



Enhancing Customer Loyalty in State-Owned Logistics Providers: The Role of Operational Excellence, Information Quality, and Digital Transformation

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ABSTRACT

This study examines the declining performance of Indonesia's state-owned logistics service providers (LSPs) as reflected in the 2023 Logistics Performance Index (LPI). Using a mixed-method approach, quantitative data from 199 respondents were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), complemented by qualitative insights from Focus Group Discussions (FGDs). The findings reveal that operational quality, information quality, and innovation significantly influence customer satisfaction, which in turn strongly drives customer loyalty. Conversely, resource quality and personnel contact do not show significant effects. The results indicate that service quality is a pivotal factor influencing customer satisfaction and loyalty. Many operational issues were uncovered, highlighting previous challenges that led to the company's collapse. This study indicates the strategic transformations implemented to regain competitiveness, encompassing enhancements in service processes and innovations focused on customer needs. Practical ideas are offered to improve service performance, enabling state-owned logistics service providers to maintain customer trust and attain long-term success in an increasingly competitive market. Further, this research contributes to the discussion regarding sustainability by advocating for logistics practices that are efficient, reliable, and customer-centric, which are conducive to the long-term resilience of organizations. The study highlights the increasing importance of digitalization, operational efficiency, and customer-centric innovation in enhancing logistics performance. While the findings provide managerial implications for improving service delivery and competitiveness, the contribution to sustainability is discussed in terms of operational efficiency and reduced service inefficiencies.

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INTRODUCTION

Research Background

Despite the growing body of literature on logistics service quality (LSQ), limited studies have specifically examined state-owned logistics service providers (SOEs), particularly in emerging economies such as Indonesia. Moreover, prior studies tend to emphasize private sector logistics

performance, with less attention to the structural and institutional challenges faced by SOEs (Agrawal et al., 2016; Shanker et al., 2022; Yıldırım Özmutlu & Arun, 2025). Additionally, there is a lack of integrated analysis combining operational performance, digital transformation, and customer-centric innovation within a unified framework.

The logistics and commodities delivery sector needs attention due to its correlation with the expansion of population, internet usage, and smartphone adoption. The rise in demand has stimulated the expansion of online product delivery systems, offering users enhanced convenience. Due to the growing demand for delivery services, users of LSPs are becoming more discerning when selecting their service providers. Multiple studies have demonstrated the significance of recognizing the elements that impact the performance of logistics service providers (LSP) to sustain customer growth (Arabelen & Kaya, 2021; Gupta et al., 2022, 2023). A study conducted by Luu (2019) and Selviaridis & Norrman (2015) demonstrates that service-oriented logistics service providers have a beneficial influence on logistics performance by fostering a service-oriented culture (Luu, 2019; Selviaridis & Norrman, 2015). According to Luu (2019), there is a positive correlation between service culture and logistics performance. This relationship is mediated by broad self-efficacy and collective consumer knowledge. Additional studies indicate that there is a strong correlation between the ability to learn about logistics and the ability to provide logistical services. Furthermore, there is a positive correlation between the ability to provide logistics services and the overall performance of a company. The ability to learn about logistics does not immediately impact the performance of a business through its logistical service skills (Yang, 2016).

In 2022, the logistics sector was expected to have a significant impact on Indonesia's Gross Domestic Product (GDP) contributing IDR of more than 200 trillion (SERA, 2022), which is increasing from the previous year. Annually, the logistics sector in Indonesia undergoes significant growth, contributing to the state's revenue. It is crucial to prioritize improving logistics quality to further develop this sector. The Logistics Performance Index (LPI) report for 2023, published by the World Bank, reveals that Indonesia's logistics industry is falling from its previous ranking in terms of logistics service performance. Indonesia's 6th ranked position within ASEAN demonstrates its ongoing ability to compete with other countries (WorldBank, 2023). Ranking of a group Indonesia's Logistics Performance Index (LPI) witnessed a significant decline in its rating, dropping by 11 positions from 44th in 2018 to 65th in 2023. This decline was particularly notable in the area of Logistics Quality and Competence. Additionally, the scores for other LPI measures exhibited a general decline. The analysis reveals a decline in rankings for the Tracking & Tracing dimension, from 39 in 2018 to 65 in 2023, and for International Shipments, from 42 in 2018 to 57 in 2023 (WorldBank, 2023).

Nevertheless, the Logistic Performance Index in Indonesia has witnessed a decrease in certain services, particularly those provided by state-owned LSPs. Indonesia has a substantial number of LSP users. According to the study paper "Beyond the Digital Frontier" (2023), the percentage of people in Indonesia who actively use e-commerce is 33.4% of the overall population. By 2023, this number is projected to reach 280.73 million individuals (Ahdiat, 2023). In addition, the proliferation of merchants utilizing social media platforms to market and sell products has expanded the opportunities for users of Language Service Providers (LSPs). This is due to the fact that the number of social media users in Indonesia has reached 139 million, which accounts for approximately 49.9% of the entire national population (Annur, 2024).

The State-Owned Logistics Service Provider in Indonesia is positioned as the 9th out of the 13 major Logistics Service Providers (LSPs) that are currently operating in the country. This rating is produced by considering the criteria of accessibility of service and operational efficiency, which includes factors such as the speed of delivery and the extent of coverage in terms of delivering goods. Despite being in operation for only a decade, local competitors in Indonesia have managed to capture 94% of the total customers, leaving the State-owned LSP with a mere 6% share. The selection of expedition service demonstrates the significant influence of clients, who are the primary consumers of LSP services in Indonesia, in negotiating favorable terms. This rating serves as a foundation for researchers to assess

the service quality of Indonesia's State-Owned LSP, which is currently perceived as subpar by customers. It provides a platform for identifying areas that require improvement.

This study addresses these gaps by developing a comprehensive model that integrates LSQ dimensions with customer satisfaction and loyalty, supported by both quantitative and qualitative evidence. The aim of this study is to measure the effect of several aspects of Logistics Service Quality (LSQ) in Indonesia's State-owned LSP on customer preferences in Indonesia. In addition, this study also suggests areas for enhancement in LSQ in Indonesia, as perceived by LSP users. This study is expected to give contribution in identifying the priority factors that need to concern in promoting the LSP quality and performance for a sustain improvement particularly in Indonesia's State-owned LSP.

Logistics Service Provider Context

This study is grounded in several theoretical perspectives. First, Service Quality Theory provides the foundation for understanding how different service dimensions' influence customer perceptions. Second, the resource-based view explains how internal resources contribute to competitive advantage. Third, the dynamic capabilities theory highlights the importance of innovation and adaptability in responding to environmental changes. Furthermore, the service-dominant logic emphasizes value co-creation between providers and customers, particularly relevant in logistics services where interaction and information transparency are critical.

Building on these theoretical stances, earlier conceptual and empirical research confirms the crucial role that aspects of service quality have in influencing customer satisfaction and behavioral consequences. According to Service Quality Theory, client perceptions are shaped by the assessment of various service characteristics, which in turn affect behavioral intentions like loyalty and repurchase choices. For example, a dynamic model of service quality shows that customer satisfaction and future behavioral intentions are strongly impacted by perceived service quality, suggesting a clear connection between client responses and service performance (Boulding et al., 1993).

Additionally, the Resource-Based View (RBV) highlights the importance of firm-specific resources in generating superior customer value and maintaining competitive advantage, especially intangible resources like knowledge, human capabilities, and service competences. According to empirical data, "operant resources," such as employee knowledge and value-oriented skills, have a significant beneficial impact on customer happiness and relationship quality, frequently outweighing the impact of tangible resources (Deleon & Chatterjee, 2017). Also, by emphasizing the significance of organizational innovation and adaptation in quickly changing situations, Dynamic Capabilities Theory offers additional support. Businesses are better able to provide tailored solutions and improve customer value creation when they can integrate, develop, and reconfigure internal and external competences, especially in service-oriented supply chains (Rasouli et al., 2015).

