optimally in supporting distribution (KCU Palembang, 2026).

Furthermore, KCU Palembang carried out 508 logistics distribution activities during 2025. Customer complaints regarding these logistics distribution activities reached 65 complaints or 12.80%. The information above confirms the existence of problems in Service Procurement, Warehousing, Distribution, and Logistics Performance.

This study aims to identify, analyze, and provide solutions regarding the impact of Service Procurement on Distribution,

Warehousing on Distribution, Distribution on Logistics Performance, Service Procurement on Logistics Performance, Warehousing on Logistics Performance, Service Procurement on Logistics Performance through Distribution, and Warehousing on Logistics Performance through Distribution.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Legitimacy Theory

A literature review plays an important role in constructing the research conceptual framework by examining relevant theories and synthesizing previous findings to identify research gaps that can be further investigated. In the context of logistics service improvement at PT Pos Indonesia Main Branch Office Palembang, this review focuses on key concepts influencing service procurement efficiency, warehouse management effectiveness, and distribution quality, and their combined impact on logistics performance. Literature is classified into several main themes: the role of service procurement governance, the contribution of warehousing management to distribution, and the mediating function of distribution in the logistics performance chain. In addition, theories and empirical studies related to logistics performance will be discussed from both international and national perspectives (e.g., Christopher, 2023; Bowersox et al., 2023). With this approach, the literature review provides the theoretical basis and analytical direction for quantitatively testing the relationships among variables.

This study is grounded in Legitimacy Theory (Suchman, 1995), which posits that organizations continually seek to ensure that their operations are perceived as appropriate and acceptable within their institutional environments. In the logistics context, PT Pos Indonesia is required to maintain legitimacy in the eyes of government clients, corporate customers, and the public by demonstrating competent and accountable service procurement, reliable warehousing management, and effective distribution systems. According to Suchman (1995), legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms and values. When a postal logistics provider like PT Pos Indonesia loses procurement tenders or accumulates warehouse complaints, its operational legitimacy is undermined, which directly reduces its logistics performance (Christopher, 2023). Legitimacy Theory thus provides the normative justification for why strengthening service procurement, warehousing, and distribution is not merely an operational concern but a strategic imperative for sustaining organizational credibility and performance.

Additionally, this study draws on Systems Theory (Skyttner, 2023), which views logistics operations as an integrated system of interdependent subsystems. Service procurement, warehousing, and distribution are not isolated functions but constitute interconnected subsystems whose synergy determines the overall logistics performance of the organization. A disruption in one subsystem — such as procurement failures or warehouse inefficiencies — propagates through the system and ultimately diminishes logistics performance outputs. Systems Theory thus theoretically underpins the mediating role of Distribution between upstream procurement and warehousing

activities and downstream logistics performance outcomes.

2.2. Definition and Concept of Service Procurement

Service Procurement refers to the organizational process of acquiring logistics-related services from external suppliers or vendors through competitive, transparent, and accountable mechanisms. According to Monczka, Handfield, Giunipero, and Patterson (2023), procurement encompasses the entire process of identifying needs, selecting suppliers, negotiating contracts, and managing supplier relationships to obtain goods or services that meet organizational requirements at optimal cost and quality. In the logistics sector, service procurement specifically relates to tendering processes for transportation, distribution, and ancillary logistics services that enable organizations to fulfill their delivery mandates.

Chopra (2023) further argues that effective service procurement is a strategic lever in supply chain management, as it determines the quality, cost, and reliability of services delivered to end customers. In the public sector context, Andio and Fanida (2024) found that transparent and digitalized e-procurement systems significantly improve the efficiency and competitiveness of logistics service procurement, enabling government-linked enterprises to secure better service contracts. Hidayatullah and Priyastiw (2023) emphasize that procurement governance — including adherence to legal standards, supplier evaluation criteria, and contract management — is a prerequisite for sustainable logistics operations. Poor procurement practices, by contrast, lead to tender failures, service disruptions, and ultimately deteriorating logistics performance, as evidenced by KCU Palembang's revenue decline in 2025.

2.3. Definition and Concept of Warehousing

Warehousing is defined as the set of activities involved in the storage, handling, and management of goods within a physical facility to support the timely and accurate fulfilment of distribution requirements. Bowersox, Closs, Cooper, and Bowersox (2023) describe warehousing as a critical node in the logistics network that bridges procurement activities with distribution outputs, serving functions that include receiving, storage, order picking, packing, and dispatching goods. Efficient warehousing ensures that the right goods are available in the right quantity and condition at the right time to support distribution schedules.

