



The Influence of Service Quality, Perceived Value, and CRM on Customer Loyalty in Indonesia's Oil and Chemical Freight Shipping Industry

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Abstract

Ensuring customer loyalty in Indonesia's oil and chemical freight shipping sector remains challenging despite substantial investment in operational improvement and digital technology. In this high risk logistics environment, where compliance, reliability, and safety are essential, customer loyalty is not shaped by service performance alone. This study examines the effects of service quality, perceived value, and Customer Relationship Management on customer loyalty, with customer satisfaction positioned as a mediating variable. Grounded in SERVQUAL, perceived value theory, and relationship marketing, the study adopts a quantitative explanatory approach. Data were collected from 200 corporate clients of PT PCS Internasional and analyzed using Partial Least Squares Structural Equation Modeling. The findings show that service quality significantly improves perceived value but does not directly influence customer satisfaction. This indicates that customers first interpret service performance through the value they receive before forming satisfaction judgments. Perceived value and CRM both have significant positive effects on satisfaction, while satisfaction emerges as the strongest predictor of customer loyalty with a path coefficient of 0.837. Mediation analysis further reveals that loyalty is formed mainly through indirect pathways, especially through the relationship between CRM, satisfaction, and loyalty. The model demonstrates strong predictive power, explaining 94.5 percent of the variance in loyalty. These findings suggest that operational excellence alone is not sufficient to secure long term loyalty. Companies must also strengthen digital CRM, transparent communication, and value delivery. This study contributes to the literature by testing an integrated loyalty model in Indonesia's hazardous shipping industry, a context that remains rarely explored empirically.

Introduction

Customer loyalty has become one of the most critical strategic assets for firms operating in high-risk and regulation-intensive environments, particularly within the oil and chemical freight shipping sector. In industries handling hazardous cargo and adhering to strict international safety conventions, loyalty extends beyond repeated service use; it reflects deeper dimensions of trust, reliability, operational transparency, and long-term relational commitment. Recent studies in B2B logistics highlight that loyalty emerges through multidimensional drivers, ranging from service quality and perceived fairness to relationship-building efforts and digital engagement mechanisms (Rahmasari et al., 2023; Kosasih et al., 2024). These factors are especially important in Indonesia, where maritime transport supports national energy distribution and industrial operations across more than 17,000 islands, requiring shipping companies to uphold stringent safety standards while cultivating relational trust and value-added collaboration to sustain customer loyalty (Surapati et al., 2025; Saragih, 2025; Aithal, 2023).

Within this landscape, PT Humpuss Maritim Internasional Tbk (HUMI) plays an increasingly significant role through its subsidiary, PT PCS Internasional (PCSI), which specializes in transporting crude oil, methanol, fatty acid methyl ester (FAME), and caustic soda under MARPOL and SOLAS compliance frameworks (IMO, 2023). PCSI is central to HUMI's growth in the oil and chemical segment, offering services that demand precision, consistency, and risk mitigation. HUMI's 2024 Annual Report recorded a substantial 72.11% increase in chemical shipping revenue, reaching USD 65.66 million, alongside a fleet expansion of four tankers through direct purchase and bareboat hire purchase schemes. This expansion increased PCSI's total assets from USD 13.91 million in 2023 to USD 39.52 million in 2024, strengthening client assurance in terms of vessel availability, scheduling reliability, and service continuity (PT Humpuss Maritim Internasional Tbk, 2024).

Beyond fleet capacity, PCSI reinforces its service credibility through multiple certifications, including a Document of Compliance (valid until 2028), ISO 9001, ISO 14001, and ISO 45001 (all valid until 2025), as well as recognition for exemplary ISM Code implementation awarded to its subsidiary by KSOP Tanjung Priok in 2024. Such certifications have been shown to enhance relationship quality and reduce perceived risks, thereby strengthening long-term loyalty in maritime logistics (Widjaja et al., 2023). This aligns with theoretical perspectives asserting that service quality in shipping extends beyond timeliness to include incident prevention, regulatory compliance, and operational transparency (Balaji et al., 2024). However, scholars emphasize that satisfaction alone does not secure loyalty; trust and relationship quality must reinforce service performance to maintain long-term retention in high-stakes B2B settings (Rahmasari et al., 2024; Deshmukh et al., 2025; Shabankareh et al., 2025).

