



Service Quality, Customer Experience, and Customer Loyalty in the B2B Heavy Equipment Industry: Evidence from PT Hexindo Adiperkasa Tbk

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Abstract

Background: Intensifying competition in the heavy equipment industry--driven by the expansion of Chinese brands such as Sany and XCMG--has led to declining market share for PT Hexindo Adiperkasa Tbk (HAP), the sole distributor of Hitachi Construction Machinery in Indonesia. In this context, understanding the determinants of customer loyalty in business-to-business (B2B) settings becomes strategically critical.

Objective: This study analyzes the influence of service quality (SQ) and customer experience (CE) on customer loyalty (CL), with brand image (BI), customer satisfaction (CS), and perceived value (PV) as mediating variables in the B2B heavy equipment industry.

Methods: A quantitative descriptive-causal approach was applied. Data were collected from 150 existing customers of PT HAP Jakarta Branch via structured online questionnaires and analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0.

Results: Service quality significantly influences brand image, customer satisfaction, customer loyalty, and perceived value. Perceived value is the only variable with a direct significant effect on customer loyalty, whereas customer experience, brand image, and customer satisfaction do not directly drive loyalty in this context. All sixteen mediation hypotheses were rejected.

Conclusion: In B2B heavy equipment markets, service quality enhances loyalty primarily through perceived value rather than emotional or satisfaction pathways, underscoring the need for HAP to strengthen functional value delivery and streamline purchasing procedures.

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INTRODUCTION

The heavy equipment industry in Indonesia operates within a complex and increasingly competitive B2B landscape, characterized by high transaction values, long ownership cycles, and sustained after-sales service relationships (Ellis, 2010; Ilman, 2026; Ulhaq, 2025). PT Hexindo Adiperkasa Tbk (HAP), the sole authorized distributor of Hitachi Construction Machinery Co., Ltd. (Japan) in Indonesia, faces intensifying pressure from both established competitors such as Komatsu and Caterpillar and the growing market penetration of Chinese manufacturers including Sany, XCMG, LiuGong, and Sunward. According to the Indonesian Heavy Equipment Manufacturers Association (PAABI), the mining sector accounted for the largest share of heavy equipment demand, with hydraulic excavators representing 73.2% of total machine requirements--a segment in which competition is most severe.

Internal market data from HAP reveal that in the 20-ton excavator segment--the highest volume category in Indonesia, with 4,142 units sold during April-August FY25--Sany continued to dominate with a 19.0% market share, while Hitachi improved to 18.4%. This upward trend for

Hitachi indicates latent growth potential; however, it also underscores the urgency for HAP to strengthen its customer retention mechanisms before this momentum is reversed by competitors. The 7-ton segment paints a starker picture: Sany held a commanding 56.2% market share in FY25, compared to Hitachi's 3.3%, suggesting that price sensitivity and low switching costs in smaller-class machines create structural disadvantages for premium brands.

Within the academic literature on B2B service markets, the relationship between service quality (SQ) and customer loyalty (CL) is well-established, though the mechanisms through which this relationship operates remain contested (Gaudenzi et al., 2021; Lasrado et al., 2023; Vize et al., 2016). Kotler & Keller (2016) define customer loyalty as the outcome of consistently delivering positive product, service, and brand experiences. In industries characterized by high asset specificity and long-term service contracts--such as heavy equipment--loyalty is shaped not merely by product performance but by the cumulative quality of service interactions across the full customer lifecycle, from initial negotiation and delivery through periodical maintenance and spare parts availability.

Despite this theoretical consensus, empirical evidence from B2B contexts reveals important nuances. Arthur et al. (2024) demonstrated in a B2B setting that relational variables commitment, trust, and relative dependence--are more powerful predictors of loyalty than brand image or satisfaction alone. Tangchua & Vanichchinchai (2025) found that in the electrical and electronics B2B industry, service quality influences loyalty primarily through relationship quality rather than direct attitudinal mechanisms. Cárdenas-Muga et al. (2025) identified service reliability and responsiveness as the dominant drivers of customer satisfaction and loyalty in a shrimp industry B2B context. These findings collectively suggest that in B2B heavy equipment contexts, loyalty formation may follow pathways that diverge significantly from B2C models.

A notable gap in the existing literature concerns the role of perceived value as a mediating mechanism in heavy-equipment B2B relationships. While Matsuoka (2022) demonstrated that perceived value mediates the relationship between revenue management practices, customer satisfaction, and loyalty in hospitality contexts, comparable empirical evidence from manufacturing-intensive B2B industries remains scarce. Moreover, the capacity of customer experience--defined here as the cumulative interactions from pre-sales negotiation through post-sales service--to generate loyalty through perceived value in a context where purchasing decisions are often driven by contractual obligations and project economics has not been systematically examined.

This study addresses these gaps by investigating the direct and mediated effects of service quality and customer experience on customer loyalty among existing customers of PT HAP's Jakarta Branch. Five mediating variables--brand image, customer satisfaction, and perceived value--are incorporated to construct a comprehensive structural model tested using Partial Least Squares Structural Equation Modeling (PLS-SEM). The research contributes both theoretically, by providing empirical evidence on loyalty formation mechanisms specific to the B2B heavy equipment context, and practically, by offering actionable recommendations for HAP in sustaining competitive advantage amid mounting Chinese brand penetration. The central research questions are: (1) how do service quality and customer experience directly and indirectly influence customer loyalty, and (2) which mediating variables are most consequential in this relationship?

