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The Effect of Logistics Distribution Performance on Customer Satisfaction at the 3PL Company PT.X in Padang, West Sumatra

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Abstract: This study aims to analyze the effect of logistics distribution performance on customer satisfaction at third-party logistics (3PL) companies in Padang, West Sumatra. Operational issues such as delivery delays, discrepancies in the quantity of goods, damaged goods, and tracking system problems can lower customer satisfaction levels. The empirical gap in this study is that previous research has shown mixed results regarding the impact of delivery delays, discrepancies in goods, damaged goods, and tracking systems on customer satisfaction. This study aims to analyze and validate the hypotheses of previous research regarding whether delivery delays, discrepancies in goods, damaged goods, and tracking systems have a significant impact on customer satisfaction. This study employs a quantitative approach using Partial Least Squares-Structural Equation Modeling (PLS-SEM) via the SmartPLS software. Data were collected from 50 distributor customers using a five-point Likert scale questionnaire with a saturation sampling technique. The results indicate that the variables “product damage” and “delivery delays” have p-values < 0.05 and T-statistics > 1.96, indicating a significant effect on customer satisfaction. Meanwhile, the variables of product nonconformity and the tracking system, with p-values of 0.393 and T-statistics of 0.854, did not have a significant effect on customer satisfaction. The tracking system variable had a p-value of 0.798 and a T-statistic of 0.256, indicating that it did not have a significant effect on customer satisfaction.

Keywords: Logistics Distribution Performance, Delivery Delays, Product Nonconformity, Product Damage, Tracking System, and Customer Satisfaction

INTRODUCTION

The logistics industry plays a crucial role in managing the national supply chain. The transportation and freight sectors play a vital role in the distribution of goods between industrial sectors and regions. Logistics aspects play a very significant role in the distribution of goods to every region. The effective and efficient use of resources related to logistics activities will provide significant benefits to all parties involved, both in terms of time and costs incurred (Sudrajat et al., 2024). Logistics, as a business activity or process, will always exist; in fact, it has existed since the transformation of goods and their distribution to end consumers began. However, Indonesian logistics companies still face challenges such as inefficient distribution

processes, long delivery times, and inconsistent warehousing services, which negatively impact customer satisfaction and business productivity.

Customer satisfaction is a key factor that influences the overall performance of a logistics company. Satisfied customers tend to exhibit higher loyalty, increase transaction volume, and project a positive image of the company. Conversely, low levels of customer satisfaction can lead to an increase in complaints, erode trust, and negatively impact the company's Key Performance Indicators (KPIs), such as on-time delivery rates, shipment accuracy, and the condition of goods upon arrival at the customer's hands. To ensure a high-quality business, customer satisfaction and the quality of logistics services must be equally important (Pramudita & Guslan, 2025) .

PT. X is a company engaged in integrated logistics and supply chain management in Indonesia. The company provides comprehensive services such as domestic and international freight forwarding, ground transportation, warehousing, distribution, and value-added services such as repacking and RFID systems. The company serves hundreds of national and multinational clients, primarily from the FMCG, retail, and e-commerce sectors. PT. X has a branch office in Padang, West Sumatra, which serves as the main Distribution Center (DC) for supplying FMCG products (Unilever) to all regions in West Sumatra.

Table 1. Data on Delivery Delays to Distributors in 2025 at PT. X

Failed	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL YTD
Delivered	40	50	76	54	67	70	50	61	45	40	40	75	668
Port Issue	-	-	-	-	-	-	-	-	-	-	-	-	-
Transporter Issue All	10	7	15	27	21	15	14	13	11	8	9	24	174
Force Majeur	-	-	-	-	-	-	-	-	-	-	-	-	-
Percentage of delays	25%	14%	20%	50%	31%	21%	28%	21%	24%	20%	23%	32%	

Source: Data from PT. X for the year 2025

The data above shows a table detailing the number of shipment delays each month. The "Failed" column lists problem categories caused by various factors, such as Port Issues, General Transportation Issues, and Force Majeure. For example, in January, there were 40 shipments, and 10 of them experienced General Transportation Issues—such as shipment delays, product discrepancies, and product damage. The percentage of transport issues varies each month, rising significantly to 50% in April and 31% in May, before stabilizing at an average of 24% in subsequent months. The 3PL company's policy sets a maximum monthly delay limit of 5%, yet the data for each month has already exceeded this limit. These issues have an impact on customer satisfaction with 3PL Company X. Furthermore, the quality of goods received remains an operational challenge.

