The Role of Customer Satisfaction In Mediating The Effect of Service Performance and Perceived Value On Customer Loyalty: Evidence From A B2B Outsourced Cleaning Service In A Pharmaceutical Manufacturing Setting

Yudy Afrizal Satiaputra[1*], V. Santi Paramita[2]

[1]Master of Management Program, Faculty of Economics and Business, Universitas Jenderal Achmad Yani, Cimahi, Indonesia
[2]Faculty of Economics and Business, Universitas Jenderal Achmad Yani, Cimahi, Indonesia
[*]Corresponding Author:
Email: yudystp@gmail.com

Abstract.
Outsourced facility services have become a strategic component of operations in Indonesia's highly regulated pharmaceutical industry, where cleanliness is not a cosmetic concern but a compliance requirement embedded in CPOB, WHO Prequalification, ISO 9001:2015, and ISO 14001:2015 standards. This study examined why an outsourced cleaning-service provider operating exclusively for a single pharmaceutical client since 2013 recorded 38 client complaints between November 2025 and January 2026, of which 66% concerned Service Performance and Perceived Value, and asked whether Customer Satisfaction mediates the effects of these two constructs on Customer Loyalty. Prior research has largely tested this chain in consumer-facing settings, leaving the business-to-business, compliance-driven pharmaceutical outsourcing context empirically unexamined. A quantitative, explanatory cross-sectional survey collected primary data from 355 employees of PT Bio Farma (Persero) Pasteur, Bandung, drawn by simple random sampling from a population of 3,096 and analyzed using PLS-SEM in SmartPLS. All eight hypotheses were supported at the 5% significance level. The model explained 74.0% of the variance in Customer Satisfaction and 68.3% of the variance in Customer Loyalty. Service Performance showed the strongest association with Customer Satisfaction ($\beta = 0.543$; $f^2 = 0.901$), while Customer Satisfaction showed the strongest association with Customer Loyalty ($\beta = 0.494$) and partially mediated both upstream paths (indirect effects $\beta = 0.269$ and $\beta = 0.229$). The study empirically extends the satisfaction-mediation framework to regulated B2B outsourcing and indicates that satisfaction management should be the central lever in loyalty-building strategy.

Keywords: *Service Performance; Perceived Value; Customer Satisfaction; Customer Loyalty and PLS-SEM.*

I. INTRODUCTION

Outsourcing has become a substantial component of the Indonesian service economy, as organizations increasingly delegate non-core functions such as cleaning, security, and vehicle-fleet management to specialist vendors. As organizations delegate non-core functions such as cleaning, security, and vehicle-fleet management to specialist vendors, the quality of the outsourced workforce becomes inseparable from the operational quality of the client organization itself [1]. In service-intensive settings, employee competence and the working environment in which service is delivered translate directly into perceived service quality [2], a pattern reinforced by evidence that employee competence and organizational commitment shape service quality through employee loyalty [3] and that high-performance work systems raise employee Service Performance through enhanced resilience [4].

The stakes are considerably higher when the client operates in the pharmaceutical industry. PT Bio Farma (Persero) is bound by CPOB (Cara Pembuatan Obat yang Baik, the Indonesian Good Manufacturing Practice regulation administered by BPOM), WHO Prequalification certification, ISO 9001:2015 for quality management, and ISO 14001:2015 for environmental management. Sanitation and hygiene are recognized aspects of Indonesia's GMP standard (CPOB), which also requires facilities to be designed and maintained so that cleaning and sanitation can be carried out effectively [5, 6]. Cleaning performance may therefore carry compliance implications in production and controlled areas. This study, however, captures employees' perceptions of the outsourced cleaning service and does not measure regulatory audit outcomes.

PT Sabil Huda Utama (SHU), a direct subsidiary of PT Bio Farma (Persero), has provided outsourced services to Bio Farma exclusively since 2013 and currently has no other client. At the Bio Farma Pasteur site, SHU deploys 211 personnel in total: 32 in the garage/motor pool, 72 in security, and 107 in cleaning service. This arrangement creates total business dependency on a single partner, a structure in which any erosion of client loyalty is not a marginal revenue risk but an existential one. Viewed through a resource-based lens, a

single-client arrangement of this kind concentrates the vendor's entire competitive position in one relationship, leaving no diversified resource base to fall back on if that relationship weakens [7]. Customer Loyalty, in this configuration, is the firm's principal asset [8] and the foundation of the sustainable competitive advantage such a vendor depends on [9], and its determinants therefore warrant direct empirical scrutiny [10].

The empirical trigger for this study is a documented deterioration in perceived service delivery. Between November 2025 and January 2026, 38 client complaints were recorded. Fourteen incidents (37%) concerned low Service Performance, floors still soiled after mopping, streaked glass, incomplete office dusting. Eleven incidents (29%) concerned professional conduct, including loud conversation among staff during working hours and mobile-phone use while on duty. The authors conceptually mapped this category to Perceived Value, understood as the client's assessment of whether the service received matches the professionalism expected relative to what is paid and required. Taken together, the categories that the authors conceptually mapped to Service Performance and Perceived Value accounted for 66% of all recorded complaints, which motivated the focus on these two constructs. This mapping is indicative and is used only to motivate the study rather than to measure the constructs.