Logistics service quality

The quality of logistics services has become a crucial factor in determining customer satisfaction and loyalty in today's industry. Effective logistics management plays a crucial role in ensuring the prompt and secure delivery of products, while also having a substantial impact on overall customer satisfaction (Gupta et al., 2022; Luu, 2019; Yang, 2016). Numerous investigations have emphasized the direct influence of logistics service quality on customer satisfaction, emphasizing the significance of various crucial factors. This literature review examines the aspects of information quality, service quality, delivery service, customer service, product condition, and reverse logistics, and how they are related to customer satisfaction and loyalty (Agrawal et al., 2016; Gupta et al., 2022).

Information quality pertains to the simplicity and accessibility of product search, as well as the dependability of the information offered regarding items (Azis et al., 2022). Providing customers with accurate and reliable information allows them to make well-informed choices when purchasing services, thus increasing their level of satisfaction (Hsu & Lee, 2014). Precise and thorough information minimizes ambiguity and fosters confidence between customers and logistics providers. For example, offering immediate tracking updates and clear communication on delivery timetables can greatly enhance customer trust and contentment. Service quality is an essential aspect of logistics service quality (Gupta et al., 2022). It refers to the degree to which a service fulfils the demands and expectations of customers. Customer satisfaction is likely to increase when products are delivered according to their description and in satisfactory condition. The trustworthiness of the logistics service provider is demonstrated through consistent service quality, which in turn promotes repeat purchases and cultivates consumer loyalty (Hidayat et al., 2016). The punctuality and dependability of delivery services are crucial in the field of logistics. Customers anticipate timely and undamaged delivery of their products. Any delays or damages that occur during the delivery process might result in consumer disappointment and create negative reviews of the logistics provider. On the other hand, effective and punctual delivery services improve customer satisfaction, making it an essential aspect of logistics service quality (Gupta et al., 2023).

Customer service entails the capacity of logistics service providers to support consumers in resolving issues and providing precise information regarding services. Efficient customer service ensures that any concerns or inquiries brought up by customers are addressed with immediacy and to their satisfaction. Effective customer service can minimize the consequences of possible issues and improve the overall customer experience, eventually increasing satisfaction and loyalty. The overall condition of products upon delivery is a critical determinant of consumer satisfaction. The products must be received in an undamaged and expected condition. Effective handling and packing are crucial for preserving the integrity of products during transportation (Govindan et al., 2016; Gupta et al., 2022). When customers receive products in perfect condition, it strengthens their confidence in the logistics provider's ability, resulting in increased levels of satisfaction. Logistics refers to the procedures associated with the return or exchange of products. The simplicity and effectiveness of these procedures are crucial to ensuring consumer satisfaction. An effortless and fast returns procedure can greatly improve the customer experience, particularly in situations where product exchanges or returns are necessary. Efficient reverse logistics demonstrate the total commitment of the logistics provider to providing customer service and cultivating confidence as well as loyalty (Agrawal et al., 2016; Mangla et al., 2016).

Relationship with Customer Satisfaction and Customer Loyalty

Comprehending the relationship between customer satisfaction and customer loyalty is essential for businesses seeking to obtain a competitive advantage and maintain long-term growth (Naini et al., 2022; Suchánek et al., 2014; Woodside et al., 1989). Conducting research that identifies and analyzes this link yields significant insights into the primary factors that influence consumer behavior. This, in turn, allows businesses to develop more efficient strategies for retaining customers and fostering brand loyalty. Businesses can effectively handle customer loyalty by acknowledging its complex nature, which encompasses not only functional aspects of customer satisfaction but also emotional and psychological variables that lead to long-term loyalty. Conducting such research is crucial for creating focused marketing strategies, enhancing the quality of services, and establishing a more profound bond with customers, ultimately resulting in higher profitability and a more robust market position (Gupta et al., 2023).

The relationship between customer satisfaction and customer loyalty is commonly considered to be direct, with increased satisfaction inevitably resulting in stronger loyalty. Nevertheless, this oversimplified perspective fails to consider other crucial elements. Although customer satisfaction is important, it is not always sufficient to guarantee loyalty (Yoon & Kim, 2000). Factors such as the competitiveness of other products, the sensitivity of customers to pricing, and the emotional attachment to a brand can have a big impact on customer loyalty, even if they are already satisfied with the product or service. Furthermore, in a rapidly changing industry, consumer expectations are constantly evolving, posing a challenge for businesses to uphold high levels of satisfaction and, as a result, foster loyalty. Hence, the relationship between customer satisfaction and loyalty is intricate and subtle, necessitating businesses to embrace a comprehensive approach that surpasses mere fulfilment of customer needs and

focuses on actually fostering and establishing enduring relationships (Hidayat et al., 2016; Sorkun et al., 2020).

Many studies have repeatedly shown that the specified aspects of service quality have a substantial positive correlation with customer satisfaction. An extensive investigation revealed that factors such as accurate and reliable information, personnel knowledge, product quality, efficient delivery services, strong customer support, perfect product condition, reverse logistics, technology adoption, all were mentioned related to the customer satisfaction (Agrawal et al., 2016; Arabelen & Kaya, 2021; Azis et al., 2019; Azis & Irjayanti, 2023; Gandhi et al., 2016; Gupta et al., 2023; Irjayanti & Azis, 2013, 2023; Luu, 2019). Each dimension caters to distinct consumer requirements and anticipations, thereby strengthening the total service experience. The impact of logistics services on customer loyalty is not limited to customer satisfaction merely; it also has important implications. Research suggests that enhancing the quality of logistics services results in increased customer satisfaction, which subsequently increases customer retention and loyalty. (Govindan et al., 2016; Gupta et al., 2022, 2023). Content Customers are more encouraged to maintain their loyalty to a logistical service provider, resulting in recurring revenue and relationships.

The Construct of Logistic Service Quality

The critical importance of improving the quality of logistics services to increase customer satisfaction and loyalty has been demonstrated by the main findings from many studies (Agrawal et al., 2016; Gupta et al., 2022; Luu, 2019; Yang, 2016). To ensure an outstanding consumer experience, logistics service providers must concentrate on the identified key dimensions. To enhance the quality of logistics services, it is recommended that the following be implemented: the provision of precise, comprehensive, and real-time information regarding the status of products and deliveries can significantly increase customer satisfaction; the implementation of rigorous quality control measures to ensure that products meet customer expectations upon delivery; and the maintenance of consistent product quality. Customer trust and satisfaction can be improved by creating efficient and reliable delivery processes, such as secure handling and timely deliveries (Azis et al., 2022). The overall consumer experience can be enhanced by training customer service representatives to effectively manage inquiries and complaints. Customer confidence can be enhanced by investing in appropriate packaging and handling techniques to guarantee that products arrive undamaged. Increasing consumer satisfaction and loyalty can be achieved by simplifying the return and exchange processes to make them more user-friendly and efficient.

Customer satisfaction is a substantial predictor of the intention to repurchase services, and numerous studies have demonstrated that operational quality, information quality, and customization quality may enhance it (Arabelen & Kaya, 2021). By improving the quality of their services to satisfy the expectations of their customers, trusted logistics service providers (LSPs) can enhance their competitive advantage. This may result in increased customer loyalty and retention. In addition, logistics efficacy is considered a critical factor in customer satisfaction, which in turn increases the likelihood of strategic decisions such as loyalty and repeat business. The most significant factor in determining the efficacy of logistics services has been attributed to quality criteria. LSPs can improve their overall performance and competitiveness by concentrating on the appropriate criteria. "The five constructs" (Gupta et al., 2022, 2023) are the foundation of the most recent research on the measurement of LSQ.