Based on the results of a previous study (Maesazshandy & Tohir, 2024) , the variable of shipment delays has a significant effect on customer satisfaction. Furthermore, regarding the variable of damaged goods, according to the study (Pramudita & Guslan, 2025) , it was shown that damaged goods have a significant effect on customer satisfaction. Meanwhile, based on a previous study (Putri & Sofia, 2025) regarding the product mismatch variable, the results indicate that product mismatch has a negative effect on customer satisfaction. The final variable is the tracking system; according to the study (Immanuel Yusuf, 2024) , the tracking system does not have a significant effect on customer satisfaction. Therefore, this study aims to analyze and validate the hypotheses of previous research regarding whether delivery delays, product non-conformity, product damage, and the tracking system have a significant effect on customer satisfaction.

Literature Review

Delivery Timeliness

From a conceptual perspective, the scope of on-time delivery in this study encompasses all actions related to delivery accuracy, ranging from service levels and predetermined schedules to the efficiency of informing clients about arrival times. Delivery timeliness, as a critical component of logistics management, has a significant impact on how customers perceive and are satisfied with the performance of delivery service providers. Furthermore, according to , to succeed in a highly competitive industry, customer satisfaction is crucial for retaining existing clients, attracting new ones, and ultimately maintaining brand loyalty. It is an open secret that many dissatisfied consumers choose to switch to competitors rather than file a complaint.

From the perspective of , customers' experiences and perceptions of service improve when they interact with polite and helpful customer service agents. This can influence customers' likelihood of using the service again. Similarly, logistics providers can enhance customer satisfaction and the intention to reuse their services by providing timely and reliable information about the status of customers' shipments.

In industries that implement Business-to-Business (B2B) strategies, on-time delivery is a critical factor in maintaining a smooth supply chain. Delivery delays beyond the promised time can disrupt customers' operational activities and lead to a decline in customer trust and loyalty toward the company (Mourtzis et al., 2017) . In the context of supply chain management, distribution refers to all activities involved in transferring goods from the manufacturer to the consumer. A key component of the supply chain is distribution, which controls the flow of goods from the manufacturer to the end consumer. Depending on the characteristics of the market being served, distribution systems can vary significantly (Sarah, 2025).

One of the key factors determining the success of a 3PL company is the supply of goods and logistics distribution from the distribution center to retail outlets, stores, and branch minimarkets located in the region. A logistics system is a collection of facilities related to transportation. Such a system requires various components to support its sustainable operation. This is particularly true in logistics systems. Therefore, to facilitate the movement of goods and distribution, a logistics system must have at least five basic components. In this context, communication and transportation are among the most important elements (Sadri et al., 2023)

Customer Satisfaction

The needs of individual consumers change over time. Their consumption behavior is influenced by market trends, technological advancements, economic conditions, culture, and lifestyle. Consequently, businesses must be flexible to satisfy consumers and remain competitive. In this context, businesses must have a successful marketing plan to attract and retain customers (March & Girsang, 2025) . The degree of user satisfaction or dissatisfaction is closely linked to the assessment of service quality. Although they have different meanings and concepts, service quality and user satisfaction are strongly correlated (Kusuma, 2018) . Customer satisfaction directly influences service quality, which in turn increases company revenue (Cristobal et al., 2007) . Therefore, customer loyalty is the cornerstone of building lasting and mutually beneficial relationships between businesses and consumers (Dini et al., 2025) . According to (Anggoro & Saputra, 2023) , customer satisfaction is a crucial component for building lasting customer relationships and enhancing the effectiveness of experience-based marketing tactics. The likelihood that customers will make repeat purchases and continue to choose a particular brand over its competitors increases as customer satisfaction rises.

SEM – PLS

The method used to analyze this problem is Smart PLS (SEM-PLS), according to (Rana et al., 2026) PLS-SEM (Partial Least Squares Structural Equation Modeling) is an appropriate analytical method for research involving complex models and predictive objectives. Furthermore, the PLS-SEM method was chosen because it is capable of analyzing models involving complex relationships, including moderation effects and interactions among variables. On the other hand, according to (Agustina & Sugiarti, 2024), one of the most widely used variance-based SEM techniques uses line coefficients to assess the relevance and strength of the proposed correlations between latent constructs.