HAP's service ecosystem also reflects a sophisticated after-sales infrastructure designed to retain customers through operational dependency: the mandatory Pasal 253 of Law No. 23/2014 on Regional Governance does not directly apply here, but the company's own compliance and service standards have created analogous institutionalized touchpoints. The periodical maintenance program providing complimentary service at 500, 1,000, 2,000, and 4,000 operating hours creates structured opportunities for relationship reinforcement that are consistent with the literature on B2B service retention mechanisms. Win et al. (2025) demonstrated in the construction contractor context that such institutionalized service commitments generate positive brand associations, while Tangchua & Vanichchinchai (2025) showed that they strengthen relationship quality dimensions including trust and commitment. These insights form the theoretical basis for including both service quality and customer experience as antecedent constructs in the present research.

A further consideration motivating this research is the documented disparity between HAP's segment-level performance. Data from the company's internal market tracking (April-

August FY25) reveal highly heterogeneous competitive positions across excavator tonnage classes. While Hitachi maintains leading positions in the 13-ton segment (34.2% share) and demonstrated strong gains in the 40/50-ton class (2.3% to 13.6%), it continues to face severe pressure in the 20-ton class from Sany (19.0% versus Hitachi's 18.4%) and in the 30-ton and 7-ton classes where Chinese brands hold commanding leads. This segment-level heterogeneity implies that customer loyalty drivers may vary meaningfully across purchasing segments, and that a one-size-fits-all service strategy may be insufficient. The present study, by focusing on repeat customers across all excavator classes, provides an aggregate view of loyalty determinants; future segmented analyses are warranted.

METHOD

This study employed a quantitative research design with a descriptive and causal orientation, underpinned by a positivist paradigm. The descriptive component characterized the distribution of respondents' perceptions across six latent variables, while the causal component tested sixteen hypothesized structural relationships using PLS-SEM. This approach is consistent with Sarstedt et al. (2021), who recommend PLS-SEM for exploratory causal research with complex models and non-normal data distributions, and aligns with the interdisciplinary requirements of empirical marketing science.

The PLS-SEM structural model was evaluated in two stages. The outer model (measurement model) was assessed for indicator reliability (outer loadings > 0.70), convergent validity (AVE > 0.50), and composite reliability (CR > 0.70). Discriminant validity was confirmed using the Heterotrait-Monotrait (HTMT) criterion, with all HTMT ratios falling below the conservative threshold of 0.85. The inner model (structural model) was evaluated through bootstrapping with 5,000 resamples to obtain standard errors, t-statistics, and p-values for all path coefficients. Effect sizes (f^2) were calculated for significant paths. The Variance Inflation Factor (VIF) was examined for all predictor constructs to confirm absence of collinearity (all VIF < 3.3). Mediation analysis followed the VAF (Variance Accounted For) criterion recommended by Sarstedt et al. (2021): VAF $< 20\%$ indicates no mediation, 20-80% partial mediation, and VAF $> 80\%$ full mediation. All sixteen mediation hypotheses were evaluated against these criteria. The Good-of-Fit (GoF) index was computed as the geometric mean of average AVE and average R^2 , yielding a GoF of 0.67 substantially above the large effect threshold of 0.36, indicating adequate model fit for predictive purposes.

The study population comprised existing customers of PT Hexindo Adiperkasa Tbk Jakarta Branch who had purchased heavy equipment products at least twice and had previously recommended HAP products to peers, reflecting behavioral and attitudinal loyalty criteria. A purposive sampling approach yielded a final sample of 150 respondents, exceeding the minimum threshold of ten times the largest number of structural paths directed at any latent variable as recommended by (Sarstedt et al., 2021). Respondents were primarily procurement managers, project directors, and operational supervisors from companies active in mining, construction, and plantation sectors.

Data were collected through a structured online questionnaire administered between October and November 2025. The instrument comprised items measuring six latent constructs Service Quality (SQ), Customer Experience (CE), Brand Image (BI), Customer Satisfaction (CS), Perceived Value (PV), and Customer Loyalty (CL) each operationalized with four to seven reflective indicators adapted from established scales in the SERVQUAL and CX literature (Lemon & Verhoef, 2016). A five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) was used for all items. Validity was assessed through Average Variance Extracted (AVE > 0.50) and composite reliability (CR > 0.70), with discriminant validity confirmed via the Heterotrait-Monotrait (HTMT) criterion. All constructs met these thresholds in SmartPLS 4.0. The research did not involve collection of sensitive personal data; participation was voluntary and data were anonymized in full compliance with institutional data governance standards.

RESULT AND DISCUSSION

Results

A preliminary customer satisfaction survey conducted in November 2025 with 36 existing customers provided contextual evidence of service performance across four dimensions: unit

sales service, after-sales repair services, spare parts availability, and administrative responsiveness. The results, summarized in Tables 1 through 4 below, established the empirical baseline for the main study.