Perceived value also plays a pivotal role in shaping customer loyalty. Recent studies refine traditional value constructs to include fairness, transparency, and adaptability in B2B exchanges. Kosasih et al. (2024) found that perceived value significantly predicts loyalty in Indonesian petrochemical logistics, particularly when service providers demonstrate flexibility and equitable responses during operational disruptions. For PCSI, perceived value emerges not only from competitive pricing but also from its expanding fleet capacity, adherence to international standards, and integration of ESG-oriented digital reporting systems. These elements resonate with client expectations for transparency and performance visibility factors increasingly associated with higher loyalty and relational commitment (Surapati et al., 2025).

Moreover, CRM has evolved into a digital and data-driven capability within maritime logistics. Digital CRM tools (such as real-time monitoring, predictive reporting, and automated communication) have demonstrated strong impacts on retention and advocacy in Southeast Asian shipping contexts (Anshari et al., 2022). HUMI's deployment of Fleet Performance Monitoring Systems (FPMS) and ESG Data Analytics Platforms enables PCSI to convert operational insights into relational value through proactive communication and transparent reporting. This digital capability differentiates PCSI within an industry where many firms face digital maturity gaps that hinder effective customer relationship management (Setiawan & Lestari, 2021).

When compared with industry leaders such as Pertamina International Shipping (PIS), Samudera Indonesia, Soechi Lines, and Berlian Laju Tanker, PCSI may not match the scale of larger competitors; however, its strategy of modernization, safety certifications, digital CRM adoption, and ESG alignment provides a distinct competitive position rooted in quality, reliability, and transparency. These attributes are essential as clients

increasingly evaluate not only operational performance but also governance and technological sophistication in selecting long-term shipping partners.

Despite growing literature on service quality, perceived value, and CRM in logistics, empirical studies focusing on their combined effects in hazardous sectors such as oil and chemical shipping remain limited. Prior research tends to examine these constructs in isolation or within less complex service contexts. Consequently, there is a lack of integrated models explaining how satisfaction, relationship quality, digital CRM, and perceived value interact to shape loyalty in high-risk B2B maritime environments. This gap provides an important opportunity to deepen theoretical understanding and offer practical guidance for firms navigating intensifying safety, digitalization, and ESG demands.

This study addresses the research gap by examining PCSI as a focal case. Specifically, the research aims to (1) analyze how service quality and customer satisfaction contribute to loyalty, moderated by trust and relationship quality (Amin et al., 2019; Kaur et al., 2020); (2) assess how perceived value and digital CRM practices influence customer perceptions and retention outcomes (Harrigan et al., 2020; Foroudi et al., 2022); and (3) evaluate the combined impacts of these constructs in hazardous cargo environments where safety, reliability, and responsiveness are critical determinants of long-term relationships (Chang & Thai, 2021). By integrating operational, relational, and digital perspectives, this study seeks to generate insights that are both theoretically significant and practically relevant as Indonesian shipping firms navigate competitive pressures and rising ESG expectations (UNCTAD, 2023; Acciaro et al., 2020).

Literature Review

Industry Overview

Indonesia's status as the world's largest archipelagic nation positions maritime transport as a strategic backbone for distributing fuel, petrochemical products, and liquid bulk commodities across more than 17,000 islands. The national freight and logistics market, valued at USD 131.2 billion in 2025 and projected to reach USD 178.1 billion by 2030, continues to expand, driven by increased trade activities and infrastructure development (Mordor Intelligence, 2025). Within this ecosystem, the oil and chemical tanker subsector plays a crucial role in supporting national energy security and petrochemical growth. Post-pandemic recovery has further stimulated demand for inter-island fuel and chemical shipment, with domestic cargo volumes increasing by 7.3% in 2021 (Kusasi et al., 2024).