A pre-study survey conducted on 12 April 2026 among 30 Bio Farma employees, using a five-point agreement scale, corroborated the complaint record from the user side. Nineteen respondents (63%) disagreed with the statement that they were satisfied with the cleaning service overall, and the same proportion disagreed that the service met their expectations and the expected premium standard. Seventeen respondents (57%) disagreed that cleaning staff were consistently polite, friendly, and professional. Regarding the statement "I would support the company's decision to extend the contract with the current cleaning-service provider", 16 respondents (53%) disagreed, 4 (13%) were neutral, and 10 (33%) agreed. This finding suggests a potential loyalty concern. Because renewal decisions are made at the management level rather than by individual employees, these responses are interpreted as user sentiment and not as the client's actual contract decision.

The problem is not reducible to a single causal chain. Service delivered by outsourced personnel is judged simultaneously on technical execution and on the client's assessment of whether the benefits obtained justify what is paid and expected the perceived-value dimension that has been shown to shape satisfaction across service contexts [11]. A comparable pattern has been documented in another highly regulated service setting, where the service marketing mix (7Ps) shaped clients' decisions to continue with a given provider in a hospital context [12]. Commercial cleaning in particular is evaluated against customer expectations that are frequently implicit and unevenly fulfilled [13]. The relationship between service quality, satisfaction, and loyalty is well documented in the general literature [14], including the finding that loyalty is built through accumulated experience rather than isolated transactions [15], and that satisfaction operates alongside trust and brand perception in shaping repurchase and recommendation behaviour [16]. What remains uncertain is how these mechanisms behave when the customer is an institution rather than an individual, when the evaluative standard is externally imposed by regulators, and when the vendor's viability depends entirely on that one relationship.

Research in adjacent B2B service settings has begun to address this, showing that customer experience dimensions shape satisfaction in express delivery relationships between firms [17], yet the compliance-driven outsourcing context remains unexamined.

This study therefore treats Service Performance (X1) and Perceived Value (X2) as antecedents, Customer Satisfaction (Z) as an intervening variable, and Customer Loyalty (Y) as the dependent variable. Eight hypotheses were formulated: Service Performance positively affects Customer Satisfaction (Ha1); Perceived Value positively affects Customer Satisfaction (Ha2); Service Performance positively affects Customer Loyalty (Ha3); Perceived Value positively affects Customer Loyalty (Ha4); Service Performance and Perceived Value simultaneously affect Customer Loyalty (Ha5); Customer Satisfaction positively affects Customer Loyalty (Ha6); Customer Satisfaction mediates the effect of Service Performance on Customer Loyalty (Ha7); and Customer Satisfaction mediates the effect of Perceived Value on Customer Loyalty (Ha8). The framework draws on established treatments of intervening variables in service-marketing models [18], of service quality's effect on satisfaction, Perceived Value, and loyalty [19-21], of performance-level

differentiation in satisfaction research [22], of the meta-analytic evidence on Perceived Value and its downstream outcomes [23], and of satisfaction-to-loyalty conversion mechanisms [24-26].

Unlike previous studies that examined the Service Performance-satisfaction-loyalty chain predominantly in consumer-facing sectors such as retail, transport, healthcare, and digital payments, this study is among the first to investigate the mediating role of Customer Satisfaction between Service Performance, Perceived Value, and Customer Loyalty in the context of a business-to-business outsourced cleaning service operating inside a CPOB- and WHO-regulated pharmaceutical manufacturing environment, thereby contributing a new perspective on how service-user loyalty perceptions form when the surrounding standards of service adequacy are anchored in externally imposed regulatory compliance rather than in the more discretionary, self-defined expectations typical of consumer markets. This framing concerns the institutional context that shapes what employees perceive as adequate service, not a direct measurement of regulatory-audit outcomes, which the study's self-reported perceptual data cannot capture.

Accordingly, the objectives of this study are: (1) to test the effects of Service Performance and Perceived Value on Customer Satisfaction; (2) to test their direct and simultaneous effects on Customer Loyalty; (3) to test the effect of Customer Satisfaction on Customer Loyalty; and (4) to determine whether and to what degree Customer Satisfaction mediates the two upstream paths.

II. METHODS

Research Type

This study used a quantitative approach with an explanatory (associational) cross-sectional survey design. The research strategy combined a case study with a survey, in the specific sense of using a single-organization survey (one vendor-client dyad) rather than a multi-source, multi-method case-study design; the case boundary is the PT Sabil Huda Utama–PT Bio Farma (Persero) service relationship, and the survey is the sole data-collection method within that case. The time horizon was cross-sectional (one-shot), with data collected at a single point in time. The unit of analysis was the individual: employees of PT Bio Farma (Persero) Pasteur, Bandung who are direct users of the cleaning service delivered by PT Sabil Huda Utama. The research setting was a field study in a non-contrived environment the participants' natural workplace, with no experimental manipulation of any variable. The methodological framing follows standard quantitative-research conventions in the Indonesian management literature [27, 28].

It is important to clarify what Customer Loyalty represents in this design. Because the unit of analysis is the individual employee, the loyalty construct captures an aggregated individual perception of whether the cleaning service warrants continued engagement, expressed through indicators such as support for contract renewal and willingness to recommend the vendor in internal evaluations. It does not represent, and should not be read as, an institutional or contractual decision by PT Bio Farma (Persero) itself. Vendor-retention decisions at Bio Farma are made through formal procurement and management channels involving considerations, such as cost, compliance audit history, and contractual terms, that lie outside the scope of this survey. The present findings therefore speak to the service-user climate that such institutional decisions are likely to draw on, rather than predicting the decision outcome directly.