The first construct is Operational Quality. The services offered by LSPs are crucial in ensuring that consumers receive satisfactory services. The quality of operational services will be enhanced, resulting in more satisfied customers, by the following: efficient inventory management, appropriate capacity allocation, secure handling of documents, and delivery according to the promised time without failure or loss (Gupta et al., 2022, 2023). The second construct is Resource Quality, to deliver satisfactory

service to customers, LSPs must have high-quality resources. Sufficient fleet and physical facilities, a competent workforce, stable finances, wide-area coverage, sophisticated technological infrastructure, a modern fleet, and effective logistics management are all examples of quality resources. The third construct is Information Quality, customers must receive comprehensive, accurate, timely, adequate, and dependable information from LSPs (Gupta et al., 2022, 2023). Customers must be informed of the status of their shipments, the precise location, and any potential delays or delivery times. The quality of information that is provided, whether it is online or offline, is crucial in satisfying the requirements of customers. The fourth construct is Personnel Contact Quality, this construct refers to the capacity of personnel (couriers) to comprehend the circumstances, maintain a friendly and respectful attitude, maintain confidentiality, be readily accessible and effective, and possess knowledge and experience related to the services they provide (Gupta et al., 2022, 2023). How the service personnel serves will be observed by the customers. Finally, the Quality of Innovation and Customization. Demonstrate operational expertise, identify solutions, and take the lead in new innovations, all while providing services that address specific and significant requests. These five points are components of Logistics Service Quality found in previous research that influence customer loyalty (Gupta et al., 2022, 2023).

Operational Quality refers to the efficiency and reliability of logistics processes, while Resource Quality reflects the availability of tangible and intangible assets supporting service delivery. Personnel Contact Quality captures human interaction aspects, whereas Information Quality focuses on transparency and accuracy of communication. Innovation and Customization represent the firm’s ability to adapt services to evolving customer needs. Thus, the hypotheses for this study as illustrated in figure 1, are provided as follows:

- H1a: Operational Quality positively influences Customer Satisfaction
- H1b: Information Quality positively influences Customer Satisfaction
- H1c: Resource Quality positively influences Customer Satisfaction
- H1d: Personnel Contact Quality positively influences Customer Satisfaction
- H1e: Innovation & Customization positively influences Customer Satisfaction
- H2: Customer Satisfaction positively influences Customer Loyalty

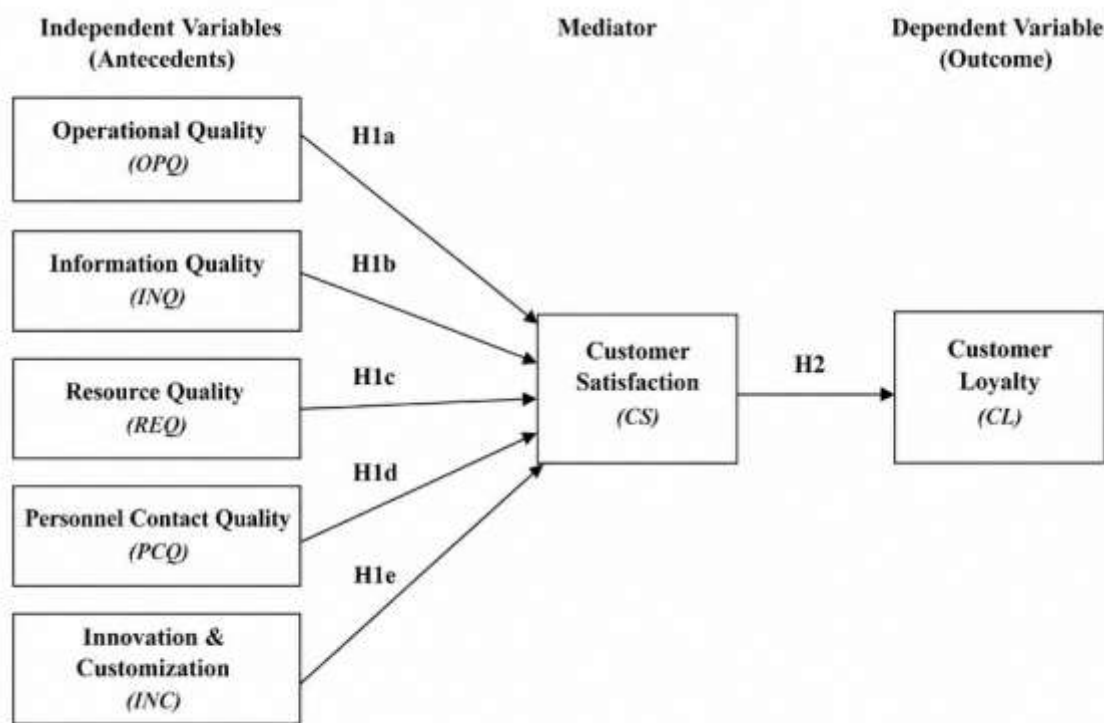


Figure 1. Conceptual Model

Research Method

This research has fulfilled the ethical approval issued together with the research approval with reference number 112/LIT06/PPM-LIT/2024 by the independent ethics committee of Telkom University Research and Community Service office. Before commencing any data collection activities, all participants were supplied with comprehensive information about the study's aims. They were informed that their participation was voluntary, and that anonymity and confidentiality would be maintained. Verbal consent was deemed appropriate and sufficient by the independent ethics committee within Research and Community Service office due to cultural considerations and varying literacy levels among participants, ensuring that all participants fully understood the research and their involvement, and all participant identities remained confidential.

Mixed-method quantitative and qualitative research methodologies were implemented in this study. The purpose of quantitative research is to describe the cause of a problem, which is a type of causal research. Causal research is a form of research that investigates the cause-and-effect relationships between variables. In this study, the variables utilized to assess Logistics Service Quality were derived from previous findings (Gupta et al., 2022). These variables include Operational Quality (X1), Resource Quality (X2), Information Quality (X3), Personnel Contact Quality (X4), and Customization & Innovation Quality. The objective is to determine the extent to which they impact Customer Loyalty (Y) with Customer Satisfaction (Z) serving as an intervening variable. Whilst a qualitative approach was conducted utilizing a case study strategy, the data was obtained through focus group discussions (Saunders et al., 2016).

The purposive sampling technique was employed to select data for this study, which entails the selection of a user of state-owned LSP service. G-power software version 3.1.9.7 was employed to ascertain the sample size. The criteria were satisfied by the input to the sampling software. Alpha error probability (α err prob): 0.05, significance level (α): 0.95, and effect size f^2 : 0.15. The number of predictors is 7 (including 5 independent variables, 1 dependent variable, and 1 intervening variable). A minimum sample size of 153 respondents was generated by processing all input.

To process quantitative data, this study utilized the PLS-SEM approach as an analysis tool and uses SmartPLS software version 4.1.0.2. There are two stages of evaluating the measurement model in the PLS-SEM model, the measurement model or outer model and the structural model or inner model, with the aim of testing the validity and reliability of the model. Evaluation of the outer model uses several indicators including Convergent Validity, Discriminant Validity, Composite Reliability, and Cronbach Alpha (Hair Jr et al., 2021). This level of suitability is measured by the Factor Loading (FL) value. If the FL value is more than 0.7 and the composite reliability value is above 0.7 then the item is considered valid and reliable (Hair Jr et al., 2021).