Hypotheses

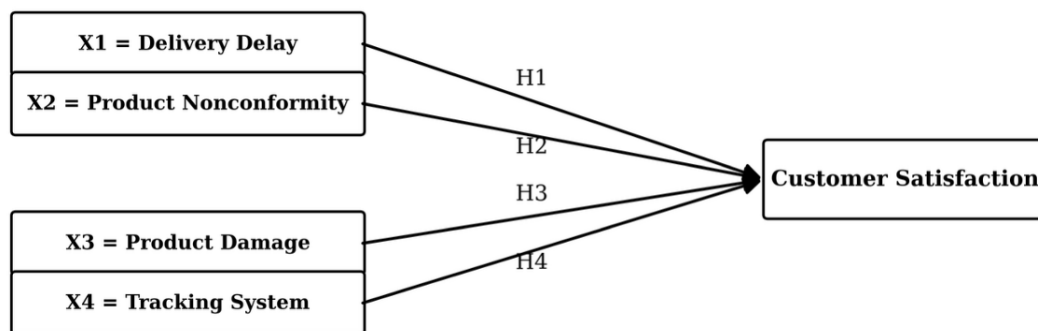


Figure 1 Conceptual Framework

1. H1: Delivery delays in logistics distribution have a direct impact on customer satisfaction.
2. H2: Product discrepancies have a direct impact on customer satisfaction.
3. H3: Damaged goods have a direct impact on customer satisfaction.
4. H4: The tracking system influences customer satisfaction.

The Effect of Delivery Delays on Customer Satisfaction

Based on the findings of the study “ , the research indicates that delivery time has a significant effect on customer satisfaction in the cargo service industry. On-time delivery increases customer satisfaction, while delays decrease it. The study employed a quantitative approach using a survey of cargo service customers in Indonesia. It tested only one independent variable: delivery time. It did not consider other factors such as product condition, order accuracy, tracking systems, customer trust, or service recovery. Additionally, the study used only linear regression, so more complex relationships could not be explained.

Furthermore, according to the journal * , the study’s results indicate that delivery time, service quality, and product quality and condition have a positive effect on customer satisfaction. A limitation of this journal article is that the study focused only on Gen Z customers in Jakarta; therefore, the results cannot yet be generalized to other customer groups. The study also did not include variables such as tracking systems, order discrepancies, complaint handling, or customer trust, which could potentially influence customer satisfaction.

Research findings from the journal found that service quality, delivery timeliness, and tracking system features collectively enhance customer satisfaction with JNE Express. Since the study was limited to a single JNE branch in Bojonegoro, the generalizability of the results remains limited. The proposed novelty is to develop the variables of tracking information quality, tracking transparency, and tracking responsiveness in the context of Indonesian logistics companies.

Product Mismatch Has No Significant Effect on Customer Satisfaction

According to the journal the results show that product mismatch has a negative effect on customer satisfaction.

The Effect of Product Damage on Customer Satisfaction

According to the study , the study evaluated the impact of Logistics Service Quality (LSQ) on customer satisfaction in e-commerce distribution channels in Indonesia using the SEM-PLS method. The analysis results show that the dimensions of Timeliness, Order Condition, Order Discrepancy, and Operational Information Sharing have a positive and significant correlation with increased customer satisfaction. This study did not specifically examine product condition, as it was already included as a variable within Logistics Service Quality (LSQ).

METHOD

Type and Research Approach

This study uses a quantitative methodology with an explanatory approach to investigate the relationship and impact of independent variables on the dependent variable. This method was chosen because the purpose of the study is to assess how delivery delays, non-conforming products, and damaged goods affect customer satisfaction.

Determination of Variable Indicators

According to Ma'ruf Abdullah, variables are categorized as: (i) dependent variables and independent variables, (ii) moderating variables, (iii) intervening variables, (iv) latent and manifest variables, and (v) endogenous and exogenous variables (Ma'ruf Abdullah, 2015). The types of variables and the relationships among them determine the research formulation or questions, objectives, hypothesis formulation, and other research elements.