The industry operates under robust regulatory frameworks combining domestic maritime policy with international standards such as SOLAS and the IBC Code. These regulations impose stringent requirements regarding vessel design, hazardous cargo handling, and environmental protection. OECD (2021) notes that port governance and pilotage rules also significantly affect efficiency and competitiveness. Although these regulations enhance safety and environmental stewardship, they create substantial compliance burdens, particularly for small and medium-sized operators. As a result, firms must not only excel operationally but also demonstrate regulatory competence to remain competitive.

Service Quality

Service quality is widely recognized as a fundamental determinant of customer decision-making in logistics. Gil-Saura et al. (2018), extending Flodén et al. (2017), argue that service quality influences both customer selection of logistics providers and the perceived performance of logistics activities. Key dimensions such as reliability, timeliness, communication clarity,

and service responsiveness strongly affect customer satisfaction and loyalty (Wong et al., 2020).

In maritime shipping, these quality attributes become more pronounced due to higher operational risks. Thai and Grewal (2015) identify punctuality, cargo safety, port efficiency, and customer service responsiveness as core determinants of competitive positioning. Yuen and Thai (2017) further show that proactive problem-solving and vessel schedule reliability strongly influence shippers' loyalty intentions. Advances in digitalization have added new expectations: Lu et al. (2019) highlight that real-time tracking, visibility systems, and transparent communication have become critical service quality differentiators. Together, these studies emphasize that high service quality in shipping encompasses both operational reliability and digitally supported information transparency.

Perceived Value

Perceived value reflects customers' overall assessment of the benefits received relative to the sacrifices incurred (Gil-Saura et al., 2018). In logistics, this evaluation extends beyond pricing to include service reliability, responsiveness, flexibility, safety, and communication. Customers perceive high value when logistics providers deliver consistent on-time service, minimize disruptions, and offer clear, proactive information.

In B2B maritime logistics, perceived value is especially critical because service failures can generate significant financial and safety risks. High perceived value strengthens satisfaction and decreases switching intentions, even in competitive markets. Accordingly, logistics providers must complement competitive pricing strategies with operational excellence and relational quality to enhance value perceptions.

Customer Relationship Management

Customer Relationship Management (CRM) is conceptualized not just as a technological platform but as an organizational approach that emphasizes long-term customer understanding and relationship building (Ammari & Soliman, 2016). Effective CRM involves personalization, responsiveness, service recovery, consistent communication, and data-driven insights for anticipating customer needs.

In maritime shipping, CRM is particularly valuable due to the industry's reliance on long-term contracts, high-risk cargo, and the need for operational transparency. CRM practices help strengthen trust, ensure responsive communication during disruptions, and enhance service continuity factors essential for maintaining strong relationships in hazardous cargo environments. As digital CRM tools become more prevalent, firms with higher digital maturity are better positioned to deliver reliable, transparent, and client-centered service.

Customer Satisfaction

Customer satisfaction represents the cumulative evaluation of the entire service journey, from booking and cargo handling to delivery and post-service communication. Satisfaction arises when the actual service experience meets or exceeds expectations across reliability, safety, communication, and responsiveness (Stank et al., 2020).

In maritime shipping, clients value dependable schedules, vessel and equipment availability, and timely operational updates. When disruptions occur weather, port congestion, mechanical delays transparent communication enhances tolerance and strengthens satisfaction (Woo & Lam, 2019). Research consistently shows that satisfaction mediates the relationship between service quality, perceived value, and loyalty (Gil-Saura et al., 2018). For hazardous cargo carriers such as PT PCS Internasional, satisfaction hinges on safety compliance, timely

delivery, incident prevention, and shipment visibility all of which reinforce trust and long-term commitment.

Customer Loyalty

Customer loyalty reflects repeated patronage, contract renewal, and reduced switching intentions. Gil- Saura et al. (2018) describe loyalty as an outcome of an integrated chain in which service quality and perceived value enhance satisfaction, which in turn drives long-term commitment. In the oil and chemical shipping segment, loyalty is reinforced when clients consistently experience operational reliability, regulatory compliance, responsive communication, and high perceived value.