The structural model or inner model in PLS is used to anticipate and project causality between latent variables by applying bootstrapping and blindfolding methods. The performance of the PLS structural model is measured through indicators such as R-square (R^2), Effect Size (F^2), and Predictive Relevance (Q^2).

The criteria for all respondents and participants in this research were that they had utilized delivery services and were users of State-owned LSP Indonesia services. In the initial phase of the questionnaire, researchers include screening inquiries. In this investigation, questionnaires were distributed via social media platforms including Telegram, Twitter, and Instagram. Similarly, the FGD participants were from Generation Y, Millennials, and Generation Z and had experience with State-owned LSP Indonesia services. After obtaining consent from all participants in attendance, the FGD was conducted on one day and audio recorded. The researcher serves as a moderator and establishes themes that align with the

research objectives. The FGD results were analyzed by emphasizing statements that were either repeated or had a similar meaning to a specific topic. The relationships between statements that are repeated are identified by collecting and grouping them into themes. The author subsequently presented the results of the FGD data analysis, which were derived from a compilation of statements and theme groups that were gathered from all of the FGD discussions.

Finding and Discussion

Quantitative Data Analysis

Figure 1 illustrates the inner framework employed in this study. The path coefficients of this research model were analyzed to determine the relationship between variables. Subsequently, a comprehensive assessment of model theory testing was conducted, with a specific emphasis on prediction studies. This study employs many metrics in data processing to demonstrate the acceptability of the proposed model, including R square, Q square, SRMR, PLS prediction, and Goodness of Fit Index (Sarstedt et al., 2021).

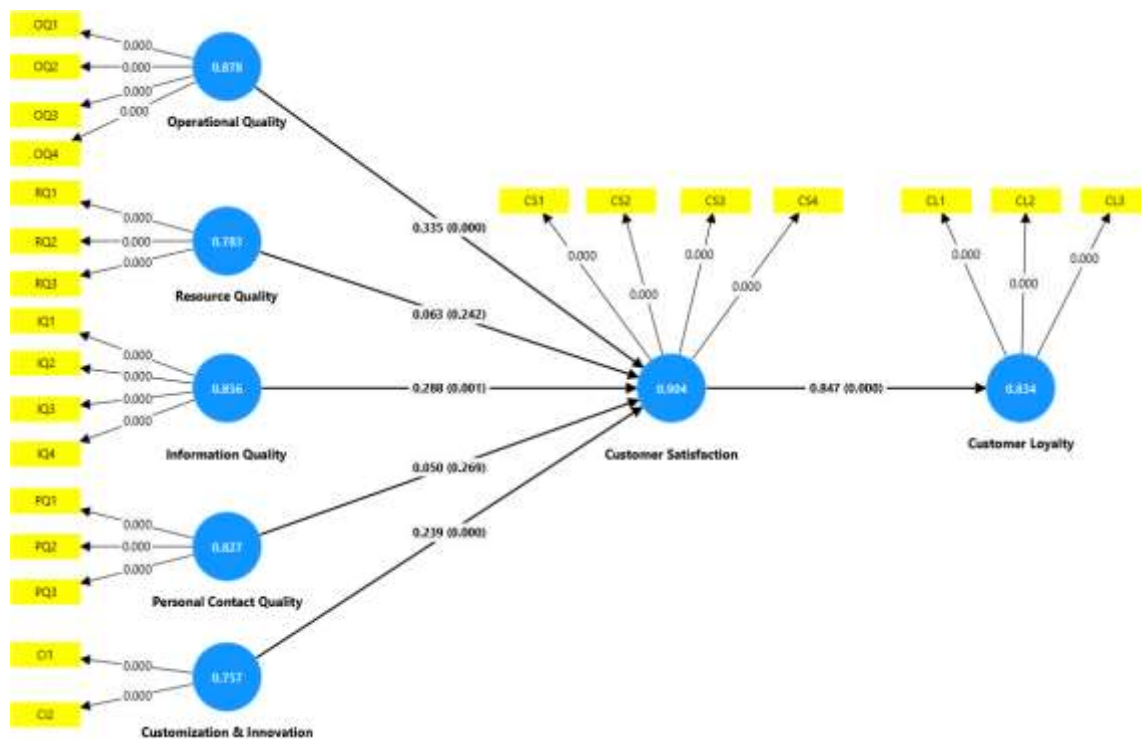


Figure 2. Inner Model

Outer Loading Value

The convergent validity value can be found by analyzing the outer loading value in the table after processing the data using SmartPLS version 4.1.0.2.

Table 1. Outer Loading Result

Variables	Dimensions	Outer loading
Operational Quality	Right	0.873
	Prompt	0.856
	Promised	0.829
	Loss	0.865

Variables	Dimensions	Outer loading
Resource Quality	Workforce	0.804
	Infrastructure	0.839
	Network	0.861
Information Quality	Accuracy	0.832
	Tracking	0.861
	Application	0.789
Personnel Contact Quality	Adequate	0.861
	Queries	0.827
	Confidence	0.879
Customization & Innovation	Attitude	0.879
	First	0.885
	Specific	0.908
Customer Satisfaction	Satisoverall	0.869
	Satisprocess	0.876
	Satisfleet	0.876
Customer Loyalty	Delight	0.905
	Committed	0.828
	Recommend	0.896
	Continuity	0.875

Table 1 displays the loading factors for all indicators ranging from 0.789 to 0.908. Therefore, all indicators satisfy the loading factor criteria. If an indicator has a value below the minimum limit, it is important to either trim or eliminate that indicator. To ensure the reliability of the model's measurements, signs with a loading factor below 0.70 were eliminated. The loading factor limit of 0.70 serves as a benchmark to assess the adequacy of an indicator in accurately representing the construct being assessed. Hence, it can be inferred that the indicators employed exhibit a robust correlation with the underlying variable (construct). These indicators accurately describe the concept being measured and demonstrate strong convergent validity.

Average Variance Extracted (AVE)

To evaluate the convergent validity of each construct and variable, it refers to the average variance extracted (AVE) value. The AVE value must be greater than >0.50 (Hair Jr et al., 2021; Sarstedt et al., 2021). The following table 2 shows the average variance extracted (AVE) values in this study.

Table 2. Average Variance Extracted (AVE)

Variable	Average variance extracted (AVE)
Customer Loyalty (CL)	0.751
Customer Satisfaction (CS)	0.777
Customization & Innovation (CI)	0.804
Information Quality (IQ)	0.700
Operational Quality (OQ)	0.732
Personnel Contact Quality (PQ)	0.743
Resource Quality (RQ)	0.697

Table 2 shows the results of the average variance extracted (AVE) which must be 0.5 and higher (Hair Jr et al., 2021; Sarstedt et al., 2021). The research results show that the variables Operational Quality,

Resource Quality, Information Quality, Personnel Contact Quality, Customization & Innovation, Customer Satisfaction, and Customer Loyalty have values greater than 0.5. It can be concluded that most of the information or variations found from the questions in the questionnaire truly describe what is measured.

R-square Analysis

Table 3 displays the coefficient of determination values for this study, which helps in measuring the level of influence of the independent variables, namely Operational quality, Information quality, Resource quality, Personnel contact quality and Customization & Innovation on the dependent variable studied.

Table 3. R-square Analysis

Variable	R-square
Customer Loyalty (CL)	0.718
Customer Satisfaction (CS)	0.843

The results of the coefficient of determination values in Table 3 show that the variables Operational quality, Information quality, Resource quality, Personnel contact quality and Customization & Innovation can explain the Customer Satisfaction variable by 84.3% and other constructs outside this study influence the remaining 12.7%. Therefore, the variables Operational quality, Information quality, Resource quality, Personnel contact quality and Customization & Innovation can explain the Customer Loyalty (CL) construct variable by 71.8% and other constructs outside this study influence the remaining 28.2%.