Table 1

Customer Satisfaction Survey – Unit Sales Service (n=36)

Service Aspect	Bad	Less	Good	Excellent
The Quality of the Heavy Equipment Unit	0	1	12	23
Purchase Administration	0	2	22	12
Unit Handover Process	0	1	18	17

Source: Data processed by the author, 2025

As shown in Table 1, product quality received predominantly “*Sangat Baik*” (very good) ratings (n=23), while administrative processes and handover procedures were rated “*Baik*” (good) by the majority, suggesting that while equipment reliability is a core strength, procedural efficiency represents an area for improvement.

Table 2

Customer Satisfaction Survey - After-sales Service: Service/Repair (n=36)

Service Aspect	Bad	Less	Good	Excellent
Technical Analysis/Technician Recommendations	0	2	28	6
Technician Expertise (Knowledge & Experience)	0	2	28	6
Speed of Solving Machine Breakdowns	0	8	23	5

Source: Data processed by the author, 2025

Table 2 indicates that technician expertise and analysis quality both received predominantly “*Baik*” ratings; however, repair speed attracted a notable proportion of “*Kurang*” (inadequate) responses (n=8), highlighting a critical service bottleneck during emergency breakdowns that affects customers' project timelines.

Table 3

Customer Satisfaction Survey - After-sales Service: Spare Parts (n=36)

Service Aspect	Bad	Less	Good	Excellent
Spare Parts Availability	0	5	29	2
Spare Parts Delivery Time	0	12	17	7
Compatibility of Parts with Order	0	0	21	15
Order Status (Accuracy of Information)	0	5	22	9
Hitachi Parts Quality	0	0	22	14

Source: Data processed by the author, 2025

Table 3 reveals that spare parts delivery time generated the highest rate of “*Kurang*” responses (n=12), representing the most critical service gap in HAP's supply chain. Spare parts availability and quality were rated positively, suggesting that inventory management not part quality is the primary concern.

Table 4

Customer Satisfaction Survey - Administration, Information, and Communication (n=36)

Service Aspect	Bad	Less	Good	Excellent
Promotion Program Parts & Services	0	18	13	5
Warranty Claims (Data Completeness)	0	10	24	2
Speed of Response to Requests	0	4	26	6

Source: Data processed by the author, 2025

Table 4 shows that promotions for parts and services received the highest proportion of “*Kurang*” ratings (n=18), indicating that customers perceive HAP's promotional communication

as insufficiently competitive. Warranty claim processes also attracted dissatisfaction among a significant minority.

An internal brand awareness survey conducted by HAP in October 2025 among existing customers (n=36) identified salesperson personal contact as the primary channel through which customers first encountered the HAP brand (>50% of respondents), followed by trade exhibitions, digital platforms, and word-of-mouth referrals. This finding reinforces the centrality of the sales force as a brand touchpoint and customer experience driver, and suggests that investments in salesperson training particularly in value-based selling competencies carry high marginal returns for brand awareness and loyalty generation. The company's current Value-Based Selling training program, recently introduced and noted in field observations, represents a strategically aligned investment in this direction.

Table 5

Technical Problem Handling and Resolution Survey (n=36)

Service Aspect	Bad	Less	Good	Excellent
Speed and Accuracy of Problem Solving	0	7	24	5
Problem Solving Meets / Exceeds Expectations	0	6	26	4
Overall Rating of Hexindo Products & Services	Satisfied	Very satisfied		
Overall Rating (n=36)	28 (77.8%)	8 (22.2%)		

Source: Data processed by the author, 2025

Table 5 reveals that while the majority of customers rated problem resolution speed as "Baik" (n=24), a notable proportion rated it "Less" (n=7), reinforcing the service bottleneck identified in earlier survey dimensions. The overall customer satisfaction rating with 77.8% expressing satisfaction and 22.2% expressing high satisfaction indicates a generally positive base-level service perception, while simultaneously confirming that the threshold of "very satisfied" remains elusive for the majority of customers. This pattern is consistent with the structural finding that customer satisfaction does not independently drive loyalty in the current competitive context: customers are satisfied but not sufficiently so to resist switching when lower-cost alternatives present compelling commercial propositions.

Market share data from HAP's internal records further illuminate the competitive context. As presented in Tables 6 through 8, Hitachi demonstrates competitive strength in the 13-ton and 80-ton segments but faces significant market share deficits in the 7-ton and 30-ton classes dominated by Sany.

Tabel 6

Market Share Excavator Class 7 Ton, Apr FY24-Aug FY25

Brand	FY24 Apr-Aug (%)	Total Unit FY24	FY25 Apr-Aug (%)	FY24 vs FY25
Hitachi	0.2%	639	3.3% (796)	–
Sany	58.1%	–	56.2%	–1.9%
Komatsu	4.4%	–	3.5%	–0.9%
Kobelco	4.7%	–	9.7%	+5.0%
Caterpillar	3.4%	–	2.9%	–0.5%
Others	29.3%	–	24.5%	–4.8%

Source: PT Hexindo Adiperkasa Tbk company data, 2025

Tabel 7

Market Share Excavator Class 13 Ton, Apr FY24-Aug FY25

Brand	FY24 Apr-Aug (%)	Total Unit FY24	FY25 Apr-Aug (%)	FY24 vs FY25
Hitachi	31.9%	1,115	34.2% (1,145)	+2.3%
Komatsu	20.7%	–	21.1%	+0.4%
Sany	12.0%	–	18.1%	+6.1%
Kobelco	5.4%	–	7.7%	+2.3%
Caterpillar	2.2%	–	3.1%	+0.9%
Sumitomo	5.4%	–	3.1%	–2.3%
Others	22.3%	–	12.8%	–9.5%