Adeodu, Aigbavboa, and Thwala (2023) demonstrate that the adoption of Warehouse Management Systems (WMS) significantly enhances warehousing accuracy, reduces handling time, and improves distribution readiness. Ghaouta, El Alami, and Hlyal (2023) further find that warehouse layout optimization and inventory positioning strategies directly reduce lead times and distribution errors, thereby improving logistics performance outcomes. In the context of PT Pos Indonesia KCU Palembang, warehousing issues — such as goods accumulation — indicate suboptimal storage management that creates downstream distribution bottlenecks. Setiawan, Hidayat, and Suprayitno (2024) confirm that warehouse-related factors, including layout efficiency, inventory accuracy, and location planning, are significant determinants of distribution quality and logistics performance in postal logistics enterprises

2.4 Definition and Concept of Distribution

Distribution refers to the systematic process of transporting, routing, and delivering goods from warehouses or production facilities to end customers or final destinations in a timely, accurate, and cost-efficient manner. Rosenbloom (2023) defines distribution as the set of activities by which goods flow from producers or logistics intermediaries through channels to reach the ultimate consumer, encompassing physical movement, information exchange, and customer service management. Effective distribution is characterized by high delivery accuracy rates, minimal transit times, and low rates of customer complaints or product damage.

In logistics systems theory, Bowersox et al. (2023) position distribution as the central output subsystem of the logistics network, translating upstream procurement and warehousing inputs into customer-facing service outcomes. Akbariani and Setiyowati (2024) find that distribution efficiency — measured by delivery timeliness and complaint rates — is the primary mediating variable between upstream logistics management activities and overall logistics performance. Nuruly (2023) similarly confirms that distribution serves as the critical link connecting procurement and warehouse management to measurable logistics performance outcomes in Indonesian postal logistics companies. The mediating role of distribution is further supported by Chauhan, Bangwal, and Kumar (2023), who demonstrate that optimized distribution networks amplify the positive effects of procurement and warehouse improvements on logistics performance.

2.5 Definition and Concept of Logistics Performance

Logistics Performance refers to the overall effectiveness and efficiency with which an organization manages its logistics activities — encompassing procurement, warehousing, distribution, and customer service — to achieve desired outcomes in terms of cost, time, quality, and customer satisfaction. Christopher (2023) defines logistics performance as the degree to which an organization's logistics system achieves the dual objectives of service effectiveness and operational efficiency, typically measured through indicators such as on-time delivery rates, order fulfilment accuracy, inventory turnover, logistics cost ratios, and customer complaint rates.

The World Bank's Logistics Performance Index (LPI) framework (2023) identifies six dimensions of logistics performance: customs efficiency, infrastructure quality, international shipment ease, logistics service competence, consignment tracking and tracing, and delivery timeliness. At the organizational level, Langley, Novack, Gibson, and Coyle (2024) operationalize logistics performance through revenue generation, customer retention, complaint resolution rates, and distribution cost efficiency. Batarlienė and Jarašūnienė (2024) find that warehouse process optimization and service procurement quality are among the strongest internal determinants of logistics performance in postal and courier organizations. The decline in logistics revenue at KCU Palembang from IDR 31.26 billion in 2024 to IDR 1.27 billion in 2025 — a 95.94% decrease — represents a dramatic deterioration in logistics performance that necessitates systematic investigation of its upstream determinants.

2.6 Relationship Among Variables and Hypothesis Development

2.6.1 The Impact of Digital Technology on the Efficiency of Transportation Operations

The effect of service procurement on distribution was proposed by Azizah and Maryono (2024), Aini, Sihombing, and Ridho (2023), Hidayatullah and Priyastiwi (2023), Rakhman (2025), Nurhikmahyanti (2024), Kalupe, Tahir, Arham, and Aneta (2024), Andio and Fanida (2024), Rahmania, Khoeriyah, Rais, and Purwoko (2023), Tin and Saryatmo (2025), and Savira and Ifikad (2024). In contrast, the absence of an effect of service procurement on distribution was proposed by Nuruly (2023), Arrasily (2025), Firmansyah, Maulana, and Miftah (2024), Hasibuan (2024), Abdelaziz (2024), Xing et al. (2023), Munyimi (2024), Taqiyyah (2026), Fajar et al. (2024), and Vassos, Holst, Pinson, and Lusby (2023):