Predictive Relevance (Q^2)

Predictive relevance is an examination conducted to determine the accuracy of an observation value obtained from a blindfolding method, by examining the value on the Q-square (Q^2). If the Q-square value is more than 0, it indicates that the observation value is satisfactory. Conversely, if the Q-square value is less than 0, it indicates that the observation value is unsatisfactory. Q-square is capable of quantifying the quality of the obtained observation value. The Q-square value is displayed in Table 4 below.

Table 4. Q-square Analysis

Variable	Q-square	Criteria
Customer Loyalty (CL)	0.676	Good Predictive Relevance
Customer Satisfaction (CS)	0.829	Good Predictive Relevance

Table 4 displays that the Customer loyalty variable has a Q-square value of 0.676, indicating a favorable observation value. The Q-square value of the Customer satisfaction variable is 0.829, which indicates a high level of observation quality. Therefore, it may be inferred that all the variables provided have high and reliable Q-square values.

Effect Size (f^2)

The f-square score in this study indicates the significant effect of endogenous variables on exogenous variables. The f-square assessment criteria, as outlined by Hair et al. (2022), are as follows: A value of f between 0.02 and 0.15 indicates a minor effect, while a value between 0.15 and 0.35 indicates a medium effect. A value of f greater than or equal to 0.35 indicates a great effect. The value of the f-square test can be found in Table 5.

Table 5. f-square Analysis

Variable	f-square Value	Criteria
Customer Satisfaction (CS) → Customer Loyalty (CL)	2.544	Large effect
Customization & Innovation (CI) → Customer Satisfaction (CS)	0.085	Small effect
Information Quality (IQ) → Customer Satisfaction (CS)	0.092	Small effect
Operational Quality (OQ) → Customer Satisfaction (CS)	0.109	Small effect
Personnel Contact Quality (PQ) → Customer Satisfaction (CS)	0.004	Small effect
Resource Quality (RQ) → Customer Satisfaction (CS)	0.005	Small effect

Hypothesis Testing (*Bootstrapping*)

By examining the significance value, t-statistics, and p-value of the constructs, it is feasible to either accept or reject the provided hypothesis. This study examined the direct effect by employing a significance threshold of 0.05 or 5%. A t-value equal to or greater than 1.65 was used for a one-tailed test. The positive beta coefficient supports the acceptance of the hypothesis. Additionally, a p-value less than or equal to 0.05 was considered statistically significant (Sarstedt et al., 2021). The table demonstrates the significance of conducting directional hypothesis testing in this inquiry.

Table 6. Path Coefficient Bootstrapping (Directional)

Hypothesis	Hypothesis	Path Coefficient	T Value (>1,645)	P values (<0.05 sig.)	95% Range Path Coefficient	
					Upper Limit	Lower Limit
H1a	OQ → CS	0.335	3.660	0,000	0.173	0.475
H1b	IQ → CS	0.288	3.066	0.001	0.155	0.464
H1c	RQ → CS	0.063	0.700	0.242	-0.098	0.197
H1d	PQ → CS	0.05	0.615	0.269	-0.067	0.202
H1e	CI → CS	0.239	3.585	0,000	0.136	0.353
H2	CS → CL	0.847	34.644	0,000	0.805	0.885

Table 6 describes the output results of hypothesis testing by bootstrapping using SmartPLS software. Hypothesis H1a shows that operational quality has a significant positive influence on customer satisfaction with a path coefficient of 0.335. A T value of 3.660 indicates that this result is significant at the 0.05 level, with a P value of 0.000 which is much lower than 0.05. Hypothesis H1b indicates that information quality has a significant positive influence on customer satisfaction with a path coefficient of 0.288 and a T value of 3.066, which shows statistical significance with a P value of 0.001. Hypothesis H1c shows that resource quality does not have a significant influence on customer satisfaction because the T value of 0.700 is lower than the critical value of 1.645 and the P value of 0.242 is higher than 0.05. Hypothesis H1d shows that personal contact does not show a significant influence on customer satisfaction because the T value of 0.615 and P value of 0.269, both of which do not meet the criteria for statistical significance. Hypothesis H1e shows that customization innovation has a significant positive influence on customer satisfaction with a path coefficient of 0.239 and a T value of 3.585, which is statistically significant with a P value of 0.000. Hypothesis H2 shows that customer satisfaction has a very significant influence on customer loyalty with a very high path coefficient of 0.847 and an

extraordinarily large T value of 34.644, with a P value of 0.000 which shows very strong significance. From the analysis results, it can be concluded that operational quality, information quality, and customization innovation have a significant effect on customer satisfaction. Meanwhile, the quality of resources and personal contacts do not have a significant influence. Furthermore, customer satisfaction is proven to be a very strong predictor of customer loyalty. This shows that increasing customer satisfaction can be an effective strategy for increasing customer loyalty in the context of logistics and customer satisfaction.

Table 7. Path Coefficient Booststrapping (Non directional)

Hypothesis	Hypothesis	Path Coefficient	T Value (>1,645)	P values (<0.05 sig.)	95% Coefficient Upper Limit	Range Lower Limit	Path
H3a	OQ → CS → CL	0.284	3.615	0.000	0.146	0.404	
H3b	IQ → CS → CL	0.244	3.058	0.001	0.131	0.392	
H3c	RQ → CS → CL	0.053	0.698	0.243	-0.081	0.168	
H3d	PQ → CS → CL	0.043	0.617	0.269	-0.057	0.170	
H3e	CI → CS → CL	0.202	3.587	0.000	0.115	0.298	

Table 7 displays the result where hypothesis H3a indicates that operational quality (OQ) has a significant positive influence on customer satisfaction (CS) and customer loyalty (CL) with a path coefficient of 0.284. The T value of 3.615 indicates that this result is significant at the 0.05 level, with a P value of 0.00 which is much lower than 0.05. In other words, operational quality contributes positively to customer satisfaction. Hypothesis H3b shows that information quality (IQ) and customer loyalty (CL) also have a significant positive influence on customer satisfaction with a path coefficient of 0.244. The T value of 3.058 indicates statistical significance with a P value of 0.001 which is lower than 0.05. This means that the quality of information also plays an important role in influencing customer satisfaction. Hypothesis H3c shows that resource quality (RQ) does not have a significant influence on customer satisfaction (CS) and customer loyalty (CL). The T value of 0.698 is lower than the critical value of 1.645, and the P value of 0.243 is higher than 0.05. Therefore, resource quality does not play a strong role in influencing customer satisfaction. Hypothesis H3d shows that personal contact (PQ) also does not have a significant influence on customer satisfaction (CS) and customer loyalty (CL). The T value of 0.617 and P value of 0.269 do not meet the criteria for statistical significance. Thus, personal contact is not the main factor in influencing customer satisfaction. Hypothesis H3e shows that customization innovation (CI) has a significant positive influence on customer satisfaction (CS) and customer loyalty (CL) with a path coefficient of 0.202 and a T value of 3.587. A P value of 0.000 indicates strong significance. Thus, customization innovation contributes positively to customer satisfaction. In the context of logistics and customer satisfaction, operational quality, information quality, and customization innovation are factors that have a significant influence on customer satisfaction. However, the quality of resources and personal contacts did not have a significant impact. A focus on improving operational quality and customization innovation can help increase customer satisfaction and strengthen customer loyalty.