Population and Sample

The population comprised 3,096 employees of PT Bio Farma (Persero) Pasteur. Respondents were drawn using probability sampling, specifically simple random sampling, so that every member of the population had an equal probability of selection [29]. The sampling frame was the complete roster of Bio Farma Pasteur employees held by the company, from which sample members were drawn at random. Sample size was determined using Slovin's formula with a margin of error (e) of 5% (0.05):

$$n = N / (1 + N \cdot e^2) = 3096 / (1 + 3096 \times 0.0025) = 3096 / 8.74 = 354.23 \quad (1)$$

The result was rounded up to 355 respondents.

To evaluate whether this realized sample was adequate for detecting the weakest structural path retained in the model (Perceived Value → Customer Loyalty, $f^2 = 0.027$; see Results), a post-hoc statistical power analysis was conducted using the F-test family for multiple linear regression, R^2 increase [30], treating the path as one of three predictors (Service Performance, Perceived Value, Customer Satisfaction) of Customer

Loyalty. With N = 355, three predictors, and $\alpha = 0.05$, the achieved power for $f^2 = 0.027$ was 0.87, above the conventional 0.80 threshold; the minimum sample required to reach power = 0.80 for this effect size was approximately 300. The realized sample of 355 therefore provided adequate power to detect even the smallest effect subsequently observed in the structural model.

Eligible respondents were defined as Bio Farma employees with at least six months of tenure at the Pasteur site and whose primary workspace (office, laboratory, or production area) falls within zones serviced daily by SHU cleaning personnel, ensuring direct and repeated exposure to the service being evaluated. Employees in zones served only intermittently, or with less than six months of tenure, were excluded from the sampling frame.

Research Location

The study was conducted at PT Bio Farma (Persero) Pasteur, Bandung, Indonesia - the site at which PT Sabil Huda Utama deploys its outsourced cleaning, security, and motor-pool personnel. The location is significant because the service is delivered within a pharmaceutical manufacturing site that operates under CPOB, WHO Prequalification, ISO 9001:2015, and ISO 14001:2015 requirements. This study did not verify the specific work areas assigned to cleaning personnel; respondents assessed the service they perceived in their own workplace, and the study does not claim that all service delivery occurred in controlled or sterile areas.

Instrumentation

Primary data were collected using a structured questionnaire administered to the 355 respondents, measuring the four constructs: Service Performance (X1), Perceived Value (X2), Customer Satisfaction (Z), and Customer Loyalty (Y). Secondary data comprised the internal complaint recapitulation for November 2025 to January 2026 provided by PT Sabil Huda Utama, which listed 38 complaint records, and the outsourced-personnel headcount for the Pasteur site. The categories reported here follow the categories in that recapitulation. The recapitulation does not specify.

Item content for each construct was adapted from an established source rather than generated de novo. Service Performance items followed a five-dimension structure (tangibles, reliability, responsiveness, assurance, empathy) after Santosa et al. [18]; Perceived Value items followed the functional, emotional, social, and trust dimensions used by Nguyen et al. [19]; Customer Satisfaction items followed Asti and Ayuningtyas [20]; and Customer Loyalty items (repeat purchase, retention, referral) followed Kotler [31]. All items used a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), treated as interval-level data for the PLS-SEM analysis.

The instrument was pre-tested using SPSS. Validity was assessed through Pearson bivariate correlation, with an item treated as valid when the two-tailed significance value was below 0.05 ($\alpha = 0.05$). Reliability was assessed using Cronbach's Alpha, with a threshold of > 0.60. This screening was applied to the full 355-respondent primary dataset rather than to a separate pretest sample; no items failed the validity or reliability criteria, and all 68 items across the four constructs were retained, consistent with the outer loadings reported in the Results (0.756-0.883). A distinct 30-respondent survey was conducted earlier (12 April 2026) to identify preliminary problems ahead of the main study; it used simplified proxy items (Employee Competence, Service Quality, Consumer Satisfaction, Customer Loyalty) rather than the final 68-item instrument, and therefore did not function as a formal item-total-correlation pretest for the instrument reported here.

Data Collection Procedures

Data were collected in two stages. The first stage was a pre-study survey of 30 employees of PT Bio Farma (Persero) Pasteur conducted on 12 April 2026, intended to identify preliminary problems concerning employee competence, service quality, satisfaction, and loyalty regarding the cleaning service provided by PT Sabil Huda Utama, and to inform the design of the main study. The pre-study used a separate 14-item questionnaire on a five-point agreement scale (three to four items per variable) and was not included in the structural model. Respondents were selected by convenience sampling. Pre-study responses were recorded by respondent number without identifiers, so they could not be linked to the main sample and some overlap cannot be ruled out. The second stage was the distribution of the main research questionnaire to the 355 selected respondents on 26 May 2026. Institutional access was arranged through a formal request to PT Bio Farma

(Persero)'s Human Capital Division, which agreed to facilitate distribution to the workforce through the company's internal communication channels; the questionnaire itself was administered as an online form, and participation was voluntary, with each employee choosing individually whether to respond. Each questionnaire was preceded by a cover letter stating the researcher's identity, the title and purpose of the study, an assurance of data confidentiality, a statement that the data would be used solely for academic purposes, and an explicit note that there were no right or wrong answers, so that respondents were asked to answer according to their actual conditions and opinions. Participation was voluntary and questionnaires were completed within respondents' natural workplace setting. Data collection continued until 355 complete responses had been obtained, matching the Slovin-derived minimum; all 355 responses received were valid and were retained for analysis, with none excluded for missing or inconsistent data. Secondary documentation the complaint recapitulation and the personnel deployment record was obtained directly from company internal records.