Table 2 Research Indicator

Variables	Sub-Variables	Indicators	Source
Delivery Reliability	Timeliness of Delivery	1. Delivery timeliness in accordance with estimates 2. Conformity of delivery time with the company's commitment	Mentzer, Flint, & Hult (2001)
Delivery Delays (Delivery Reliability)	Delivery Reliability	3. The company's consistency in meeting delivery schedules 4. Low frequency of delivery delays	Mentzer, Flint, & Hult (2001)
Order Accuracy	Order Accuracy	1. Goods received match the order 2. Correct type or variety of goods shipped	Mentzer, Flint, & Hult (2001)
Order Accuracy	Quantity and Specification Accuracy	3. Accuracy of the quantity of goods received 4. Conformity of goods' specifications to customer requests	Mentzer, Flint, & Hult (2001)
Product Damage (Product Condition)	Condition of Goods Upon Receipt	1. Goods are received without physical damage 2. Product packaging is in good condition	Bienstock, Mentzer, & Bird (1997)

Product Damage (Product Condition)	Safety of Goods Handling	3. Safety of the goods handling process during shipment 4. Company liability for damaged goods	Bienstock, Mentzer, & Bird (1997)
Shipping Tracking System (Information Visibility)	Availability and Accuracy of Information	1. Ease of customer access to shipment information 2. Accuracy of shipment location information 3. Regular updates on shipment status 4. Tracking helps estimate the time of delivery	Caridi et al. (2010)
Customer Satisfaction	Customer Satisfaction and Loyalty	1. Satisfaction with the quality of delivery service 2. Alignment of service with customer expectations 3. Satisfaction with timeliness 4. Willingness to use the service again 5. Willingness to recommend the service	Oliver (1980); Parasuraman et al. (1988)

Data Sources and Sampling Methods

Population: A total of 50 respondents from the logistics sector, specifically distributors of FMCG products at the 3PL company PT X.

1. Sample: (Saturated Sample) FMCG distributors at the 3PL company PT X.
2. Technique: Data was collected using a questionnaire distributed to 50 distributors in the region. This method was chosen because it is effective in reaching respondents who are geographically dispersed. The entire data set was analyzed using variance-based Partial Least Squares Structural Equation Modeling (PLS-SEM) methodology.
3. Research Instrument: This study comprised 25 structured statements using a five-point Likert scale to collect responses regarding the five variables in the conceptual model. Data from the questionnaire was collected online.

Data Analysis Techniques

The relationships between independent and dependent variables in the research model were measured using PLS-SEM. The PLS-SEM method was chosen because it is capable of analyzing complex relationships between latent variables, does not require the assumption of a normal distribution, and can be applied to relatively small sample sizes. Additionally, PLS-SEM is suitable for predictive research and theory development (Joseph F. Hair Jr. et al., 2017).

The PLS-SEM analysis consists of two main stages: evaluation of the measurement model (outer model) and evaluation of the structural model (inner model). The outer model evaluation is conducted to test the construct validity and reliability. Convergent validity is measured through outer loadings with a criterion of > 0.7 , as well as an Average Variance Extracted (AVE) value of > 0.5 . Meanwhile, discriminant validity can be evaluated using the Heterotrait-Monotrait Ratio (HTMT) method with a value < 0.9 , indicating that the constructs are sufficiently distinct from one another (Henseler et al., 2015). Construct reliability is measured using Composite Reliability and Cronbach's Alpha, with a minimum threshold of 0.7.

Next, an inner model evaluation was conducted to test the relationships among the latent variables in the research model. This assessment included the R-squared (R^2) value to examine the ability of the independent variables to explain the dependent variable, as well as the path

coefficients to determine the direction and strength of the relationships among the variables. Significance testing was performed using the bootstrapping technique, with a t-statistic value > 1.96 at a 5% significance level. Additionally, the Q-square (Q^2) value can be used to measure the model's predictive relevance (Hair et al., 2017).

According to Hair et al. (2022), the significance of path coefficients is tested using bootstrapping results. In a two-tailed test with a 5% significance level ($\alpha = 0.05$), the hypothesis is accepted if:

1. T-statistic > 1.96
2. P-value < 0.05

Hypothesis testing in this study was conducted based on the results of the inner model analysis, specifically by examining the path coefficient values and the significance levels of each relationship between variables. A hypothesis is accepted if the t-statistic is greater than 1.96 and the p-value is less than 0.05. Thus, SEM-PLS allows researchers to comprehensively test the simultaneous relationships between delivery delays, product mismatches, and product damage on customer satisfaction.