Importance and Performance Map Analysis

Importance and Performance Matrix Analysis (IPMA) is a method used in Partial Least Squares Structural Equation Modeling (PLS-SEM) to gain further insight from the analysis results. IPMA identifies constructs that are important in explaining a particular target construct (Sarstedt et al., 2021). This research uses importance and performance matrix analysis, or IPMA, to determine the relative importance and performance of each independent variable in relation to the dependent variable. IPMA provides an opportunity to enrich PLS-SEM analysis with additional findings and results.

Table 8. Importance and Performance Map Analysis (IPMA)

	Total effect importance of Customer loyalty (CL)	Construct Performance of Customer Loyalty (CL)
Operational Quality (OQ)	0.284	75.729
Information Quality (IQ)	0.244	74.316
Resource Quality (RQ)	0.053	74.837
Personnel Contact Quality (PQ)	0.043	74.337
Customization & Innovation (CI)	0.202	72.045
Customer Satisfaction (CS)	0.847	74.180

Table 8 presents the outcomes of the IPMA analysis about the factors that impact Customer Loyalty. It shows the significance value (importance) and index value (performance) for each variable. The Operational Quality (OQ) variable has a significant and positive impact on customer loyalty (CL), with an importance value of 0.284 and a performance score of 75,729. This indicates that the Indonesia's State-Owned LSP demonstrates commendable performance in operational elements.

The Information Quality (IQ) variable has a significant and positive impact on customer satisfaction, with an importance value of 0.244 and a performance score of 74,316. This demonstrates that the Indonesia's State-Owned LSP delivers adequate information to its clients. The variable of resource quality (RQ) has an insignificant effect on customer satisfaction, with an importance value of 0.053 and a performance of 74,837. While Indonesia's State-Owned LSP may not have a large impact, it has demonstrated commendable performance in terms of resources. The Personal Contact (PQ) variable has an insignificant effect on customer satisfaction, with an importance value of 0.043 and a performance score of 74,337. While Indonesia's State-Owned LSP may not have a significant impact, it has commendable performance in terms of interpersonal connections. The variable of Customization Innovation (CI) has a notable and favorable impact on customer satisfaction, with an importance value of 0.202 and a performance rating of 72.045.

The Customer Satisfaction (CS) variable exerts a substantial positive impact on Customer Loyalty (CL) with a significance value of 0.847 and a performance score of 74,180. Indicates that the Indonesia's State-Owned LSP demonstrates strong performance in terms of customer satisfaction. Indonesia's state-owned LSP has successfully developed innovative measures to effectively address the requirements of its customers. The Indonesia's State-Owned LSP demonstrates commendable competence in customer satisfaction, operations, information management, and personal communication. This signifies that the operational features of variables have a significant impact on customer loyalty. The opportunity for enhancing performance lies in the areas of resource allocation and innovative customization. By prioritizing the enhancement of resource quality and fostering innovation, logistics services may successfully improve customer satisfaction and increase customer loyalty.

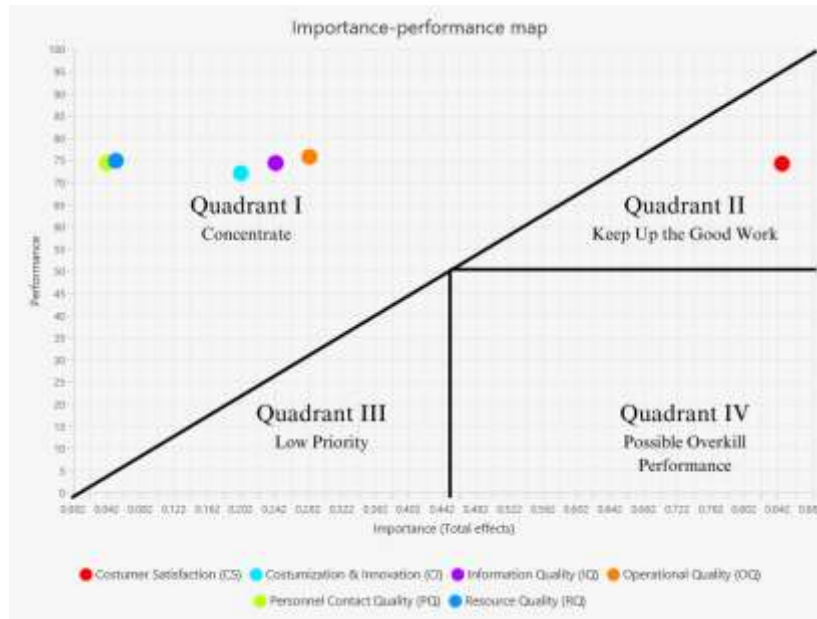


Figure 3. IPMA Quadrant Analysis

Figure 3 displays the SmartPLS output derived from the results of the Importance Performance Map study. The X-axis represents the Total Effect Importance, which measures the significance of a particular factor. The Y-axis represents a performance indicator, which evaluates the level of performance achieved. When these two axes intersect, it displays the outcomes of each variable construct that will be examined. The image displays defined lines representing specific sections of the Quadrant, each with its own distinct significance. The conclusions can be determined by the results obtained from each variable construct's output.

Customer Satisfaction (CS) lies in quadrant II, also known as the "keep up the good work" quadrant. This suggests that the present level of customer satisfaction has fulfilled customer expectations. Hence, it is crucial to always uphold and preserve excellent service standards to sustain customer loyalty. Meanwhile, multiple performance factors are situated in quadrant I, known as "Concentrate". The placement of these variables in this quadrant indicates that although their level of performance is rather high, there is still a potential for development. The characteristics that belong to Quadrant 1 include Customization & Innovation (CI), Information Quality (IQ), Operational Quality (OQ), Personnel Contact Quality (PQ), and Resource Quality (RQ).

According to the comprehensive analysis findings, in order to enhance customer loyalty, organizations should prioritize enhancing the aspects identified in quadrant I, while also preserving their current strengths in quadrant II. Customer surveys, staff training, technology and infrastructure development are the means by which this can be accomplished. Despite the implementation of the Indonesia's State-Owned LSP, it continues to receive unfavorable reviews. The Indonesia's State-Owned LSP must create and assess factors in quadrant II. Therefore, organizations have the ability to enhance the customer experience, leading to a higher likelihood of customers developing loyalty towards the company.

Qualitative Data Analysis

The following analysis includes insights acquired from a Focus Group Discussion (FGD) carried out with stakeholders of Indonesia's State-owned LSP. The objective of the discussion was to pinpoint the main obstacles and possibilities that Indonesia's State-owned LSP is encountering in the present competitive environment. The conversation revealed key themes, patterns, and categories that emphasized challenges regarding service quality, technological adaptability, reputation, financial performance, competition, and asset usage. This analysis aims to clarify these themes using thematic, narrative, and comparative methods, to provide a thorough knowledge of the elements affecting Indonesia's State-owned LSP and suggest ideas for future strategic directions.

The following Figure 4. illustrates the primary topics and their corresponding codes that were determined through the examination of the Focus Group Discussion (FGD) for the Indonesia's State-Owned LSP. Each topic is represented by a distinct circle, visually demonstrating the various factors that influence the business. The themes, encompassing Service Quality and Human Resources (SQ) as well as Asset Utilization (AU), emphasize the crucial areas that want attention and enhancement. This visual representation facilitates comprehension of the interconnected difficulties and possibilities encountered by the Indonesia's State-Owned LSP, offering a transparent and comprehensive summary of the main topics discussed during the FGD.