Data Analysis

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software, in two stages.

The outer (measurement) model was evaluated for convergent validity, discriminant validity, and reliability. A loading factor of ≥ 0.7 was applied as the recommended threshold for confirmatory research [32], with loadings between 0.5 and 0.6 considered acceptable, and Average Variance Extracted (AVE) required to exceed 0.5. Discriminant validity was assessed through cross-loadings (> 0.7) and by comparing the square root of AVE against inter-construct correlations. Reliability required Cronbach's Alpha, rho_A, and Composite Reliability to exceed 0.70 [32].

The inner (structural) model was evaluated through the coefficient of determination (R^2), the f^2 effect size, predictive relevance (Q^2), and model fit indices (SRMR, with 0.08-0.10 commonly used as an acceptable range, and NFI, reported for completeness though not treated as a standalone decision criterion in PLS-SEM). Effect sizes were interpreted on the following scale: 0-0.10 weak; >0.10-0.30 moderate; >0.30-0.50 substantial; and above 0.50 strong [32].

Hypotheses were tested using bootstrapping against a t-table value of 1.96 at the 5% significance level, with a hypothesis supported when $p \leq 0.05$.

Ethical Approval

This study did not undergo formal review by a research ethics committee, consistent with prevailing practice for non-clinical, non-invasive organizational management research in Indonesia, where institutional review board review is typically reserved for studies involving clinical, biomedical, or vulnerable-population risk. Institutional permission to conduct the study was instead obtained through official channels: letter No. B/017/FEB-WD1/VI/2026 issued by the Faculty of Economics and Business, Universitas Jenderal Achmad Yani, and addressed to PT Bio Farma (Persero)'s Human Capital Division, which reviewed and approved respondent access on the company's behalf.

Respondent consent was procedural rather than signature-based: the questionnaire cover letter disclosed the researcher's identity, the study's purpose, the voluntary nature of participation, the confidentiality guarantee, and the restriction of data use to academic purposes, and completion of the questionnaire was treated as implied consent. Respondents were free to withdraw at any point before submitting their questionnaire simply by not completing it, though because responses were collected anonymously, withdrawal after submission was not technically possible, as individual responses could not be traced back to a specific respondent for removal; this limitation of anonymous data collection was disclosed in the cover letter. Response data are retained by the corresponding author in de-identified form for academic record-keeping and will be made available for verification upon reasonable request. No respondent was compensated, and participation carried no consequence for employment status.

A structural conflict-of-interest consideration also warrants disclosure: respondents were employees of PT Bio Farma (Persero), the parent company of PT Sabil Huda Utama, the vendor being evaluated. This relationship, rather than an independent third-party respondent pool, was a deliberate design choice, since the object of inquiry was precisely how the client organization's own employees perceive a wholly dependent subsidiary vendor. However, this proximity may also introduce social-desirability pressure in either direction, as

respondents may inflate or deflate ratings depending on their awareness of the corporate relationship, a limitation already noted under common-method bias in the Limitations section and reinforced here.

III. RESULT AND DISCUSSION

Results

Respondent Characteristics

Of the 355 respondents, the majority were male, aged 35-44 years, educated to bachelor's level, and had served Bio Farma for more than five years; while tenure at Bio Farma is not a direct measure of exposure to this specific vendor, this demographic profile is at least consistent with respondents having had repeated opportunity to observe the outsourced cleaning service being evaluated.

Table 1. Respondent Characteristics (n = 355)

No	Characteristic	Category	Frequency	%
1	Gender	Male	231	65
		Female	124	35
2	Age	< 25 years	16	5
		25-34 years	85	24
		35-44 years	160	45
		≥ 45 years	94	26
3	Education	Senior high school	29	8
		Diploma (D3)	25	7
		Bachelor's (S1)	233	66
		Master's/Doctoral (S2/S3)	68	19
4	Tenure	< 1 year	17	5
		1-3 years	27	7
		3-5 years	42	12
		> 5 years	269	76

Source: Primary Data (2026)

Descriptive Analysis of the Four Constructs

Continuum-line categorization [27] placed all four constructs in the "high" category. Each construct's total score was classified into one of five equal-width intervals spanning the theoretical minimum to maximum score (Very Low, Low, Moderate, High, Very High); Service Performance, Perceived Value, and Customer Satisfaction all fell within the High interval, as did Customer Loyalty. The indicator-level pattern is nonetheless informative: in every construct, the lowest-scoring indicator relates to trust in procedural competence or to value-for-cost fairness, while the highest-scoring indicators relate to visible, surface-level attributes.