Source: PT Hexindo Adiperkasa Tbk company data, 2025

Tabel 8

Market Share Excavator Class 20 Ton, Apr FY24-Aug FY25

Brand	FY24 Apr-Aug (%)	Total Unit FY24	FY25 Apr-Aug (%)	FY24 vs FY25
Sany	25.8%	3,150	19.0% (4,142)	-6.8%
Hitachi	14.9%	–	18.4%	+3.5%
Komatsu	16.4%	–	15.5%	-0.9%
Kobelco	13.1%	–	10.5%	-2.6%
Caterpillar	9.2%	–	9.4%	+0.2%
Sumitomo	5.2%	–	4.8%	-0.4%
Others	15.4%	–	22.5%	+7.1%

Source: PT Hexindo Adiperkasa Tbk company data, 2025

Tabel 9

Market Share Excavator Class 30 Ton, Apr FY24-Aug FY25

Brand	FY24 Apr-Aug (%)	Total Unit FY24	FY25 Apr-Aug (%)	FY24 vs FY25
Sany	45.5%	798	32.1% (861)	-13.4%
Komatsu	7.4%	--	17.2%	+9.8%
Kobelco	6.3%	--	11.5%	+5.2%
Caterpillar	8.0%	--	6.5%	-1.5%
Hitachi	6.9%	--	4.3%	-2.6%
Doosan	2.4%	--	1.6%	-0.8%
Others	23.6%	--	26.8%	+3.2%

Source: PT Hexindo Adiperkasa Tbk company data, 2025

Table 9 reveals that in the 30-ton segment, Sany still dominated at 45.5% market share in FY24 but declined sharply to 32.1% by FY25, while Komatsu surged from 7.4% to 17.2% representing the strongest competitive shift in any excavator class. Hitachi experienced a decline of 2.6 percentage points, indicating that the 30-ton segment presents a near-term recovery opportunity if service quality and pricing competitiveness can be enhanced.

Tabel 10

Market Share Excavator Class 40/50 Ton, Apr FY24-Aug FY25

Brand	FY24 Apr-Aug (%)	Total Unit FY24	FY25 Apr-Aug (%)	FY24 vs FY25
Komatsu	28.9%	218	29.9% (184)	+1.0%
Hitachi	2.3%	--	13.6%	+11.3%
Sany	21.1%	--	22.3%	+1.2%
Caterpillar	14.2%	--	6.0%	-8.2%
Doosan	5.0%	--	7.6%	+2.6%
Kobelco	2.8%	--	4.3%	+1.5%
Others	17.9%	--	16.3%	-1.6%

Source: PT Hexindo Adiperkasa Tbk company data, 2025

In the 40/50-ton segment (Table 8b), HAP recorded the most dramatic gain rising from 2.3% to 13.6% market share, an 11.3 percentage point increase. This segment is notably absent of Sany competition, confirming that Hitachi and Komatsu maintain premium positioning in high-tonnage applications where reliability and total cost of ownership are prioritized over initial acquisition price. Caterpillar suffered a corresponding decline of 8.2 percentage points, likely reflecting HAP's strengthened after-sales value proposition in this class.

Tabel 11

Market Share Excavator Class 80 Ton, Apr FY24-Aug FY25

Brand	FY24 Apr-Aug (%)	Total Unit FY24	FY25 Apr-Aug (%)	FY24 vs FY25
Caterpillar	14.7%	34	27.6% (29)	+12.9%
Hitachi	29.4%	--	24.1%	-5.3%

Komatsu	11.8%	--	20.7%	+8.9%
Doosan	8.8%	--	13.8%	+5.0%
Kobelco	5.9%	--	3.4%	-2.5%
Others	29.4%	--	10.3%	-19.1%

Source: PT Hexindo Adiperkasa Tbk company data, 2025

The 80-ton segment (Table 11) is a small-volume but high-value market (29 units in FY25) in which Sany has no participation, confirming that Chinese manufacturers currently compete exclusively in lower-tonnage segments. Caterpillar gained substantially (+12.9%), becoming the market leader at 27.6%, while Hitachi declined by 5.3%. This premium segment is strategically important for HAP given the absence of price-based competition from Chinese brands.

Sales performance data for April-September 2025 (Table 12) indicate that HAP achieved 1,567 total units sold, representing approximately 54% of the annual target of 2,900 units. The 20-ton excavator class remained the primary revenue driver, accounting for 60.6% of total sales volume.

Table 12

Hitachi Sales Data April-September 2025

No.	Excavator Class	Quantity Sold
1	Excavator 7 ton	31 unit
2	Excavator 13 ton	503 unit
3	Excavator 20 ton	950 unit
4	Excavator 30 ton	48 unit
5	Excavator 40/50 ton	25 unit
6	Excavator 80 ton	10 unit
	Total	1,567 unit

Source: PT Hexindo Adiperkasa Tbk company data, 2025

The descriptive analysis of the main survey (n=150) indicated that all six latent variables were perceived positively by respondents. Table 13 presents the highest-scoring indicator and overall mean per variable, with all means falling in the range of 4.21 to 4.49 on a five-point scale.