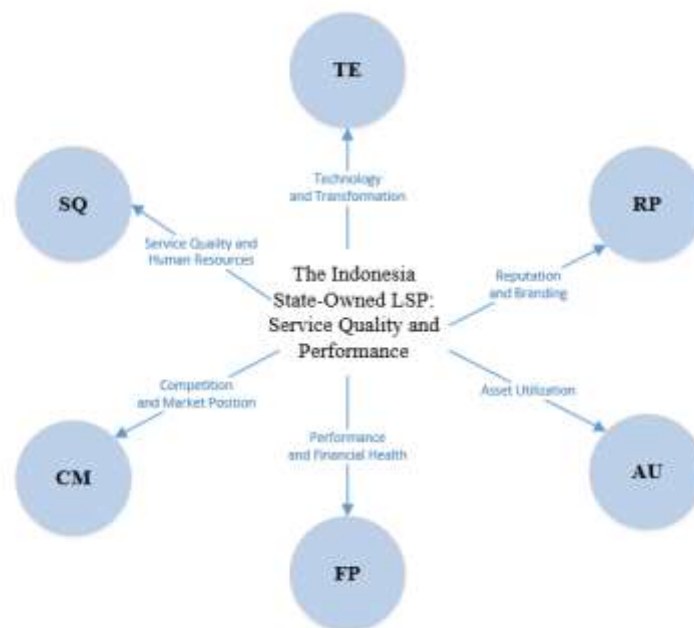


Figure 4. FGD Coding Themes

Following the reviewing the FGD data for the Indonesian State-Owned Logistics Service Provider (LSP), several significant themes, categories, and trends were found. The theme of Service Quality and Human Resources surfaced, highlighting concerns over the mindset and work ethic of employees who feel secure because of the state-owned status. This results in a lack of motivation and frequently poor service, as workers do not feel motivated to perform at a high level.

The second theme, Technology and Transformation, highlighted the Indonesian State-Owned LSP's weakness in adopting emerging technology, such as real-time tracking, resulting in many technical problems that impact service quality. In the context of Reputation and Branding, there continues an established perception among the public that the Indonesian State-Owned LSP solely serves the function of sending letters. This highlights the immediate necessity for re-branding initiatives to enhance recognition and understanding among the younger demographic.

The theme of Performance and Financial Health highlighted challenges in managing employees who expressed a sense of detachment and voiced concerns about the financial sustainability of the Indonesian State-Owned LSP because of its unfavorable financial situation. The issue of Competition and Market Position highlighted that the Indonesian State-Owned LSP is no longer the preferred option for shipping

services. It encounters competition from competitors who are technologically advanced and have more transparent procedures.

Furthermore, the topic of Asset Utilization highlights that the Indonesian State-Owned LSP owns substantial assets that have not been fully exploited. It suggests exploring new ways to make use of these assets, such as repurposing them as warehouses for business-to-business services. These topics jointly emphasize the complex difficulties and opportunities that the Indonesian State-Owned LSP is currently confronting. Therefore, deliberate interventions are necessary to effectively address them.

The narrative that arises from this Focus Group Discussion (FGD) is centered around the Indonesia's State-Owned LSP, which was previously a dominant player in the market but has now dropped behind due to its slow response to technological advancements and shifts in the market. The discussion indicated that the Indonesia's State-Owned LSP owns substantial assets, although they have not been fully leveraged, and employees lack motivation due to the security provided by being a state-owned company. The essential technical transformation has been delayed, resulting in frequent service quality deterioration caused by system malfunctions. The FGD participants unanimously agree that the Indonesia's State-Owned LSP must undertake a re-branding initiative, enhance the quality of its services, and modernize its technology in order to remain competitive in a market that is becoming increasingly fierce.

Feedback from several participants demonstrates insight into the primary challenges encountered by the Indonesia's State-Owned LSP, including service, technology, and work ethic. Nevertheless, there are different viewpoints regarding the necessary solutions. One group of participants, argued that the Indonesia's State-Owned LSP is no longer financially sustainable and should be liquidated. On the other hand, another group believed the Indonesia's State-Owned LSP may still be competitive if it undertakes the appropriate transition.

The primary conclusions derived from this focus group discussion (FGD) suggest that the Indonesia's State-Owned LSP encounters substantial obstacles in terms of service quality and technical adaptation. The old general perception of Indonesia's State-Owned LSP as solely a postal delivery service and the decreased work ethic of employees resulting from its state-owned status pose significant obstacles to enhancing the company's performance. Furthermore, despite the LSP holding substantial assets, their utilization has not been optimal, necessitating the implementation of new tactics to maximize asset utilization.

According to the discussion, approximately 60% of parcels at PT Pos have accurate real-time tracking status, but the company has requested that the tracking status be accurate in real time. This demonstrates the critical need for increased efficiency in registering and tracking shipments. The State-Owned LSP is now embarking on a digital transformation in response to the growing need for fast and accurate services from customers. Furthermore, customers continue to complain about delivery delays. According to the company's report for 2023, around 20% of goods were delayed due to inefficient sorting and route allocation operations. In 2023, Indonesia's Logistics Performance Index (LPI) rated 63rd out of 139 nations (LPIWorldBank, 2023), indicating that logistics efficiency remains a major concern.

Discussion

Driving Sustainability Through Transformation in the State-Owned LSP

The results of this study reveal an interesting discovery: customer satisfaction is not significantly influenced by the quality of personal interactions or the quality of resources. These two variables fail to satisfy the statistical significance threshold measurement, with path coefficients of 0.063 (T-statistic 0.700) and 0.050 (T-statistic 0.615), accordingly. The finding may indicate that, in the context of State-Owned LSP, systemic and operational factors are more influential in shaping consumer perceptions than direct interaction or resource quality. Also there is minimal interaction between employees and consumers in the context of LSP. This may be attributable to a greater reliance on technology and

systems than on the quality of the workforce or personal services. The outcomes of the analysis indicate that Operational Quality is a critical factor in customer satisfaction, with a path coefficient of 0.335 and a T-statistic value of 3.660. This suggests that the primary factors that influence positive customer perceptions of LSP are delivery reliability, punctuality, and appropriate service. The finding is consistent with prior research that has demonstrated the critical role of operational quality in the logistics sector in encouraging consumer satisfaction.

In addition, it has been demonstrated that customer satisfaction is significantly influenced by information quality, particularly in the areas of accuracy and transparency, as demonstrated by a path coefficient of 0.288 and a T-statistic of 3.066. The ability to track their packages in real-time and the transparency and accuracy of information are highly valued by customers, especially in relation to shipping status. The level of satisfaction of customers is ultimately determined by the trust they have in LSPs, which is bolstered by effective information management. Growing demand for technology with the ability to accurately and quickly deliver information is becoming increasingly urgent as a way of increasing State-Owned LSP services. A further finding is that Customer Satisfaction can be enhanced by Innovation and Customization, as indicated by a path coefficient of 0.239 and a T-statistic of 3.585. The ability of logistics service providers to innovate in the delivery of logistical solutions and customize services to meet the expectations of their customers is a determining factor that may increase customer satisfaction. This innovation involves not only the creation of new products, but also improvements of the delivery process and the overall customer experience provided by service providers.

Concurrently, the most significant outcome of this study is the extremely strong correlation between customer satisfaction and customer loyalty, as indicated by a path coefficient of 0.847 and a T-statistic value of 34.644. This confirms the notion that loyalty is significantly influenced by consumer satisfaction. Not only do LSPs retain their existing customers, but they also increase the probability that customers will recommend the service to others when they effectively meet or exceed customer expectations. In the competitive logistics sector, maintaining and expanding market share is depending upon high satisfaction. The significance of strengthening operational quality and information quality as the primary factors that influence customer satisfaction is underscored by the results of this study. In contrast, it is intriguing that the quality of resources and personal interactions does not have a substantial impact, suggesting that customers prioritize service aspects related to transparency, accuracy, and reliability over the quality of interpersonal relationships or resources. This discovery offers strategic insight that the primary objective of State-Owned LSP should be to improve the quality of their core services and to innovate in order to preserve customer satisfaction and loyalty.