Table 2. Descriptive Scores by Variable (n = 355)

Variable	Total Score	Ideal Score	Highest-Scoring Indicator	Lowest-Scoring Indicator
Service Performance (X1)	25,136	35,500	Operational readiness of equipment; staff uniform tidiness; technical knowledge of pharmaceutical sterility standards (each 1,277 / 71.94%)	Staff competence in applying cleaning procedures in sterile areas (1,234 / 69.52%)
Perceived Value (X2)	20,023	28,400	Workspace cleanliness contributing to Bio Farma's reputation and professionalism (1,292 / 72.79%)	Trust that staff work processes meet required operational standards (1,212 / 68.28%)
Customer Satisfaction (Z)	24,687	35,500	Sustained positive experience over time (1,262 / 71.10%)	Perception of no wastefulness / value-for-cost fairness (1,193 / 67.21%)
Customer Loyalty (Y)	14,692	21,300	Support for contract renewal (1,248 / 70.31%)	Willingness to give formal positive ratings in vendor evaluations (1,190 / 67.04%)

Source: Primary Data (2026), processed

Measurement Model (Outer Model) Evaluation

Convergent validity was assessed through outer loadings and Average Variance Extracted (AVE). All indicator loadings exceeded the recommended threshold of 0.70 [32]: loadings ranged from 0.756 to 0.873 for Service Performance (X1, 20 items), 0.756 to 0.860 for Perceived Value (X2, 16 items), 0.801 to 0.867 for Customer Satisfaction (Z, 20 items), and 0.823 to 0.863 for Customer Loyalty (Y, 12 items); no items were removed. AVE values were 0.666 (Service Performance), 0.694 (Perceived Value), 0.693 (Customer Satisfaction), and 0.722 (Customer Loyalty), all above the 0.50 threshold, confirming convergent validity for all four constructs.

Internal consistency reliability was evaluated using Cronbach's Alpha, rho_A, and Composite Reliability (CR), all exceeding the 0.70 threshold [32]: Service Performance ($\alpha = 0.973$, rho_A = 0.974, CR = 0.975), Perceived Value ($\alpha = 0.971$, rho_A = 0.971, CR = 0.973), Customer Satisfaction ($\alpha = 0.977$, rho_A = 0.977, CR = 0.978), and Customer Loyalty ($\alpha = 0.965$, rho_A = 0.965, CR = 0.969).

Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT). Under the Fornell-Larcker criterion, the square root of AVE for each construct (Service Performance = 0.816; Perceived Value = 0.833; Customer Satisfaction = 0.832; Customer Loyalty = 0.850) exceeded its correlations with every other construct (the largest cross-construct correlation was 0.754, between Service Performance and Customer Satisfaction), satisfying discriminant validity. HTMT values for all construct pairs ranged from 0.461 to 0.827, remaining below the conservative 0.90 threshold recommended for confirmatory research [32], which further supports discriminant validity.

Collinearity among the predictor constructs was assessed using the Variance Inflation Factor (VIF). All VIF values ranged from 1.258 to 3.839, well below the conservative threshold of 5.0, indicating no problematic multicollinearity among Service Performance, Perceived Value, and Customer Satisfaction as predictors in the structural model.

Structural Model Evaluation

The coefficient of determination for Customer Satisfaction was $R^2 = 0.740$ (Adjusted $R^2 = 0.738$), indicating that Service Performance and Perceived Value jointly explain 74.0% of the variance in Customer Satisfaction - moderate, and close to the substantial threshold. For Customer Loyalty, $R^2 = 0.683$ (Adjusted $R^2 = 0.680$), indicating that Service Performance, Perceived Value, and Customer Satisfaction jointly explain 68.3% of the variance, a moderate result.

sizes differentiated the paths sharply. The f^2 for Service Performance → Customer Satisfaction was 0.901 (strong), the most dominant contributor in the entire model, followed by Perceived Value → Customer Satisfaction at 0.658 (strong). On the loyalty side, Customer Satisfaction → Customer Loyalty recorded $f^2 = 0.201$ (moderate), the largest contribution to loyalty among the three predictors, while Service Performance → Customer Loyalty recorded $f^2 = 0.107$ (moderate) and Perceived Value → Customer Loyalty recorded $f^2 = 0.027$ (weak), the weakest direct path in the model.

Indirect-effect magnitudes were assessed using the Upsilon (v) statistic. The indirect effect of Service Performance on Customer Loyalty through Customer Satisfaction was v = 0.181 (strong category), and the indirect effect of Perceived Value on Customer Loyalty through Customer Satisfaction was v = 0.132 (moderate category).

Predictive relevance was assessed using the Q^2 statistic. Q^2 values were 0.507 for Customer Satisfaction and 0.489 for Customer Loyalty, both well above zero and approaching the 0.50 threshold associated with large predictive relevance [32], indicating that the model possesses strong predictive power for both endogenous constructs. Model fit was evaluated using SRMR and NFI: SRMR was 0.048 for both the saturated and estimated model, below the conservative 0.08 threshold [33], and NFI was 0.821 for both models.

PLS Predict results supported the model's out-of-sample predictive power: the model produced a lower RMSE than the linear-model benchmark on 30 of 32 Y/Z indicators and a lower MAE on 29 of 32 indicators, with partial exceptions on indicators Y6, Y11, and Y12.

Hypothesis Testing

Seven hypotheses (Ha1-Ha4, Ha6-Ha8) were supported at the 5% significance level. Ha5, concerning the joint contribution of Service Performance and Perceived Value to Customer Loyalty, is not amenable to a standalone significance test in PLS-SEM and is instead reported descriptively via R^2.