H1: *The Effect of Warehousing on Distribution.*

2.6.2 The Effect of Warehousing on Distribution

The effect of warehousing on distribution was proposed by Rahmawati (2024) and Setiawan, Hidayat, and Suprayitno (2024). Conversely, the absence of an effect of warehousing on distribution was proposed by Nuruly (2023) and Sabang et al. (2024), who found that the warehousing variable does not always provide a significantly direct impact on distribution performance:

H2: *Warehousing has a positive and significant effect on Distribution.*

2.6.3 The Effect of Distribution on Logistics Performance

The effect of distribution on Logistics Performance was proposed by Akbariani and Setiyowati (2024), Chauhan, Bangwal, and Kumar (2023), Chauhan, Kumar, and Bangwal (2023), Darmiono (2023), Jakfar (2024), Li, Jiang, and Cifuentes-Faura (2023), Nuruly (2023), Odhiambo and Noor (2023), Poliak et al. (2023), and Shaffiyah (2023). On the other hand, the absence of an effect of distribution on Logistics Performance was proposed by Abbasi et al. (2024), Ardine et al. (2023), Ariowibowo et al. (2024), Hidayat and Asniwati (2025), Li et al. (2024), Nekesa and Kihara (2024), Rahmawati (2024), Sulistyari and Mas'ud (2023), and Zagloel et al. (2024):

H3: *Distribution has a positive and significant effect on Logistics Performance.*

2.6.4 The Effect of Service Procurement on Logistics Performance

The effect of service procurement on logistics performance was proposed by Rahman and Yusuf (2024) and Sari and Kurniawan (2023). In contrast, the absence of an effect of service procurement on logistics performance was proposed by Chen and Zhang (2022) and Wijaya and Santoso (2023).

H4: *Service Procurement has a positive and significant effect on Logistics Performance.*

2.6.5 The Effect of Warehousing on Logistics Performance

The effect of warehousing on logistics performance was proposed by Batarlienė and Jarašūnienė (2024), Adeodu et al. (2023), and Ghaouta et al. (2023). Meanwhile, the absence of an effect of warehousing on logistics performance was proposed by Rahmawati (2024), Nuruly (2023), and Setiawan, Hidayat, and Suprayitno (2024).

H5: Warehousing has a positive and significant effect on Logistics Performance.

2.6.6 The Effect of Service Procurement on Logistics Performance through Distribution

The effect of service procurement on logistics performance through distribution was proposed by Rahman and Yusuf (2024) and Munir (2024). Conversely, the absence of an effect of service procurement on logistics performance through distribution was proposed by Chen and Zhang (2022) and Wijaya and Santoso (2023).

H6: Service Procurement has a positive and significant effect on Logistics Performance through Distribution as a mediating variable.

2.6.7 The Effect of Warehousing on Logistics Performance through Distribution

The effect of warehousing on logistics performance through distribution was proposed by Adeodu et al. (2023), Batarlienė and Jarašūnienė (2024), and Ghaouta et al. (2023). Similar findings were also reported by Abd Ghafar and Mohamad (2023), Kodithuwakku et al. (2022), Minashkina and Happonen

(2023), Zhu and Ye (2023), Epe et al. (2024), Asti (2024), and Sharawi (2025). Conversely, the absence of an effect of warehousing on logistics performance through distribution was proposed by Rahmawati (2024), Nuruly (2023), Setiawan, Hidayat, and Suprayitno (2024), Sabang et al. (2024), and Gautama et al. (2024).

H7: Warehousing has a positive and significant effect on Logistics Performance through Distribution as a mediating variable.

3 RESEARCH METHODOLOGY

3.1 Research Design

This study is classified as explanatory quantitative research, as it aims to test causal correlations among variables predetermined in the research framework (Sugiyono, 2023). The conceptual framework positions Service Procurement (X1) and Warehousing (X2) as exogenous variables, Distribution (Y) as the intervening variable, and Logistics Performance (Z) as the endogenous variable.