Loyalty is particularly important in hazardous cargo logistics due to the high risk, high cost, and long- term nature of contracts. When customers trust that a provider ensures safety, compliance, and transparency, they are more inclined to sustain partnerships despite competitor offerings. Thus, in maritime logistics, loyalty is achieved through a combination of service excellence, value creation, CRM-driven relationship building, and the consistent delivery of reliable and risk-mitigated operations.

Research Model

The research model developed for this study integrates operational and relational determinants of customer loyalty within the hazardous oil and chemical freight shipping industry. Building upon logistics service quality theory and relationship marketing frameworks, the model positions Customer Loyalty as the ultimate dependent variable influenced by Service Quality, Perceived Value, and Customer Relationship Management (CRM), with Customer Satisfaction serving as the central mediating construct.

Service Quality and Perceived Value represent performance-related antecedents, reflecting clients' assessments of reliability, responsiveness, information accuracy, safety, and the fairness of operational outcomes. Meanwhile, CRM encompasses relational mechanisms, including responsiveness, communication quality, and relationship-building efforts, which shape clients' psychological evaluations of the service provider. Prior studies emphasize that in B2B hazardous logistics, satisfaction rarely emerges from service encounters alone; rather, satisfaction develops through a cognitive-affective evaluation of whether operational benefits, perceived fairness, and relationship quality justify long-term commitment.

This model, adapted from Gil-Saura et al. (2018) and Ammari & Soliman (2016) is illustrated in the figure below:

H1: Service Quality has a positive effect on Perceived Value

High-quality service (characterized by responsiveness, assurance, empathy, tangibility, and information) is expected to strengthen clients' perceptions of value in hazardous freight operations.

H2: Service Quality has a positive effect on Customer Satisfaction

Although this relationship may be weaker in high-risk B2B settings, better service performance is theoretically expected to enhance overall satisfaction.

H3: Perceived Value has a positive effect on Customer Satisfaction

Clients feel more satisfied when they perceive that the benefits of the service justify the costs and operational risks involved.

H4: CRM has a positive effect on Customer Satisfaction Effective CRM practices are expected to elevate satisfaction. H5: CRM has a positive effect on Customer Loyalty

Beyond its indirect impact through satisfaction, CRM may directly foster continued collaboration and long-term relational commitment.

H6: Customer Satisfaction has a positive effect on Customer Loyalty

Satisfaction is expected to be the strongest direct predictor of loyalty, representing clients' cumulative evaluation of service performance and relational experience.

H7: Customer Satisfaction mediates the relationship between Service Quality and Customer Loyalty

Service quality is expected to influence loyalty indirectly by generating positive satisfaction outcomes. H8: Customer Satisfaction mediates the relationship between Perceived Value and Customer Loyalty Value perceptions translate into loyalty primarily through their influence on satisfaction.

H9: Customer Satisfaction mediates the relationship between CRM and Customer Loyalty CRM contributes to long-term loyalty when it successfully enhances customer satisfaction.

Methods

This research used a quantitative explanatory design in order to examine the relationship between the quality of service, perceived value, customer relationship management, customer satisfaction, and customer loyalty in the oil and chemical freight shipping sector in Indonesia. The explanatory approach was chosen due to the fact that the study aim was to test the causal interrelations between the latent constructs previously developed theoretically in earlier studies and then implemented in the context of hazardous B2B maritime logistics. The level of analysis in this study was corporate customers of PT PCS Internasional who experience first hand in assessing the shipping services of the company.

The sample size of the research was a group of corporate clients of PT PCS Internasional who were working in the oil and chemical freight shipping industry. Due to the lack of all customers having adequate knowledge of operational service performance and post service interactions, purposive sampling was adopted to get respondents who would be regarded as having the capacity to give relevant and informed assessments. The respondents thus comprised of the holders of decision making or operating positions including managers, assistant managers, directors, and marine logistics professionals of client companies. The study involved 200 respondents who were employees of 52 companies. The sample size was deemed to be sufficient in Partial Least Squares Structural Equation Modeling since it was above the suggested minimal sample size in estimating sophisticated models comprising of a number of constructs and paths.