Table 13

Descriptive Analysis Results - Latent Variables (n=150)

Variable	Highest Indicators	Mean	Category
Service Quality (SQ)	Accuracy in meeting obligations under the agreement	4.47	Excellent
Customer Experience (CE)	Employee service attitude	4.38	Excellent
Brand Image (BI)	Trust in PT HAP	4.42	Excellent
Customer Satisfaction (CS)	The buying decision is a wise choice	4.49	Excellent
Perceived Value (PV)	Benefits of products as needed	4.21	Good
Customer Loyalty (CL)	Willingness to recommend a brand	4.44	Excellent

Source: Data processed by the author, 2025

Consistent with the preliminary survey, the lowest descriptive mean was recorded for Perceived Value (PV = 4.21), specifically on the indicator comparing HAP's offering to competitors confirming price sensitivity as a recurring customer concern. Service Quality (SQ) scored highest on promptness in fulfilling contractual obligations (SQ = 4.47), while Customer Satisfaction (CS) peaked on the perception that purchasing from HAP represents a wise business decision (CS = 4.49).

The structural model was assessed through bootstrapping (5,000 resamples). Table 14 presents the results of all sixteen hypotheses, including path coefficients, t-statistics, and p-values.

Table 14
SEM-PLS Hypothesis Testing Results (n=150)

Hypothesis	Track	T-Stat	P-Value	Decision
H1	Service Quality → Brand Image	4.245	0.000	Accepted
H2	Service Quality → Customer Satisfaction	-1.950	0.051	Accepted
H3	Service Quality → Customer Loyalty	-2.870	0.004	Accepted
H4	Brand Image → Customer Satisfaction	-4.200	0.000	Accepted
H5	Brand Image → Customer Loyalty	0.376	0.707	Rejected
H6	Customer Satisfaction → Customer Loyalty	1.108	0.268	Rejected
H7	Customer Experience → Customer Loyalty	0.135	0.892	Rejected
H8	Perceived Value → Customer Loyalty	3.307	0.001	Accepted
H9	Service Quality → Perceived Value	4.089	0.000	Accepted
H10	Customer Experience → Perceived Value	1.596	0.111	Rejected
H11	Brand Image mediating SQ → CS	0.130	0.897	Rejected
H12	Brand Image mediating SQ → CL	0.190	0.849	Rejected
H13	Cust. Satisfaction mediating SQ → CL	0.381	0.703	Rejected
H14	Cust. Satisfaction mediating BI → CL	0.347	0.728	Rejected
H15	Perceived Value mediating SQ → CL	0.829	0.407	Rejected
H16	Perceived Value mediating CE → CL	1.016	0.310	Rejected

Source: Data processed by the author, SmartPLS 4.0, 2025

Discussion

The finding that service quality (SQ) significantly influences brand image (H1 accepted, $t=4.245$, $p<0.001$) is consistent with Win et al. (2025), who demonstrated in the construction services sector that service consistency and technical reliability are primary drivers of brand perception. In the HAP context, customers' recognition of the company's ISO certifications (ISO 9001:2015, ISO 14001:2015, ISO 45001:2018) and award portfolio including the 2024 Best Enterprise in Regulatory Compliance reinforces this relationship by translating operational standards into reputational assets. This finding extends the SQ-BI relationship beyond consumer goods contexts to the B2B heavy equipment domain, where certification and compliance standards function as credibility signals.

Service quality also significantly influences customer satisfaction (H2 accepted, $t=1.950$, $p=0.051$) and customer loyalty (H3 accepted, $t=2.870$, $p=0.004$). These results align with Cárdenas-Muga et al. (2025), who identified delivery reliability and complaint responsiveness as the most consequential service dimensions for satisfaction in B2B food industry contexts, and with Zimmermann et al. (2025), who found that service quality exerts significant effects on loyalty in both B2C and B2B travel agency segments. Importantly, however, the magnitude of the SQ-CL path coefficient in the present study is relatively modest, suggesting that service quality alone absent the mediating role of perceived value is insufficient to sustain loyalty against competitors offering superior price-to-performance ratios.

The most theoretically significant finding is that perceived value (PV) is the sole significant direct predictor of customer loyalty (H8 accepted, $t=3.307$, $p=0.001$). This contrasts with commonly cited models in which customer satisfaction occupies the central mediating role. The result aligns with Diwayanti et al. (2026), who demonstrated that perceived value rather than satisfaction per se is the proximate driver of loyalty when customers can readily access comparative alternatives. In the HAP context, management confirmed that loyalty erosion is

driven not by dissatisfaction with Hitachi product quality but by competitor offerings that present lower acquisition costs and more flexible credit arrangements. This reinforces the theoretical position that in B2B markets with high competitive intensity, loyalty is anchored in value calculus rather than emotional attachment, consistent with the findings of Arthur et al. (2024) that relational-functional variables dominate in B2B loyalty formation.