Table 3. Hypothesis Testing Results

Hypothesis	Path	β	t-statistic	p-value	95% CI [LL - UL]	Effect size (f^2)	Decision
Ha1	Service Performance → Customer Satisfaction	0.543	13.044	< 0.001	0.467 - 0.620	0.901 (strong)	Supported
Ha2	Perceived Value → Customer Satisfaction	0.464	10.675	< 0.001	0.369 - 0.537	0.658 (strong)	Supported
Ha3	Service Performance → Customer Loyalty (direct)	0.285	5.370	< 0.001	0.171 - 0.372	0.107 (moderate)	Supported
Ha4	Perceived Value → Customer Loyalty (direct)	0.132	2.851	0.005	0.047 - 0.224	0.027 (weak)	Supported
Ha5	Service Performance & Perceived Value simultaneously → Customer Loyalty	-	-	-	-	R^2 = 0.683 (moderate)	Descriptive (not independently tested)
Ha6	Customer Satisfaction → Customer Loyalty	0.494	7.933	< 0.001	0.376 - 0.615	0.201 (moderate)	Supported
Ha7	Service Performance → Customer Loyalty via Customer Satisfaction (partial mediation)	0.269	6.977	< 0.001	0.195 - 0.348	Upsilon = 0.181 (strong)	Supported
Ha8	Perceived Value → Customer Loyalty via Customer Satisfaction (partial mediation)	0.229	5.966	< 0.001	0.158 - 0.308	Upsilon = 0.132 (moderate)	Supported

Source: Primary Data (2026), processed using SmartPLS

Note: 95% confidence intervals were obtained via bias-corrected and accelerated (BCa) bootstrapping with 500 resamples, two-tailed test at $\alpha = 0.05$ (critical $t = 1.96$).

Note: Unlike Ha1-Ha4 and Ha6-Ha8, Ha5 was not evaluated through bootstrapped path significance; it is reported here as the joint explanatory contribution (R^2) of Service Performance and Perceived Value to Customer Loyalty.

For both Ha7 and Ha8, the corresponding direct effects (Ha3 and Ha4) were also significant alongside the significant indirect effects, which, following the mediation-type classification of Zhao et al. [34], indicates complementary partial mediation (both the direct and indirect effects are significant and point in the same direction) rather than indirect-only (full) mediation. On the Perceived Value path specifically, the direct effect was comparatively weak in standardized terms (β = 0.132, f^2 = 0.027) while the indirect effect was comparatively larger (β = 0.229, Upsilon = 0.132); because f^2 and Upsilon are not directly comparable metrics, this pattern is reported descriptively rather than as evidence that one route is statistically more dominant than the other.

Discussion

Interpretation of Key Findings

The single clearest result is the strength of Service Performance's association with Customer Satisfaction (β = 0.543; t = 13.044; f^2 = 0.901). In a pharmaceutical manufacturing environment, this is coherent: cleanliness is a compliance input, and the client's satisfaction is anchored to whether the physical execution of the service meets standards it is itself audited against. The complaint record supports the same reading, with 37% of incidents attributable to Service Performance failures.

Perceived Value also contributed strongly to satisfaction (β = 0.464; f^2 = 0.658), but its direct contribution to loyalty was the weakest path in the model (β = 0.132; f^2 = 0.027). Read together with the significant indirect path (β = 0.229; v = 0.132), this indicates that Perceived Value's association with loyalty is markedly weaker through the direct route than through the route mediated by satisfaction, even though the

direct effect remains statistically significant. For a client organization evaluating a vendor, the perception that a service is worth its cost appears to weigh more heavily as an input into an overall satisfaction judgement than as a standalone basis for contract continuation.

Customer Satisfaction was the strongest determinant of Customer Loyalty (β = 0.494; t = 7.933), larger than either direct antecedent path. Because the direct effects remain significant, mediation is partial on both routes, meaning that performance and value continue to influence loyalty independently even after satisfaction is accounted for. Practically, this suggests that satisfaction-management strategies should complement, rather than replace, direct investment in operational performance.

The descriptive pattern deserves attention alongside the structural results. Although all four constructs scored in the "high" category, the lowest-scoring indicators were consistently trust-related and fairness-related: staff competence in applying cleaning procedures in sterile areas (1,234 / 69.52%), trust that work processes meet required operational standards (1,212 / 68.28%), perceived absence of wastefulness (1,193 / 67.21%), and willingness to give formal positive ratings in vendor evaluations (1,190 / 67.04%). Visible attributes equipment readiness, uniform tidiness, workspace cleanliness scored highest. The gap suggests that the vendor is currently judged as presentable but not yet fully trusted on procedural competence, which may be an important dimension in a CPOB-regulated setting.

Comparison with Previous Studies

Throughout this discussion, the term *service quality* is retained when referring to prior studies that operationalized their antecedent construct under that label, while Service Performance denotes the construct as operationalized in the present study. The two are treated as conceptually equivalent for comparative purposes, both capture the client's evaluation of the technical and behavioral execution of service delivery, but are not presented as identical measurement instruments; differences in item content across studies are acknowledged where relevant.

The same mediating pattern was reported more recently by Mugova et al. [35], whose multi-channel retail banking model in South Africa likewise found service quality to reach loyalty indirectly through satisfaction, and by Uzir et al. [26], who established the joint role of service quality and Perceived Value in forming satisfaction among home-delivery customers in a developing country.