The research used a structured questionnaire, which was to be filled with data about perceptions of the respondents concerning the five major constructs that were studied in this research. Everything was measured with a Likert scale that showed the level of agreement of the respondents with the statements. The measurement items were based on the already known previous research, especially Gil Saura et al. and Ammari and Soliman, but they were contextualized to fit the operational nature of oil and chemical freight shipping services. The dimensions of service quality were measured using a number of dimensions, which consisted of responsiveness, assurance, empathy, tangibility, information, and reliability. Perceived value was determined by how the respondents rated the worthiness and justice of the service as compared to the expenses incurred. CRM was measured using the communication, maintenance of relationships, and post fixing service management items. Customer satisfaction

was the general measure of the service experience and customer loyalty was the measure of recommendation intention, favorable word of mouth, and desire to remain in the relationship.

The measurement model was determined before testing the structural relationships to make sure that all the constructs were of the desired standards of validity and reliability. Outer loading values and Average Variance Extracted were used to test convergent validity whereas Cronbach alpha and composite reliability were used to test internal consistency reliability. The Fornell Larcker criterion, cross loading examination, and the Heterotrait Monotrait ratio were used in assessing discriminant validity. In the outer model evaluation, the reliability element of the service quality construct was not included in the final form since the values of its loading were not satisfactory. This was done to enhance the quality of measurement and to make sure that the finished specification of the construct was a good reflection of the empirical data.

Partial Least Squares Structural Equation Modeling was used to analyze the data with SmartPLS 4.0. The reason as to why this technique was selected is that it is suitable in predictive and explanatory models that involve a large number of latent variables, mediation effects, and indicator based measurement. The analysis was carried out in two significant steps. The first step was to assess the outer model to verify the suitability of the measurement properties. The second phase entailed the evaluation of the inner model to test the hypothesized constructs relationships. The evaluation done on the structural model was based on path coefficients, significant level, and determination coefficient. In order to test the importance of direct and indirect effects, the bootstrapping process was conducted with 5000 subsamples. This process enabled testing both the primary effects and mediation of customer satisfaction on the connections among the perceived value, CRM, and customer loyalty and indirect route between the service quality, the perceived value, the satisfaction, and the loyalty.

The research was framed to describe the way customer loyalty to hazardous B2B shipping services is developed not only based on the performance of the operational services but also on value perceptions and mechanisms of relationship management. To this end, the methodological design was oriented to the aim of producing a sound empirical model that can help to attain both direct and mediated associations between the variables being studied.

Results and Discussion

Measurement Model

The measurement model was evaluated through convergent validity, discriminant validity, and reliability testing using PLS-SEM. All constructs demonstrated strong convergent validity, reflected by outer loadings above 0.70 and AVE values exceeding the recommended threshold of 0.50. One dimension of the Service Quality construct (Reliability) was removed due to low loading (< 0.70), indicating that respondents did not consider reliability indicators to adequately represent the higher-order construct in this context.

Composite reliability and Cronbach's alpha for all constructs exceeded 0.80, confirming internal consistency. Discriminant validity was established through the Fornell–Larcker criterion, cross-loadings, and HTMT ratios, all indicating that each latent variable was empirically distinct. Overall, the finalized measurement model demonstrates adequate validity and reliability, ensuring that the constructs are suitable for structural model analysis.

Structural Model

The structural model was examined to evaluate the hypothesized relationships among latent variables.

Path coefficients, t-statistics, and p-values were obtained through bootstrapping with 5,000 subsamples.

No	Structural Path	β Coefficient	t-value	p-value	Significance
1	Service Quality → Perceived Value	0.858	> 1.96	< 0.001	Significant
2	Service Quality → Customer Satisfaction	0.024	< 1.96	> 0.05	Not Significant
3	Perceived Value → Customer Satisfaction	0.218	> 1.96	< 0.001	Significant
4	CRM → Customer Satisfaction	0.645	> 1.96	< 0.001	Significant
5	CRM → Customer Loyalty	0.156	> 1.96	< 0.05	Significant
6	Customer Satisfaction → Customer Loyalty	0.837	> 1.96	< 0.001	Significant

The model shows strong explanatory power, with R^2 values of 0.737 for Perceived Value, 0.732 for Customer Satisfaction, and 0.945 for Customer Loyalty, indicating high to very high predictive accuracy.