RESULTS AND DISCUSSION

Data Validity Test

Partial Least Squares Structural Equation Modeling (PLS-SEM) and SmartPLS software were used to assess the validity of the respondents' data. Convergent validity was verified by examining the outer loadings of each indicator. If an indicator's outer loading is greater than 0.70, the indicator is considered valid. Indicators were deemed invalid, and “ ” were removed from the analytical model if their values fell below this threshold. After eliminating the invalid indicators, all remaining indicators had outer loadings > 0.70 , thereby meeting the criteria for convergent validity. Based on the construct reliability test, the *Average Variance Extracted* (AVE) value for each construct is greater than 0.50, and the *Cronbach's Alpha* and *Composite Reliability* scores each exceed the 0.70 threshold. Thus, each construct in the model meets the standards for validity and reliability (Hair et al., 2021).

Indicators	No.	Missing	Mean	Median	Min	Max	Standard Devia...	Excess Kurtosis
TL-1	1	0	2.840	3.000	1.000	5.000	1.515	-1.470
TL-2	2	0	3.000	3.000	1.000	5.000	1.428	-1.372
TL-3	3	0	3.020	3.000	1.000	5.000	1.273	-1.081
TL-4	4	0	2.840	3.000	1.000	5.000	1.461	-1.441
TL-5	5	0	2.980	3.000	1.000	5.000	1.435	-1.345
AC-1	6	0	2.880	3.000	1.000	5.000	1.437	-1.388
AC-2	7	0	2.880	3.000	1.000	5.000	1.437	-1.435
AC-3	8	0	3.020	3.000	1.000	5.000	1.476	-1.390
AC-4	9	0	2.980	3.000	1.000	5.000	1.393	-1.281
AC-5	10	0	3.040	3.000	1.000	5.000	1.399	-1.323
QC-1	11	0	3.000	3.000	1.000	5.000	1.523	-1.530
QC-2	12	0	2.860	3.000	1.000	5.000	1.342	-1.140
QC-3	13	0	2.980	3.000	1.000	5.000	1.319	-1.156
QC-4	14	0	2.860	3.000	1.000	5.000	1.327	-1.282
QC-5	15	0	3.000	3.000	1.000	5.000	1.470	-1.369

Figure 2 Raw data from respondents

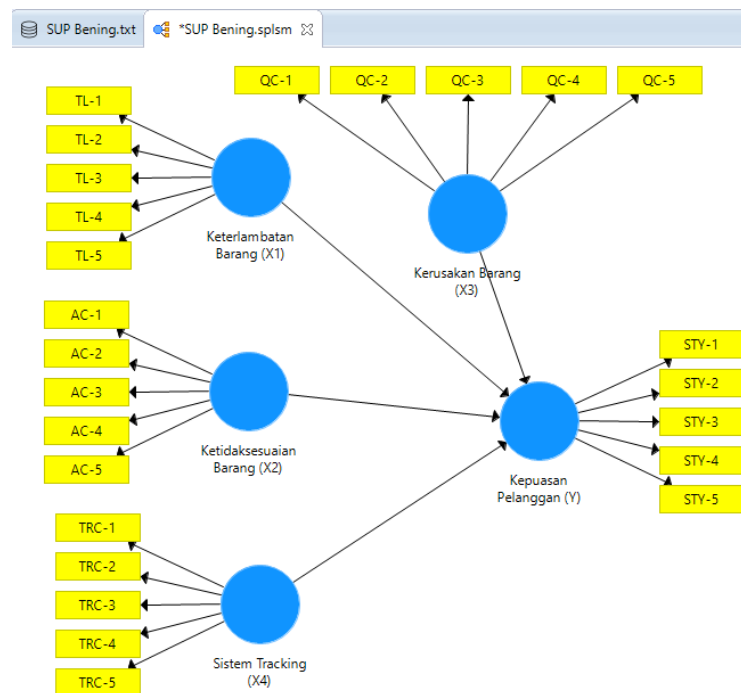


Figure 3 Initial view of the indicator model

Next, a *validity test* was conducted using the *PLS algorithm*.

Outer Loadings					
	Kepuasan Pelanggan (Y)	Kerusakan Barang (X3)	Keterlambatan Barang (X1)	Ketidaksesuaian Barang (X2)	Sistem Tracking (X4)
AC-1				0,921	
AC-2				0,931	
AC-3				0,911	
AC-4				0,898	
AC-5				0,900	
QC-1		0,919			
QC-2		0,916			
QC-3		0,897			
QC-4		0,906			
QC-5		0,941			
STY-1	0,929				
STY-2	0,934				
STY-3	0,924				
STY-4	0,918				
STY-5	0,895				
TL-1			0,921		
TL-2			0,931		
TL-3			0,870		
TL-4			0,905		
TL-5			0,916		
TRC-1					0,906
TRC-2					0,929
TRC-3					0,918
TRC-4					0,909
TRC-5					0,919

Figure 3 Outer Loading Results

All indicators showed an average outer loading value above 0.700. This indicates that each indicator meets the criteria for convergent validity. Reliability and construct validity tests were also conducted to support these findings.

Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Kepuasan Pelanggan (Y)	0,954	0,955	0,965	0,846
Kerusakan Barang (X3)	0,952	0,952	0,963	0,839
Keterlambatan Barang (X1)	0,947	0,947	0,960	0,826
Ketidaksesuaian Barang (X2)	0,950	0,950	0,961	0,832
Sistem Tracking (X4)	0,952	0,953	0,963	0,840

Figure 4 Validity and Reliability Tests

Based on the results of the reliability and validity test table, the *Cronbach's Alpha*, *Rho-A*, and *composite reliability* values are above 0.700, and the *Average Variance Extracted* (AVE) value is above 0.500. It can be concluded that the measurement instruments used in this study are valid and reliable. Internal Model Analysis (R-Square) The R-Square value was then examined to test the structural model, also known as the internal model. It was observed that the average values for construct reliability and validity were above 0.700, indicating that the variables of product mismatch, product delay, product damage, and the tracking system have a significant effect on customer satisfaction.

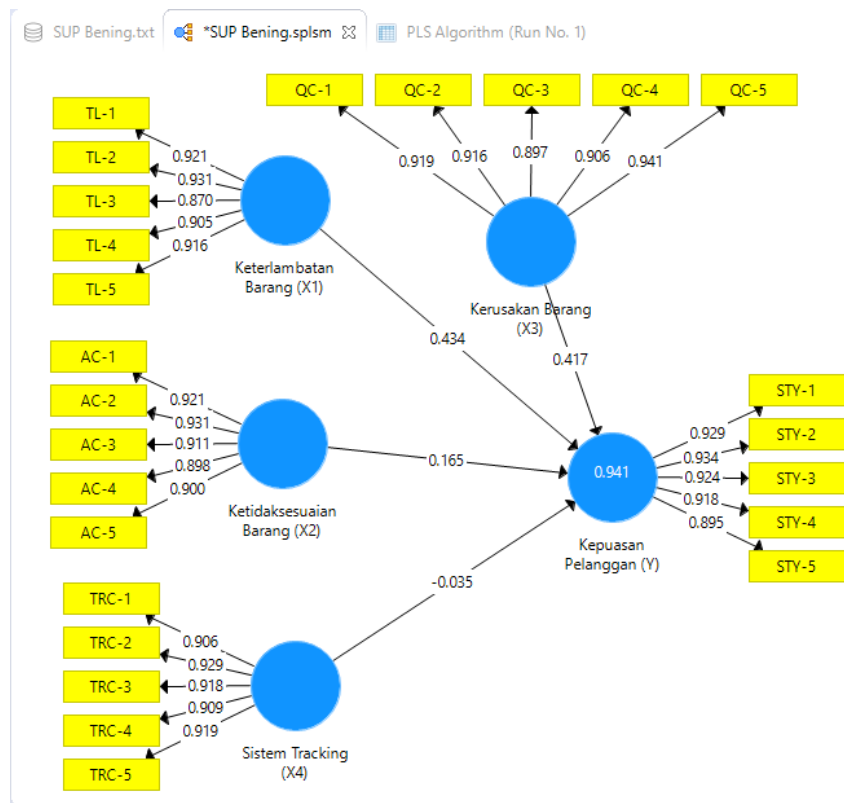


Figure 5 Display of SEM-PLS run results for indicators

R Square		
	R Square	R Square Adjusted
Kepuasan Pelanggan (Y)	0,941	0,935

Figure 6 *R-Square* (Coefficient of Determination)

Based on the figure above, the data show that the R-Square value for the Customer Satisfaction variable is 0.935. This indicates that the exogenous factors in the model explain 93.5% of the variation in the effect on customer satisfaction. Hypothesis testing (bootstrapping). The bootstrapping method was used to test the hypotheses and confirm the existence of significant correlations among the variables.