The finding that service quality shapes satisfaction, which in turn shapes loyalty, is consistent with the broad body of evidence synthesized by Singh et al. [14] and with Mekel et al. [10], who reported the same chain in Indonesian transport services. It also aligns with Nguyen et al. [19], who found service quality to affect satisfaction, Perceived Value, and loyalty in a developing-country healthcare setting, and with Rahayu and Nurlaela Wati [21] and Asti and Ayuningtyas [20], who documented the satisfaction-mediated route in Indonesian service contexts. The same underlying pathway, quality or value antecedents converting into loyalty-related outcomes chiefly through satisfaction, has been reported across a wide range of otherwise dissimilar industries: airline services [36], e-wallet platforms [37], retail banking [38], food-and-beverage retail [39], e-government portals [40], and mixed product-service offerings [41]. The consistency of this pattern across such varied consumer and institutional contexts lends further credibility to its presence in the compliance-driven, B2B pharmaceutical-outsourcing setting examined here.

The result on Perceived Value both extends and qualifies prior work. Othman, Kamarohim, Fadilah, et al. [11] established Perceived Value as a determinant of Customer Satisfaction; the present study confirms that effect (β = 0.464) while showing that in a B2B pharmaceutical outsourcing relationship its direct pull on loyalty is weak. This is a context-specific divergence from consumer-market studies in which Perceived Value more readily drives repeat patronage: an institutional client bound by regulatory standards appears to weight demonstrated performance and accumulated satisfaction more heavily than value-for-cost reasoning.

This qualification is consistent with the meta-analytic finding of Blut et al. [23], who report that the strength of Perceived Value's effects varies systematically across relational contexts, including contractual versus non-contractual settings precisely the distinction that separates the present B2B contract relationship from the consumer markets in which most prior evidence was generated. The B2B service evidence of Cepeda-Carrión et al. [17] points in the same direction.

The emphasis on expectation fulfilment in commercial cleaning identified by Godbersen and Wenzel [13] is echoed in the indicator-level findings here, where the weakest scores cluster around trust in procedural conformity. Similarly, the accumulated-experience view of loyalty advanced by McMullan and Gilmore [15] is consistent with the highest-scoring satisfaction indicator being sustained positive experience over time (1,262 / 71.10%). The performance-level differentiation reported by Lee et al. [22] and the loyalty-programme findings of Khairawati [24] provide further comparative grounding, as does Sulistiono et al. [25] on the discipline-competence-satisfaction linkage in employee-delivered services.

Limitations and Cautions

Several limitations qualify these findings. First, the cross-sectional design captures a single point in time and cannot establish causal direction; loyalty and satisfaction may be reciprocally reinforcing over the life of a contract. Second, the study is a single-case investigation of one vendor-client dyad, and the vendor's exclusive dependency on one client is an unusual structural feature that may itself shape how respondents evaluate the relationship generalization to multi-client outsourcing providers should be made cautiously. Third, all measures are self-reported perceptions from service users, which introduces potential common-method and social-desirability bias, particularly where respondents work for the parent company of the vendor being evaluated. Fourth, the model tests four constructs; other determinants documented in the loyalty literature, such as trust, switching costs, and contractual or governance factors specific to B2B relationships, were not included. Fifth, PLS Predict showed partial exceptions on indicators Y6, Y11, and Y12, indicating that predictive performance was not uniform across all loyalty items. The complaint records are internal vendor documents whose logging and categorization procedures could not be independently verified, and they are used only to motivate the study. Finally, as detailed in the Ethical Approval section, this study did not undergo formal ethics-committee review; while institutional permission, anonymity safeguards, and a documented consent procedure are in place, the absence of independent ethics oversight remains a limitation for readers accustomed to IRB-reviewed designs.

Recommendations for Future Research

Future research should test the model longitudinally, ideally across contract cycles, so that the direction of the satisfaction-loyalty relationship can be examined rather than assumed. Comparative designs covering several outsourcing vendors, several pharmaceutical or otherwise regulated client organizations, or a contrast between regulated and unregulated B2B service settings would clarify how much of the present pattern is attributable to the compliance environment specifically. Extending the model with trust, switching cost, contractual governance, or perceived risk as additional constructs would help explain the residual variance in Customer Loyalty (approximately 31.7%). Multi-source data pairing user perceptions with objective audit results, inspection scores, or complaint records would reduce common-method bias. Finally, a mixed-methods follow-up could probe why trust-in-procedure and value-for-cost indicators consistently score lowest, since these are the levers most likely to yield improvement.

IV. CONCLUSION

This study set out to determine how Service Performance and Perceived Value affect Customer Loyalty, and whether Customer Satisfaction mediates those effects, in the context of an outsourced cleaning service operating inside a regulated pharmaceutical manufacturing environment. Drawing on 355 respondents at PT Bio Farma (Persero) Pasteur, Bandung and analyzed via PLS-SEM, seven hypotheses (Ha1-Ha4, Ha6-Ha8) were supported through significance testing, and the joint contribution of Service Performance and Perceived Value to Customer Loyalty (Ha5) was substantial when evaluated descriptively via R^2 (0.683).

Service Performance emerged as the strongest predictor of Customer Satisfaction ($f^2 = 0.901$, the strongest path in the entire model), while Customer Satisfaction showed the strongest association with Customer Loyalty ($\beta = 0.494$, the largest coefficient among all paths to loyalty). Customer Satisfaction functioned as a partial mediator on both upstream paths, and its mediating role was particularly notable on the Perceived Value path, where the direct effect was weak ($f^2 = 0.027$) and the mediated (indirect) route comparatively larger. The model explained 74.0% of the variance in satisfaction and 68.3% of the variance in loyalty.