The results of this study align with previous studies conducted in the domain of logistics service quality and customer satisfaction. Previous studies emphasized the significance of service quality dimensions, such as reliability and responsiveness, in influencing customer satisfaction (Narteh, 2018; Slack et al., 2020). The present study revealed that operational quality, which includes providing service that is both timely and correct, was identified as a key predictor of customer satisfaction, thereby confirming previous research findings (Gupta et al., 2023; Sorkun et al., 2020). The findings reveal that there is a strong and statistically significant relationship between customer satisfaction (CS) and customer loyalty (CL), with a path coefficient of 0.847 and a T-value of 34.644. This discovery is consistent with the previous study that highlights the crucial significance of customer satisfaction in promoting loyalty (Liang et al., 2019). Nevertheless, hypotheses H1c and H1d, which proposed that resource quality and personnel contact quality have an impact on customer satisfaction, were not supported. This is indicated by the T-values and P-values, which indicate a lack of statistical significance. The lack of significant influence from resource quality and personnel contact quality contradicts findings from previous investigations. Several studies highlighted the significant impact that frontline personnel have on shaping consumer perceptions and satisfaction (Gupta et al., 2023; Hamouda, 2019). The variation in

results may be related to the particular circumstances of the research, which concentrated on Indonesia's State-Owned LSP. In this context, systemic problems and institutional variables could obliterate the individual performance of employees.

The qualitative aspect of the study involved a Focus Group Discussion (FGD) which demonstrated various significant themes: service quality, technological adaptation, reputation and branding, financial performance, competition, and asset utilization. Participants voiced concerns regarding the diligence and dedication of employees, attributing it to the sense of job security associated with state-owned companies. This discovery aligns with theories of organizational behavior that emphasize the adverse impact of job security on employee performance (Kreitner et al., 2001). The investigation uncovered substantial obstacles in the implementation of new technologies, such as real-time tracking systems, which are essential for modern logistics operations. A significant obstacle to enhancing service quality and competitiveness was found as the delay in adopting technology which were confirmed many findings on how technology played crucial roles in business (Irijayanti & Azis, 2012, 2017; Salahshour Rad et al., 2018; Shaikh et al., 2021). Further, participants emphasized the importance of strategic actions to address financial instability and improve market competitiveness, recognizing financial sustainability as a crucial concern. This discovery aligns with strategic management theories that highlight the significance of financial well-being for long-term viability and competitive advantage (Islami et al., 2020; Shofawati, 2019). Finally, the lack of efficient utilization of valuable resources was noted as another significant problem, indicating potential for repurposing these resources to enable business-to-business services.

The investigation determines that the Indonesia's State-Owned LSP necessitates significant changes to effectively compete in the progressively competitive industry. To achieve their goals, they must alter their mindset and enhance their work ethic, allocate resources towards adopting cutting-edge technology, and engage in re-branding initiatives to transform the public's perception. In addition, the Indonesia's State-Owned LSP should enhance the utilization of its assets and evaluate the possibility of venturing into the industry of renting warehouses to other businesses. Failure to execute these improvements poses a significant danger of the LSP falling further behind its competitors and potentially facing elimination.

One of the recent transformations implemented by the State-Owned LSP is the the installation of Robotic Process Automation (RPA), which is thought to be a key step toward sustainability in the logistics sector. RPA is predicted to boost logistics organizations' efficiency and competitiveness. RPA can assist speed up package processing, increase data recording accuracy, optimize delivery routes, accelerate customer claim settlement, and enhancing integration with marketplace systems. Starting in 2023, the Indonesia State-owned LSP will utilize robot-based automatic sorting technology from LiBiao Robotics, known as the 't-Sort' system. This technology automates package sorting, replacing the prior manual procedure (LiBiao, 2024). Integration with IT systems and RFID scanning software enables package tracking from source to recipient, improving transparency and service speed. A research conducted at the Surabaya Processing Center found that the employment of sorting robots improved operating efficiency significantly (Mulyati et al., 2025; Pujono & Imaroh, 2024). The sorting process gets faster and more accurate, allowing for the reassignment of labor to higher-value tasks. This not only improves production, but also promotes the company's reputation among customers. The implementation of Robotic Process Automation (RPA) marks a significant milestone in the company's digital transformation. This project directly addresses a number of previously recognized operational bottlenecks, including lengthy sorting processes and low tracking accuracy. By replacing manual operations with automated systems that incorporate RFID scanning and corporate information systems, shipment tracking speed and transparency have improved greatly. This adjustment also aligns with the notion of sustainability in logistical operations. Automation improves energy efficiency and reduces operational waste caused by sorting errors or reshippments owing to data inaccuracy.

Furthermore, the redistribution of labor to value-added tasks such as claims handling, quality control, and customer service represents social sustainability initiatives by providing more meaningful employment for employees (Gupta et al., 2022; Mangla et al., 2016). Increasing tracking accuracy and

optimizing delivery routes also help to reduce fuel use and carbon emissions, so promoting more environmentally friendly logistics practices. Strategically, this move helps Indonesia's state-owned LSP minimize the competitiveness gap with private logistics companies that have already implemented automation technology. Increased service speed and accuracy will increase customer satisfaction and loyalty, as demonstrated by this study, which found that operational and information quality have a considerable influence on customer satisfaction, which in turn has a large impact on customer loyalty. However, this digital transformation necessitates ongoing investment in digital capabilities, such as HR training to adapt to automated processes and more system integration with external platforms like marketplaces. Without this element, the full benefits of RPA deployment would not be realized. As a result, the organization's capacity to adapt strategically while remaining committed to innovation and sustainability principles will determine the long-term success of this transformation.

Conclusion

The study's findings highlight the relevance of operational quality, information quality, innovation, and customization in increasing customer satisfaction in the logistics sector, particularly for Indonesia's state-owned logistics service provider. Furthermore, customer satisfaction has been shown to be a major predictor of customer loyalty, emphasizing the need of enhancing service quality as a critical strategy for retaining and expanding market share. The qualitative conclusions from the Focus Group Discussion emphasize the importance of organizational transformation through technology adoption, brand reputation improvement, and internal asset and capability optimization.

Indonesia State-Owned LSP has implemented Robotic Process Automation (RPA) through the deployment Robotics' t-Sort automatic sorting system. This implementation has demonstrated a beneficial impact on operational efficiency, package processing speed, and tracking accuracy. In addition, integrating this system with RFID devices improves service transparency. RPA also promotes sustainability by eliminating operational waste and enabling the reassignment of labor to more value-added activities. To ensure the long-term success of this transformation, Indonesia state-owned LSP must continue to invest in human resource training, increase system integration, and sustainably manage organizational change.

These findings have theoretical and practical consequences for both state-owned logistics enterprises and the logistics sector as a whole. This study serves as a foundation for strategic decision-making aimed at improving consumer satisfaction and ensuring the sustainability of logistics services. Further research is needed to investigate other external elements such as advanced technology adoption, digital consumer behavior, and HR management techniques in order to gain a better understanding of the dynamics of logistics service performance in a larger and more sustainable setting.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author [MI], upon reasonable request.

Author Contribution Statements

The authors affirm that we were engaged in the conception and design of the study, the analysis and interpretation of the data, as well as the drafting of the paper. All authors contributed substantially to writing the manuscript critically for intellectual content. All authors agree to be accountable for all aspects of the work conducted in this study, and MI has the role of corresponding author in this article.

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