	Original Sample (O)	Sample Mean (M)	Standard Deviation...	T Statistics (O /...	P Values
Kerusakan Barang (X3) -> Kepuasan Pelanggan (Y)	0.417	0.402	0.146	2.861	0.004
Keterlambatan Barang (X1) -> Kepuasan Pelanggan (Y)	0.434	0.424	0.145	2.990	0.003
Ketidaksesuaian Barang (X2) -> Kepuasan Pelanggan (Y)	0.165	0.178	0.193	0.854	0.393
Sistem Tracking (X4) -> Kepuasan Pelanggan (Y)	-0.035	-0.022	0.137	0.256	0.798

Figure 7 Direct Hypothesis Test Results

Based on the SEM-PLS bootstrapping results, there are two variables that have a positive effect on customer satisfaction, namely:

1. Product Damage → Customer Satisfaction: product damage (X3) and product delivery delays (X1). The product damage variable has a path coefficient (Original Sample) of 0.417, a T-statistic value of 2.861 (>1.96), and a p-value of 0.004 (<0.05), indicating that the hypothesis is accepted and that product damage has a significant effect on customer satisfaction. (Significant) The product damage variable, with a coefficient of 0.417 and a p-value of 0.004, indicates that the hypothesis is accepted and that product damage has a significant effect on customer satisfaction
2. Delayed Delivery → Customer Satisfaction: Similarly, the delayed delivery variable has a coefficient of 0.434, a T-statistic of 2.990, and a p-value of 0.003, thus also proving to have a significant effect on customer satisfaction. (Significant)
3. Product nonconformity (X2) has a coefficient of 0.165, a T-statistic of 0.854, and a p-value of 0.393, so it does not have a significant effect on customer satisfaction. (Not very significant)
4. The tracking system (X4) even showed a negative coefficient of -0.035, with a T-statistic of 0.256 and a p-value of 0.798, indicating that the tracking system does not have a significant effect on customer satisfaction. (Not very significant)

CONCLUSION

Based on the results of the data validity test above and the study's findings, customer satisfaction in the transportation and logistics services sector in Indonesia is significantly influenced by customer service strategies. The quality and reliability of the assessment instruments used—as demonstrated by the validity and reliability tests—show that all indicators have an AVE above 0.50 and a factor loading above 0.70 (Sadam et al., 2023). Of the four variables tested, only delivery delays and damaged goods were found to have a significant effect on customer satisfaction, while product mismatches and the tracking system did not show a significant effect. The findings of this study indicate that delivery delays and product damage are the primary factors contributing to transportation issues at PT. X, which positively and significantly influence customer satisfaction levels. Meanwhile, product mismatches and the tracking system do not have a significant impact on product receipt at distributors; this aspect may be tolerated by distributors even if delivery delays occur. These findings confirm that by improving delivery services to ensure goods are delivered to distributors on time and according to schedule, and by ensuring that goods arrive at their destination undamaged, customer satisfaction can be fostered and PT. X's corporate image can be enhanced.

Research Development

Although this study provides a significant empirical contribution, there are several limitations that can serve as a reference for future research. The variables used in this study still have a relatively small influence on service quality. The author suggests that future

researchers identify or add other variables that may have a stronger impact on customer satisfaction. Additionally, future research could employ a mediation approach—specifically, customer loyalty—to examine this aspect of customer satisfaction.