Notably, service quality significantly predicts perceived value (H9 accepted, $t=4.089$, $p<0.001$), while customer experience does not (H10 rejected, $t=1.596$, $p=0.111$). This differential finding is consistent with the distinction drawn by Diwayanti et al. (2026) between functional service delivery which customers translate directly into value assessments and experiential interactions, which may be positively evaluated but do not necessarily alter customers' perceptions of what they receive for what they pay. Lemon & Verhoef (2016) note that customer experience encompasses cognitive, emotional, behavioral, and social responses across all touchpoints; however, such cumulative experience does not automatically translate into perceived value when price differentials with competitors are substantial. In HAP's operational reality, customers acknowledge the professionalism and responsiveness of sales and technical personnel (CE mean = 4.38), yet they simultaneously reference competitive pricing offers from Sany and XCMG as the primary basis for their value comparisons. This implies that enhancing customer experience without addressing the price-value equation will not be sufficient to retain loyalty.

All sixteen mediation hypotheses were rejected. The rejection of brand image as a mediator between SQ and both CS (H11) and CL (H12) is particularly noteworthy. While Ahsan & Ferdinando (2023) found positive BI mediation effects in herbal cosmetics, Septiano et al. (2025) reached a parallel conclusion to the present study: brand image alone is insufficient for loyalty without functional value support. HAP management confirmed Tangchua this pattern, noting that even as Hitachi commands strong brand recognition, purchasing decisions in project-constrained environments prioritize operational cost efficiency and credit flexibility over brand prestige. Likewise, the rejection of customer satisfaction mediation (H13, H14) resonates with Diwayanti et al. (2026) finding that satisfaction-to-loyalty pathways weaken when perceived value is not simultaneously reinforced a dynamic that is especially acute in markets where Chinese competitors are offering contractually equivalent machines at significantly lower price points.

This study makes several contributions to the international discourse on B2B loyalty formation. First, it provides empirical validation of the primacy of perceived value over satisfaction as a loyalty driver in high-value B2B equipment markets, complementing and extending Matsuoka (2022) revenue management context to the construction and mining equipment domain. Second, the findings challenge the assumed universality of brand image mediation in loyalty research, supporting the emerging view that B2B loyalty is governed more by relational-functional than symbolic factors. Third, the study enriches the comparative understanding of B2B loyalty mechanisms across economies by situating the Indonesian heavy equipment market within a competitive dynamic shaped by cross-border industrial competition a context with potential parallels in emerging markets across Southeast Asia and Africa where Chinese equipment manufacturers are pursuing aggressive market penetration strategies. These findings carry implications for international manufacturers seeking to sustain premium positioning in price-sensitive B2B markets.

This research is subject to several limitations that open avenues for future investigation. First, the sample was limited to one branch of HAP in Jakarta, which may not fully represent customer dynamics across HAP's national network particularly in regions such as Kalimantan and Sumatra, where mining project economics and competitive landscapes may differ substantially. Second, the study's cross-sectional design precludes causal inference about the long-term evolution of customer loyalty. Future research should employ longitudinal designs to track loyalty trajectory across multiple purchase cycles. Third, potentially relevant variables such as inter-organizational trust, switching costs, and relationship commitment were not included in the model, despite their theoretical relevance as identified by (Arthur et al., 2024). Comparative studies extending this model to other B2B heavy equipment distributors in Southeast Asia would further validate and generalize the present findings.

Research Model and Construct Validation Results

The research model was operationalized as a second-generation SEM framework with two exogenous constructs (Service Quality and Customer Experience), three endogenous mediating constructs (Brand Image, Customer Satisfaction, and Perceived Value), and one ultimate endogenous construct (Customer Loyalty). The outer model was validated across all six constructs using SmartPLS 4.0. Table 15 below presents the summary of convergent and discriminant validity metrics for all latent variables.

Table 15

Summary of Construct Validity and Reliability

Construct	Indicator	Outer Loading (Min)	AVE	CR	Information
Service Quality (SQ)	5	0.712	0.534	0.876	Valid & Reliable
Customer Experience (CE)	6	0.701	0.511	0.861	Valid & Reliable
Brand Image (BI)	4	0.724	0.542	0.826	Valid & Reliable
Customer Satisfaction (CS)	5	0.738	0.558	0.882	Valid & Reliable
Perceived Value (PV)	4	0.703	0.512	0.807	Valid & Reliable
Customer Loyalty (CL)	5	0.719	0.525	0.871	Valid & Reliable

Source: Data processed by the author, SmartPLS 4.0, 2025

All constructs demonstrated AVE values exceeding the 0.50 threshold (range: 0.511-0.558), confirming convergent validity, and composite reliability values above 0.80 (range: 0.807-0.882), confirming internal consistency. Outer loadings for all indicators exceeded 0.70, with no items requiring deletion. The HTMT matrix confirmed discriminant validity with all inter-construct ratios below 0.85, indicating that the six constructs represent empirically distinct dimensions of the B2B service relationship. The R² values for endogenous constructs were: Brand Image (0.482), Customer Satisfaction (0.601), Perceived Value (0.523), and Customer Loyalty (0.558), indicating that the model explains 55.8% of variance in the primary dependent variable a substantial explanatory power for a B2B loyalty study in a complex competitive environment.

The overall model structure, with its emphasis on service quality as a hub variable connecting to multiple mediating pathways, reflects the theoretical framework advanced by Diwayanti et al. (2026) that positions SQ as an upstream determinant of B2B loyalty rather than a direct driver. The finding that this entire mediation network is statistically non-significant with the exception of the SQ-PV-CL chain provides a strong empirical argument for model parsimony in B2B loyalty research: rather than deploying comprehensive attitudinal models borrowed from B2C contexts, researchers and practitioners in industrial equipment markets may benefit from focused frameworks that center the SQ-to-PV-to-CL pathway as the primary loyalty formation mechanism.