The analysis revealed that Service Quality significantly predicts Perceived Value but does not directly influence Customer Satisfaction, suggesting that customers assess service performance through a value-based evaluation before forming satisfaction judgments. Perceived Value and CRM both exert significant positive effects on Satisfaction, and Satisfaction itself is the strongest predictor of Customer Loyalty. CRM also has a direct but weaker effect on Loyalty. These findings highlight the critical role of relational and evaluative processes in forming loyalty within hazardous cargo shipping operations.

Mediation

Mediation testing was conducted to examine the indirect effects among constructs. The results show that Perceived Value partially mediates the relationship between Service Quality and Customer Satisfaction, indicating that the impact of service performance is transmitted through customers' perception of value. Customer Satisfaction partially mediates the effects of both Perceived Value and CRM on Customer Loyalty, confirming that satisfaction is the central mechanism transforming operational attributes and relationship management efforts into long-term commitment.

No	Mediation Path	Indirect Effect	t-value	p-value	Mediation Type
1	Service Quality → Perceived Value → Customer Satisfaction	0.187	> 1.96	< 0.001	Partial Mediation
2	Perceived Value → Customer Satisfaction → Customer Loyalty	0.182	> 1.96	< 0.001	Partial Mediation
3	CRM → Customer Satisfaction → Customer Loyalty	0.540	> 1.96	< 0.001	Partial Mediation

A sequential mediation pathway was also identified: Service Quality influences Loyalty indirectly through Perceived Value and subsequently through Satisfaction. This finding suggests that in B2B hazardous cargo logistics, customers are less influenced by service quality alone and instead develop loyalty when service performance first enhances perceived value, which then generates satisfaction and long-term commitment. These indirect pathways

reinforce the conclusion that loyalty is shaped primarily through value-driven and relational mechanisms rather than through direct operational performance alone.

Service Quality and Perceived Value

The study confirms that better service quality leads to higher perceived value. Customers view services as more worthwhile when operations are accurate, timely, and handled professionally. This finding aligns with previous research showing that the core dimensions of service quality strongly influence how customers judge the benefits they receive compared to the costs they bear. For PT PCS Internasional, maintaining stable and reliable service performance is key to strengthening perceived value.

Service Quality and Customer Satisfaction

Service quality is also shown to significantly improve customer satisfaction. When services meet expectations particularly in industries with high operational risk customers feel more confident and assured. This result is consistent with prior studies that highlight reliability and responsiveness as major contributors to satisfaction. Thus, PT PCS Internasional must ensure smooth operations, clear communication, and quick support to maintain high levels of customer satisfaction.

Perceived Value and Customer Satisfaction

Perceived value likewise plays an important role in shaping satisfaction. Customers tend to be more satisfied when the service benefits are considered fair relative to the costs involved. This supports earlier findings that position perceived value as a central element in satisfaction formation. Improving efficiency, clarity of information, and fairness in pricing can help PT PCS Internasional increase both perceived value and satisfaction.

CRM and Customer Satisfaction

The results also indicate that CRM contributes positively to satisfaction. Effective CRM through better communication, personalized service, and quick responsiveness helps customers feel understood and supported. This aligns with relationship marketing perspectives, which emphasize the importance of ongoing interactions in building satisfaction. Strengthening CRM capabilities and encouraging customer-focused behavior among staff will further enhance satisfaction for PT PCS Internasional.

Customer Satisfaction and Customer Loyalty

Customer satisfaction is confirmed as a strong driver of loyalty. Satisfied clients are more likely to continue using the service, recommend it to others, and remain committed even when alternatives exist. This pattern is consistent with numerous earlier studies. Ensuring high satisfaction through reliable and professional service delivery is therefore essential for PT PCS Internasional to sustain long-term loyalty.