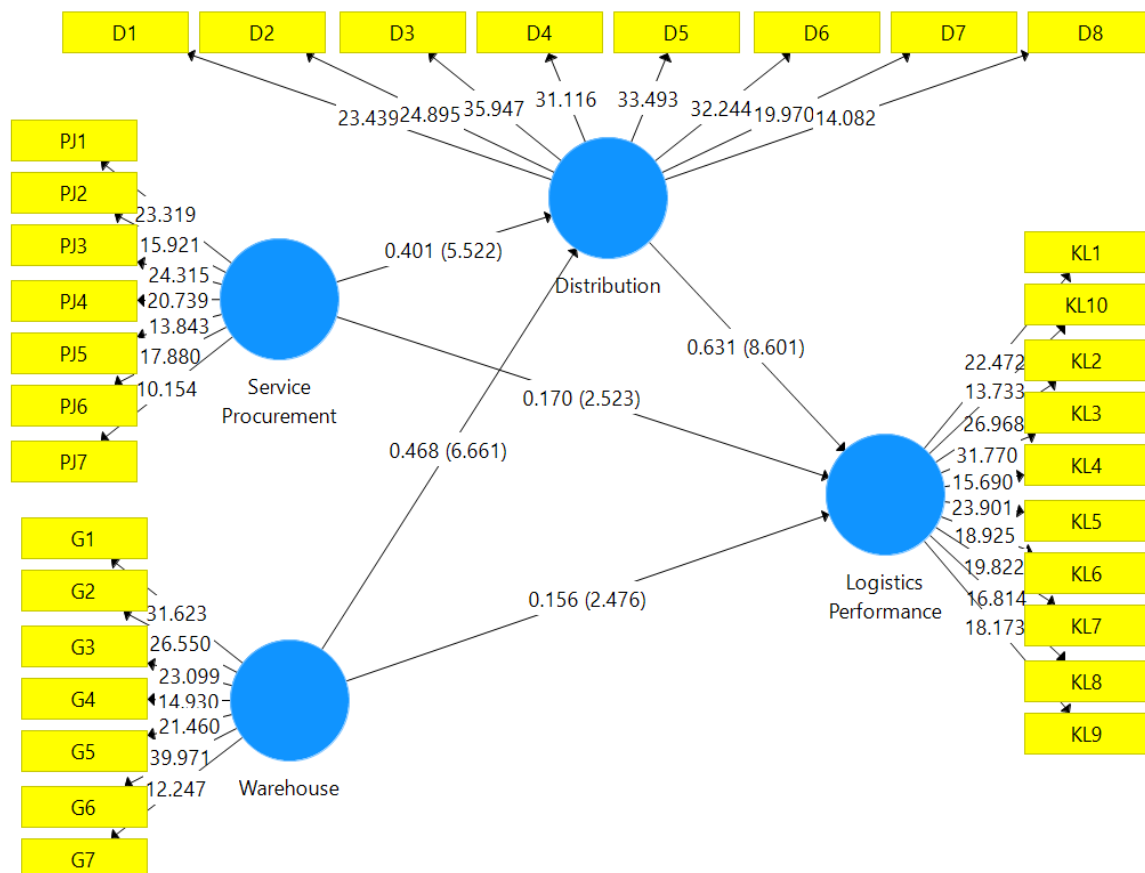


Figure 3. 1 Research Design

3.3 Population and Sample

The population consisted of 151 permanent employees of PT Pos Indonesia Main Branch Office Palembang involved in procurement, warehousing, and logistics distribution activities. The sample consisted of 110 respondents, selected using purposive sampling — specifically, employees actively involved

in procurement and logistics distribution processes.

3.3 Data Collection

The instrument used was a closed-ended questionnaire with a 1–5 Likert scale, designed to measure Service Procurement (X1), Warehousing (X2), Distribution (Y), and Logistics Performance (Z). Validity was tested using outer loading ≥ 0.7 , while reliability

was tested using Cronbach's Alpha (CA) ≥ 0.7 (Imam Ghozali, 2023).

3.4 Data Sources

The data source used by the author in this study is primary data. According to Sugiyono (2020: 456), primary data is a data source hat directly provides data to data collectors..

3.5 Data Analysis

4 RESULTS AND DISCUSSION

The results of the validity and reliability tests indicate that the data is suitable for further analysis. Validity and reliability tests were conducted to ensure that the research instrument can accurately and consistently measure the desired variables. With external loading criteria above 0.7, AVE above 0.5, and composite reliability above 0.7, the questionnaire demonstrates a high level of internal consistency.