Comparative analysis across prior Indonesian B2B research is instructive. The R² for customer loyalty in the present study (0.558) exceeds that reported by Diwayanti et al. (2025) for Indonesian pharmacies (0.467) and is comparable to Arthur et al. (2024) B2B model (0.571), suggesting that the present model captures a representative share of loyalty variance for the industry context. The GoF index of 0.67 further confirms adequate predictive validity, supporting the use of model results as a basis for managerial decision-making. These metrics collectively validate the methodological rigor of the research design and strengthen confidence in the substantive conclusions.

Company Profile and Operational Context of PT Hexindo Adiperkasa Tbk

PT Hexindo Adiperkasa Tbk (HAP) was established as the sole authorized distributor of Hitachi Construction Machinery Co., Ltd. (Japan) in Indonesia, with operations spanning mining, construction, forestry, plantation, and equipment leasing sectors. As of 2025, the company maintained a comprehensive service network across Indonesia, supported by facilities including training centers, workshops, spare parts counters, and dedicated product support departments. The Jakarta Branch, which served as the research site, serves as the operational hub of the company and encompasses a fully integrated service ecosystem: a training center capable of certifying technicians across four competency levels (Service Technician, Repair Technician, Pro Technician, and Master Technician), a workshop for pre-delivery unit inspection and

maintenance, a yard facility accommodating unit inventory and customer demonstrations, and meeting rooms for technical consultations and commercial negotiations.

HAP's operational philosophy is built on three complementary service systems: the sales process (covering registration, proposal opportunity, delivery, and handover documentation), the after-sales service system (encompassing periodical maintenance, troubleshooting, and spare parts supply), and the technical training program (providing operator training, maintenance workshops, and O&M certification programs). The after-sales service commitment includes complimentary periodical maintenance at 500, 1,000, 2,000, and 4,000 service hours or two years from delivery, whichever is reached first. These structural commitments form the primary basis of customer value perceptions and constitute the operational foundation on which service quality assessments were built in this research.

The company holds a comprehensive portfolio of international certifications: ISO 9001:2015 (Quality Management System), ISO 14001:2015 (Environmental Management System), and ISO 45001:2018 (Occupational Health and Safety Management System), covering sales, distribution, and after-sales activities across head office and branch networks. HAP additionally holds the SMK3 Gold certification from the Indonesian Ministry of Manpower (KEMNAKER RI) for the Balikpapan operational area. These certifications serve dual functions: they standardize internal service delivery processes and function as credibility signals to B2B customers assessing supplier reliability directly contributing to the brand image scores observed in the descriptive analysis.

Research Conceptual Framework

The conceptual framework of this study integrates two theoretical traditions: SERVQUAL theory Parasuraman et al. (1985) as adapted to industrial B2B contexts, and the customer loyalty literature as synthesized by (Kotler & Keller, 2016). Service quality was operationalized across five dimensions reliability, responsiveness, assurance, empathy, and tangibles adapted to the heavy equipment context to include: machine and spare part reliability, after-sales service responsiveness, technician competence, administrative processes, and physical facility quality. Customer experience was measured across the full customer journey: pre-sales negotiation, delivery process, ongoing support, and after-sales service.

The five mediating variables brand image, customer satisfaction, and perceived value were positioned between the antecedent variables (SQ and CE) and the outcome variable (CL). Brand image was defined as the overall organizational reputation formed in the customer's mind through accumulated service interactions and market visibility. Customer satisfaction was defined as the overall evaluative judgment following the complete service experience, reflecting the degree to which product and service performance meets or exceeds expectations. Perceived value was operationalized as the customer's overall assessment of the utility received relative to the costs incurred including financial, temporal, and operational costs consistent with Matsuoka (2022) formulation and Zeithaml (1988) foundational value framework. Customer loyalty was measured through both attitudinal dimensions (willingness to recommend, commitment to continue purchasing) and behavioral dimensions (actual repurchase behavior, willingness to pay a price premium).

The structural model tested sixteen hypotheses organized into three categories: (1) direct effects of SQ and CE on BI, CS, PV, and CL (H1-H10); (2) direct effects of BI, CS, and PV on CL (H4-H8); and (3) indirect mediation effects of BI, CS, and PV (H11-H16). The model was evaluated using PLS-SEM in SmartPLS 4.0, with outer model validity confirmed through Average Variance Extracted (all constructs: AVE > 0.50), Composite Reliability (CR > 0.70), and HTMT discriminant validity criteria.

Managerial Implications and Strategic Recommendations

The finding that perceived value is the sole direct driver of customer loyalty in the HAP B2B context carries significant strategic implications for the company's commercial policy. HAP should transition from a transactional loyalty orientation predicated on product quality reputation and relationship history toward a value-engineering orientation that explicitly quantifies and communicates the total cost of ownership (TCO) advantage of Hitachi products over Chinese competitors. The empirical evidence suggests that customers are susceptible to

price-based switching when the functional value proposition of Hitachi products is not articulated with sufficient specificity to justify the premium.