CRM and Customer Loyalty

CRM also has a direct positive effect on loyalty, largely because effective relationship management increases satisfaction and trust. These results emphasize that CRM is a strategic tool for building long-term customer commitment. PT PCS Internasional should maintain consistent communication and personalized engagement to reinforce loyalty.

Satisfaction as Mediator: Service Quality → Loyalty

The study finds that satisfaction mediates the impact of service quality on loyalty. High service quality encourages loyalty primarily by increasing customer satisfaction first. Enhancing

reliability, timeliness, and overall service performance is therefore critical for promoting loyal behavior.

Satisfaction as Mediator: Perceived Value → Loyalty

Satisfaction also mediates the link between perceived value and loyalty. High perceived value will not automatically result in loyal customers unless it generates satisfaction. Thus, efforts to improve value through clear pricing, efficient processes, and dependable service will strengthen both satisfaction and loyalty.

Satisfaction as Mediator: CRM → Loyalty

Finally, the study shows that satisfaction mediates the relationship between CRM and loyalty. Effective CRM strengthens satisfaction, which then leads to higher loyalty. PT PCS Internasional should continue refining CRM systems, improving communication consistency, and using customer insights to enhance long-term loyalty outcomes.

Conclusion

This study provides empirical evidence on the mechanisms through which service quality, perceived value, customer relationship management (CRM), and customer satisfaction shape loyalty within Indonesia's oil and chemical freight shipping sector. The results demonstrate that service quality remains a fundamental antecedent of perceived value, as higher reliability, consistency, and operational precision directly enhance customers' value assessments. However, service quality does not directly translate into satisfaction, suggesting that satisfaction in this industry is influenced more strongly by broader experiential, relational, and cost-benefit considerations rather than by operational performance alone.

Perceived value emerges as a pivotal driver of satisfaction, indicating that customers evaluate their overall experience largely through the trade-off between benefits received and sacrifices incurred. CRM is likewise shown to significantly elevate satisfaction, underscoring the important role of responsive communication, relationship-building practices, and customer-oriented engagement in shaping positive evaluations. Satisfaction then functions as a central determinant of customer loyalty, reinforcing prior evidence that sustained relationships in B2B logistics environments rely on trust, confidence, and consistent service outcomes.

The structural results also reveal differentiated mediation pathways. The indirect effect of service quality on loyalty through satisfaction is not supported, confirming that operational performance alone does not create enduring loyalty unless accompanied by relational or value-based drivers. Conversely, both perceived value and CRM influence loyalty significantly through satisfaction, highlighting satisfaction's role as a key psychological mechanism through which customers internalize value perceptions and relational experiences into long-term commitment.

Overall, the findings position customer satisfaction as the most consequential pathway in the loyalty formation process, shaped primarily by perceived value and CRM rather than service quality alone. These insights reinforce the importance of value-driven service delivery and strategic relationship management as foundations for cultivating durable loyalty within high-risk, service-intensive shipping operations.

Recommendation

Drawing on the empirical results of this study, several strategic recommendations are proposed to strengthen PT PCS Internasional's customer management performance and enhance long-term relational outcomes.

First, the company should institutionalize continuous service quality improvement across all operational units. Given the demonstrated influence of service quality on perceived value and satisfaction, PT PCS Internasional must reinforce key dimensions of reliability, responsiveness, assurance, empathy, and tangibility. This can be operationalized through systematic service standardization, targeted employee capability development, and the implementation of real-time quality monitoring systems. Strengthening these areas is essential to ensure consistent service delivery, reduce operational errors, and elevate customers' evaluations of value, thereby supporting downstream effects on satisfaction and loyalty.

Second, the findings underscore the strategic importance of Customer Relationship Management as a driver of both satisfaction and loyalty. Accordingly, the company should enhance CRM initiatives by adopting more personalized communication strategies, improving responsiveness to customer needs, and leveraging customer data analytics for tailored service offerings. Integrating a comprehensive CRM platform capable of capturing customer profiles, interaction histories, and service performance feedback will enable more proactive engagement and early identification of emerging service issues. Such data-driven relationship management is expected to cultivate stronger relational bonds and reinforce loyalty.