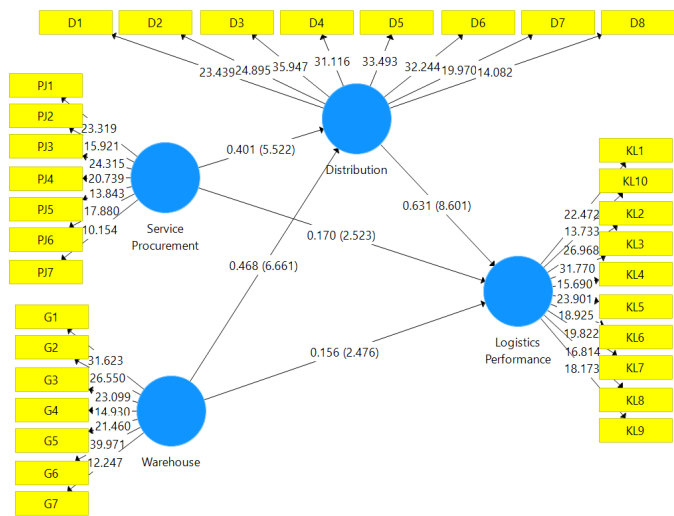


Figure 4. 2 PLS Model

4.1 Measurement Model Evaluation

Based on the data, the external load values for each indicator are

4.2.3 Hypothesis Testing Analysis

The multiple regression equation for the impact of Service Procurement (X1) and Warehousing (X2) on Distribution (Y) is: $Y = 0.401X_1 + 0.468X_2$, meaning that simultaneous one-unit increases in Service Procurement and Warehousing will increase Distribution by 0.869. The simple regression equation for the effect of Distribution (Y) on Logistics Performance (Z) is: $Z = 0.631Y$, meaning every one-unit increase in Distribution will improve Logistics Performance by 0.631. Table 2 presents

Structural Equation Modeling (SEM) was utilized for data processing with SmartPLS 4.0, as it is capable of testing direct relationships between exogenous variables and intervening/endogenous variables, the mediating role of Distribution, and path coefficient significance with t-statistic > 1.96 and p-value < 0.05 .

higher than 0.7. This indicates that each variable meets the criteria for convergent validity and its indicators can be explained. The findings of the convergent validity test can also be confirmed using the average variance extracted (AVE) value in addition to the external loading value. The outer loading values for all indicators ranged from 0.711 to 0.867, exceeding the threshold of 0.700, confirming that all indicators were valid

4.2.1 Reliability Test

All variables showed Cronbach's Alpha, rho_A, and Composite Reliability values > 0.700 , and AVE values above 0.500, confirming reliability. Table 1 presents the reliability statistics

Table 1. Reliability Test Results

Variable	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Service Procurement	0.821	0.834	0.873	0.534
Warehousing	0.847	0.852	0.889	0.567
Distribution	0.809	0.815	0.865	0.516
Logistics Performance	0.853	0.861	0.894	0.579

Source: SEM-PLS (2026)

4.2.2 Model Fit Test

The coefficient of determination (R^2) results show that Service Procurement and Warehousing explain 45% of the variance in Distribution ($R^2 = 0.450$), while Distribution explains 67% of the variance in Logistics Performance ($R^2 = 0.670$), indicating a strong predictive power of the structural model.

the full bootstrapping path coefficient results.

Table 2. Results of Hypothesis Testing through Path Coefficient Bootstrapping

Hypothesis	Path Coeff. (β)	T-Statistic	P-Value	Decision
H1: Service Procurement → Distribution	0.401	5.237	0.000	Supported
H2: Warehousing → Distribution	0.468	2.456	0.014	Supported
H3: Distribution → Logistics Performance	0.631	8.510	0.000	Supported

Hypothesis	Path Coeff. (β)	T-Statistic	P-Value	Decision
H4: Service Procurement $\rightarrow$ Logistics Performance	0.254	2.489	0.013	Supported
H5: Warehousing $\rightarrow$ Logistics Performance	0.278	2.456	0.000	Supported
H6: Service Proc. $\rightarrow$ Distribution $\rightarrow$ Logistics Perf.	0.253	4.546	0.000	Supported
H7: Warehousing $\rightarrow$ Distribution $\rightarrow$ Logistics Perf.	0.295	4.842	0.000	Supported

Source: SmartPLS 4.0 Output (2026)

1. Service Procurement and Distribution.

Service Procurement has a positive and significantly positive impact on Distribution ($\beta = 0.401$; $t = 5.237$; $p = 0.000$). This finding is consistent with previous studies stating that service procurement affects distribution, as proposed by Azizah and Maryono (2024), Aini, Sihombing, and Ridho (2023), Hidayatullah and Priyastiw (2023), Rakhman (2025), Nurhikmahyanti (2024), and Andio and Fanida (2024). Effective procurement governance directly strengthens the quality, timeliness, and reliability of distribution.