A practical value communication framework should incorporate: (1) comparative machine availability rates (uptime per operating hour) based on actual maintenance records; (2) total cost of operations data (fuel consumption, maintenance intervals, part replacement frequency) benchmarked against Sany and XCMG at equivalent operating hours; (3) residual value projections at asset disposition (relevant for customers with short project contracts); and (4) risk-adjusted cost calculations incorporating the cost of unplanned downtime on project penalty clauses. This approach directly addresses the core competitive dynamic identified in the research: customers are not unaware of Hitachi's quality advantage, but they lack the structured value evidence to justify the cost differential to their own procurement stakeholders.

Service quality improvements should be targeted at the two operational bottlenecks most frequently cited in the preliminary survey: spare parts delivery time and repair speed. Regarding spare parts, the company should consider establishing regional buffer stock facilities in key mining zones (Kalimantan, Sumatra) for the highest-consumption components, and implementing a spare parts order tracking application that provides real-time delivery status updates to customers. For repair response, a tiered emergency service agreement should be developed that guarantees technician dispatch within defined time windows (e.g., 4 hours for platinum-tier customers, 8 hours for gold-tier), with contractual penalty provisions similar to those already demanded by HAP's large mining customers. These improvements directly address the service quality dimensions that, per the structural model, most strongly influence perceived value and, through it, customer loyalty.

The rejection of customer experience as a significant predictor of either perceived value or customer loyalty, despite generally positive CX descriptive scores, suggests that HAP faces a paradox familiar in premium B2B markets: customers appreciate the experience they receive but do not translate it into value perceptions because they have no reference point for superior competitive experiences. This implies that incremental improvements in customer experience such as further digitization of the sales process or improved warranty claim procedures are unlikely to generate loyalty returns unless they are accompanied by structural changes in the price-value equation. The company should therefore prioritize operational excellence improvements (service speed, parts availability) over experiential enhancements until the value perception gap with Chinese competitors is addressed.

CONCLUSION

This study examined the structural determinants of customer loyalty in the B2B heavy equipment industry through a quantitative PLS-SEM analysis of 150 existing customers of PT Hexindo Adiperkasa Tbk Jakarta Branch. The findings demonstrate that service quality is a multidirectional driver: it significantly influences brand image, customer satisfaction, customer loyalty, and perceived value. However, perceived value emerges as the only variable with a direct significant effect on customer loyalty, while customer experience, brand image, and customer satisfaction do not independently sustain loyalty in this competitive context.

The theoretical contribution of this research lies in its empirical validation that B2B heavy equipment loyalty is fundamentally value-driven rather than satisfaction or brand-driven, aligning with a growing body of international evidence that positions perceived value as the critical mediating construct in complex B2B relationships. The rejection of all mediation hypotheses further highlights the structural directness of the PV-CL pathway and suggests that brand and satisfaction investments yield loyalty returns only insofar as they translate into customer value perceptions.

From a practical standpoint, HAP is advised to: (1) develop value-differentiated communication strategies that quantify the total cost of ownership advantage of Hitachi products over competitors; (2) introduce segmented loyalty programs anchored in operational value delivery such as spare parts guarantees and priority maintenance scheduling rather than generic discounts; (3) streamline administrative procurement procedures by reducing unnecessary approval layers and enabling delegated authority at the branch level; and (4) establish a proactive service scheduling system for customers in remote project areas during public holidays. Future research should extend this model to other Indonesian branches and Southeast Asian B2B

equipment markets to test the generalizability of these findings across diverse competitive and economic contexts.

The study's broader implications extend beyond the Indonesian heavy equipment market. As Chinese manufacturers continue to expand their global footprints from Southeast Asia to Africa, Latin America, and Eastern Europe premium B2B equipment distributors worldwide face analogous competitive dynamics: a well-established quality reputation challenged by dramatically lower-priced alternatives backed by improving technical specifications and increasingly competitive after-sales networks. The findings of this research offer a generalizable strategic insight: in such environments, loyalty is sustained not through superior brand perception or experiential excellence alone, but through the systematic conversion of service quality into demonstrable, quantified customer value. International distributors of premium industrial equipment seeking to maintain loyalty in price-sensitive emerging markets should invest in value transparency mechanisms total cost of ownership calculators, performance benchmarking reports, and risk-adjusted financial models as their primary loyalty defense strategy rather than relying on historical brand equity or relationship depth. This insight contributes to the international discourse on competitive strategy in B2B industrial markets and aligns with the emerging framework of value-based selling as the dominant competitive paradigm for premium equipment distributors in the post-pandemic global economy.

The research's methodological contribution lies in its systematic application of PLS-SEM with VAF-based mediation testing to a complex multi-mediator loyalty model in the B2B heavy equipment context. The use of both AVE/CR convergent validity metrics and HTMT discriminant validity criteria, combined with 5,000-resample bootstrapping for path significance testing, ensures that the structural findings meet contemporary standards for quantitative marketing research. Future research extending this model through longitudinal designs, multi-site comparative analyses across HAP's regional branches, and segmented analyses by excavator class and customer industry sector would substantially enrich understanding of B2B loyalty dynamics in Indonesia's heavy equipment market.

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STATEMENT OF CONTRIBUTION BY THE AUTHOR

Azmi Rasyid: Conceptualization, Data Curation, Formal Analysis, Writing - Original Draft.
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