REFERENCES

- Agustina, P. A., & Sugiarti, H. (2024). Structural Equation Modeling for the Influence of Effectiveness, Lifestyle, and Income Level on the Use of E-Wallet Services by Urban Workers. *Jurnal Ilmiah Sains*, 24 (April), 70–79. <https://doi.org/10.35799/jis.v24i1.54458>
- Anggoro, I. T., & Saputra, A. R. P. (2023). Irfan Tri Anggoro, Management Program, Faculty of Economics, Mercu Buana University, Yogyakarta. *Journal of Business Behavior and Strategy*, 11(2).
- Bienstock, C. C., Mentzer, J. T., & Bird, M. M. (1997). Measuring Physical Distribution Service Quality. *Journal of the Academy of Marketing Science*, 25, 31–44.
- Caridi, M., Crippa, L., Perego, A., Sianesi, A., & Tumino, A. (2010). Do virtuality and complexity affect supply chain visibility? *International Journal of Production Economics*, 127(2), 372–383.
- Cristobal, E., Flavián, C., & Guinalíu, M. (2007). Perceived e-service quality (PeSQ): Measurement validation and effects on consumer satisfaction and website loyalty. *Managing Service Quality*, 17
- Dini, F. R., Junianto, M., Nugraha, Y. A., Napitupulu, R. A. A., Management, B., & Sriwijaya, P. N. (2025). *Consumer Loyalty Based on Service Quality and Customer Satisfaction*. 6 (2), 93–101. <https://doi.org/10.37802/jamb.v6i2.1280>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43 (1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Immanuel Yusuf. (2024). Journal of Management and Business (JIMBI). The Influence of Service Quality, Delivery Timeliness, and Tracking System Facilities on Customer Satisfaction at the JNE Express Krakatau Branch in Medan. *Immanuel Yusuf*, 5
- Kusuma, E. C. (2018). The Influence of Perceived Value and Service Quality on Customer Loyalty: Customer Satisfaction as a Mediator and Gender as a Moderator. *Journal of Business and Management*, 5 (1), 42–50. <https://doi.org/10.26905/jbm.v5i1.2315>
- Lin, X., Mamun, A. Al, Yang, Q., & Masukujjaman, M. (2023). Examining the effect of logistics service quality on customer satisfaction and re-use intention. *PLoS ONE*, 18 (May 5), 1–24. <https://doi.org/10.1371/journal.pone.0286382>
- Maesazshandy, D., & Tohir, M. (2024). *The Effect of Delivery Time on Customer Satisfaction in Cargo Services*. 2(3), 87–91.
- March, N., & Girsang, D. (2025). *Factors Affecting Consumer Satisfaction*. 7 (3), 903–908. <https://doi.org/10.34007/jehss.v7i3.2336>
- Mentzer, J. T., Flint, D. J., & Hult, G. T. M. (2001). Logistics Service Quality as a Segment-Customized Process. *Journal of Marketing*, 65(4), 82–104.
- Mourtzis, D., Boli, N., & Fotia, S. (2017). Knowledge-Based Estimation of Maintenance Time for Complex Engineered-to-Order Products Based on KPI Monitoring: A PSS Approach. *Procedia CIRP*, 63 , 236–241. <https://doi.org/10.1016/j.procir.2017.03.317>
- Oliver, R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality. *Journal of Retailing*, 64(1), 12–40.
- Pramudita, A. S., & Guslan, D. (2025). *The Impact of Logistics Service Quality on Consumer*

- Satisfaction in E-Commerce Distribution Channels in Indonesia*. 2, 109–118.
- Putri, S., & Sofia, D. (2025). *The Influence of Logistics Service Quality and Customer Satisfaction on Customer Loyalty in Logistics Services*. 5(1), 585–598.
- Rafmadini, N., Santosa, W., & Satitidjati, T. (2025). *The Influence of Delivery Time, Service Quality, Product Quality, and Condition on Customer Loyalty Among Gen Z E-Commerce Customers in Jakarta*. 14(03), 1169–1182.
- Rana, M. S., Sharmin, S., Amin, M. Bin, Mishad, N. A. A., & Oláh, J. (2026). Assessing the effectiveness of eco-labels on consumer purchase intentions in the food and beverage industry: A PLS-SEM approach. *Social Sciences and Humanities Open*, 13 (December 2025). <https://doi.org/10.1016/j.ssaho.2025.102422>
- Royhan Kusuma, M. R. (2026). *Table of Contents*. 11 (2). <https://doi.org/10.21070/acopen.11.2026.13856>
- Sadri, P. D. A., Suartawan, P. E., & Dewi, P. A. G. K. (2023). Analysis of Performance Factors in the Logistics Distribution of a Chain of Minimarkets (Case Study of CV. Arys Mikro Bali). *Journal of Transportation and Logistics Technology*, 4 (1), 39–48. <https://doi.org/10.52920/jttl.v4i1.125>
- Sudrajat, A., Hertina, D., Dyahrini, W., & Indonesia, U. W. (2024). *LOGISTICS SYSTEMS IN INDONESIA: AN INSTITUTIONAL REVIEW*. 7(2), 283–297.
- Susianti, O. M. (2024). *Formulation of Variables and Indicators in Quantitative Educational Research*. 9, 18–30.
- Susilawati, D., Pebrianti, P. D., Marina, S., & Suminar, R. (2023). The Impact of Physical Distribution Service Quality, Price, and Brand Image on JNE Customer Satisfaction. *Journal of Transportation and Logistics Business Management*, 9 (2), 82. <https://doi.org/10.54324/j.mbt1.v9i2.1708>