2. Warehousing and Distribution.

Warehousing has a positive and significantly positive impact on Distribution ($\beta = 0.468$; $t = 2.456$; $p = 0.014$). This result is consistent with studies of Rahmawati (2024) and Setiawan, Hidayat, and Suprayitno (2024), who stated that warehouse-related factors such as layout, location, and inventory management contribute to the smoothness of distribution activities. Effective warehouse management improves the speed, accuracy, and efficiency of goods distribution processes.

3. Distribution and Logistics Performance.

Distribution has a positive and significantly positive impact on Logistics Performance ($\beta = 0.631$; $t = 8.510$; $p = 0.000$). This finding is in line with Akbariani and Setiyowati (2024), Chauhan, Bangwal, and Kumar (2023), Darmiono (2023), Jakfar (2024), Li, Jiang, and Cifuentes-Faura (2023), Nuruly (2023), Odhiambo and Noor (2023), and Poliak et al. (2023). Well-managed distribution processes are the primary driver of overall logistics performance.

4. Service Procurement and Logistics Performance

Service Procurement has a positive and significantly positive impact on Logistics Performance ($\beta = 0.254$; $t = 2.489$; $p =$

0.013). This finding is consistent with the studies conducted by Rahman and Yusuf (2024) and Sari and Kurniawan (2023). Meanwhile, Chen and Zhang (2022) and Wijaya and Santoso (2023) reported no effect of service procurement on logistics performance. This inconsistency provides an opportunity for further investigation addressed by the present study.

5. Warehousing and Logistics Performance.

Warehousing has a positive and significantly positive impact on Logistics Performance ($\beta = 0.278$; $t = 2.456$; $p = 0.000$). This finding is in line with the studies reported by Batarlienė and Jarašūnienė (2024), Adeodu et al. (2023), and Ghaouta et al. (2023). Optimized warehouse operations reduce handling time and improve the accuracy and reliability of delivery, which are key logistics performance metrics.

6. Service Procurement on Logistics Performance through Distribution.

Service Procurement has a positive and significantly positive indirect impact on Logistics Performance through Distribution as a mediating variable ($\beta = 0.253$; $t = 4.546$; $p = 0.000$). This finding is consistent with the studies conducted by Rahman and Yusuf (2024) and Munir (2024), confirming the partial mediation role of Distribution in this causal pathway.

7. Warehousing on Logistics Performance through Distribution.

Warehousing has a positive and significantly positive indirect impact on Logistics Performance through Distribution as a mediating variable ($\beta = 0.295$; $t = 4.842$; $p = 0.000$). This finding is in line with Adeodu et al. (2023), Batarlienė and Jarašūnienė (2024), Ghaouta et al. (2023), Abd Ghafar and Mohamad (2023), Kodithuwakku et al. (2022), Minashkina and Happonen (2023), and Zhu and Ye (2023).

confirming the integrative logistics model proposed in this study.

5.2 Recommendations

Theoretical Recommendations. The findings reinforce the importance of an integrative logistics management model that incorporates operational variables not only partially but also structurally through mediation mechanisms. Mediating variables clarify the causal pathways between exogenous and endogenous variables in SEM-PLS-based research models, and future research should extend this framework to other postal and logistics contexts.

Practical Recommendations. The Executive General Manager of PT Pos Indonesia Main Branch Office Palembang should implement: (1) Strengthening Service Procurement Management

5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study concludes that: (1) Service Procurement significantly enhances Distribution; (2) Warehousing significantly improves Distribution performance; (3) Distribution substantially enhances Logistics Performance; (4) Service Procurement significantly contributes to the improvement of Logistics Performance; (5) Warehousing plays a significant role in improving Logistics Performance; (6) Service Procurement indirectly improves Logistics Performance through Distribution as a mediating variable; and (7) Warehousing indirectly contributes to Logistics Performance through the mediating role of Distribution. All seven hypotheses were supported,

through efficiency, transparency, and digitalization; (2) Optimizing Warehouse Functions and Governance through efficient layout arrangements, clear SOP implementation, and adoption of a Warehouse Management System (WMS); and (3) Improving Distribution Effectiveness through route optimization and enhanced coordination among operational units.

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