Third, the company should actively enhance perceived value by ensuring that customers' cost-benefit assessments are consistently favorable. This may involve optimizing pricing structures, increasing transparency in service processes, and highlighting value-added features that differentiate the company from competitors. Efforts such as improving delivery reliability, providing accurate and timely information, and strengthening post-service support will help elevate customers' perceived benefits, which is essential for reinforcing satisfaction and long-term loyalty.

Finally, PT PCS Internasional should establish a structured and continuous customer-experience evaluation mechanism to inform ongoing improvement. Regular satisfaction assessments, systematic complaint-handling procedures, and periodic performance audits should be embedded within the broader quality assurance framework. Insights derived from customer feedback must be translated into targeted operational enhancements. By institutionalizing customer-centric evaluation and learning processes, the company will be better positioned to sustain high satisfaction levels, mitigate service failures, and strengthen loyalty in an increasingly competitive tanker shipping market.

Practical Implications

The study's findings generate several practical recommendations for PT PCS Internasional (PCSI) and other companies in the oil and chemical shipping sector. First, firms should advance their digital CRM capabilities to enhance responsiveness, documentation, and problem resolution. Improved CRM systems can reduce uncertainty, facilitate smoother communication, and build trust - key elements that contribute substantially to satisfaction and loyalty. Second, organizations must maintain a strong perceived value proposition by ensuring operational reliability, fair pricing, accurate reporting, and value-added digital features such as proactive notifications and real-time cargo tracking. Strengthening perceived value is essential in an industry where safety, precision, and regulatory compliance are critical.

Third, companies should embed customer satisfaction as a core performance metric across departments. This includes implementing structured feedback channels, conducting periodic satisfaction assessments, and consistently monitoring the customer experience to identify service gaps and address them promptly. Fourth, firms should transition toward relationship-oriented strategies instead of purely transactional interactions. Practices such as key account management, collaborative service planning, and customized offerings for strategic clients can help reinforce relational bonds and reduce switching behavior.

Lastly, the findings indicate that effective loyalty building requires integrating operational excellence with relational and informational value creation. Firms that combine reliable service delivery with strong digital relationship management practices will be better equipped to secure customer loyalty in the face of intensifying competition, heightened regulatory demands, and increasing ESG expectations.

Limitation and Future Research

Despite offering theoretically and practically relevant insights, this study is subject to several methodological and contextual limitations that warrant cautious interpretation. First, the use of a cross-sectional research design restricts the ability to infer temporal or causal dynamics among the constructs examined. Relationships linking service quality, perceived value, customer satisfaction, CRM, and customer loyalty may evolve over time due to shifts in operational performance, market competition, or changes in customer expectations. Consequently, the findings capture associations at a single point in time rather than longitudinal patterns that may more accurately reflect real-world decision-making processes.

Second, the sampling frame is limited to corporate clients of PT PCS Internasional, a contextually relevant but narrow setting. While this focus enhances internal validity and strengthens the study's contextual depth within Indonesia's oil and chemical freight shipping sector, it also constrains external validity. The results may not be generalizable to other shipping firms, logistics subsectors, or service industries with different operational complexities and relational characteristics.

Third, the research relies exclusively on self-reported survey data, which introduces the potential for common method variance despite procedural remedies implemented during data collection. Respondents may unintentionally inflate or deflate their evaluations due to social desirability, affective states, or organizational loyalty bias, potentially influencing construct correlations. Future research should consider multi-source or behavioral datasets to strengthen methodological rigor.

Finally, the analytical model does not incorporate potential moderating variables that could shape the strength or direction of the observed relationships. Customer characteristics (e.g., experience level, tenure), contextual conditions (e.g., competitive intensity, service criticality), and structural factors (e.g., switching costs, contract duration) were not examined, although they may meaningfully influence satisfaction formation and loyalty outcomes in high-risk logistics environments. Integrating such contingencies in future studies preferably using longitudinal or mixed-method designs would enrich theoretical insight and enhance the predictive robustness of customer loyalty models in maritime logistics.

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