The practical implication is direct. Loyalty-building strategies for B2B outsourced cleaning services in the pharmaceutical industry should position customer-satisfaction management as the central strategic lever, without neglecting direct investment in Service Performance and Perceived Value. For the vendor studied, the specific priorities indicated by the indicator-level results are raising staff competence in applying cleaning procedures in sterile areas, strengthening client trust that work processes conform to required operational standards, and addressing value-for-cost perceptions the three lowest-scoring items across the model. Structured human-resource strategies targeting competence development and supervision [42], paired with workforce analytics to track and act on service-quality indicators [43], offer concrete levers the vendor can use to close these specific gaps. Given that 16 of 30 pre-study respondents (53%) did not support contract renewal, and given the vendor's exclusive dependence on this single client, these findings suggest that addressing these areas carries implications extending beyond incremental service quality toward the vendor's business continuity, though this interpretation should be verified against objective renewal outcomes rather than treated as an established fact.

This study contributes to the literature on service marketing and B2B outsourcing empirically, by demonstrating that the satisfaction-mediated pathway from Service Performance and Perceived Value to Customer Loyalty holds in a compliance-driven pharmaceutical outsourcing relationship, while showing that the direct value-to-loyalty link appears weaker in this setting than consumer-market studies would suggest. It extends the Service Performance-satisfaction-loyalty framework from consumer-facing contexts to an institutional client whose evaluative standards are set by external regulation. The findings also illustrate the application of Upsilon-based indirect-effect assessment and PLS Predict validation in a single-dyad B2B service setting.

These conclusions should be read against the study's limitations: the cross-sectional design precludes causal inference, the single vendor-client case with exclusive dependency limits generalizability, all measures are self-reported perceptions from a single respondent group, and constructs such as trust, switching costs, and contractual governance were outside the tested model.

Future research should therefore pursue longitudinal and multi-vendor designs, incorporate objective performance data alongside perceptual measures, extend the model with additional B2B-relevant constructs, and examine comparatively whether regulatory intensity is what accounts for the weak direct effect of Perceived Value on Customer Loyalty observed here.

Author's Contribution Statement

Yudy Afrizal Satiaputra: research conceptualization, instrument development, data collection, data analysis, and drafting of the original manuscript. V. Santi Paramita: supervision, validation of the methodology and analytical results, and review and editing of the manuscript. All authors have read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest. The authors have no financial or personal relationships with any party that could inappropriately influence the objectivity of this research. It should be noted that the object of this study, PT Sabil Huda Utama, is a subsidiary of PT Bio Farma (Persero), the organization at which the respondents are employed; the authors, however, hold no employment, financial interest, or contractual relationship with either company, and neither company participated in the design of the study, the analysis of the data, or the preparation of this manuscript.

Source of Funding

This research received no external funding from any public, commercial, or not-for-profit funding agency. All costs associated with data collection and manuscript preparation were borne independently by the authors. Accordingly, no funding body had any involvement in the design, execution, analysis, interpretation, or writing of this study.

V. ACKNOWLEDGMENTS

The authors thank the management of PT Bio Farma (Persero) Pasteur and its Human Capital Division for granting permission and facilitating the distribution of the questionnaire, all employees who agreed to serve

as respondents, the management of PT Sabil Huda Utama for access to internal company data, and the Master of Management Program, Faculty of Economics and Business, Universitas Jenderal Achmad Yani for academic support throughout the research.

REFERENCES

[1] A.R. Hidayat, A.W. Astuti, Pengaruh manajemen sumber daya manusia terhadap peningkatan kinerja karyawan di perusahaan digital, ***Jurnal Locus Penelitian dan Pengabdian***, ***3***(9), 2024, pp. 776-786. https://doi.org/10.58344/locus.v3i9.3161

[2] N. Septina, T. Josiah, The influence of employee competence and work environment on the service quality of employees at UPTD Puskesmas Natar, Natar District, South Lampung Regency, ***Jurnal Bisnis, Manajemen dan Akuntansi***, ***1***(2), 2025, pp. 151-160. https://doi.org/10.70963/jbisma.v1i2

[3] N. Endrias Moerni Akzani, J. Junaidi, F. Oemar, Pengaruh kompetensi dan komitmen organisasi terhadap kualitas pelayanan melalui variabel moderasi loyalitas pegawai di Dinas Kependudukan dan Pencatatan Sipil Kabupaten Siak, ***Jurnal Ilmiah Ekonomi dan Bisnis***, ***21***(1), 2024, pp. 120-126. https://doi.org/10.31849/jieb.v21i1.17960

[4] K. Nadeem, A. Riaz, R.Q. Danish, Influence of high-performance work system on employee service performance and OCB: The mediating role of resilience, ***Journal of Global Entrepreneurship Research***, ***9***(1), 2019. https://doi.org/10.1186/s40497-018-0142-2

[5] V. Annisa, Kajian penerapan good manufacturing practice di industri farmasi Indonesia [A study of good manufacturing practice implementation in the Indonesian pharmaceutical industry], Majalah Farmasetika, 9(4), 2024, pp. 351-366. https://doi.org/10.24198/mfarmasetika.v9i4.56576

[6] Badan Pengawas Obat dan Makanan, Peraturan Badan Pengawas Obat dan Makanan Nomor 7 Tahun 2024 tentang standar cara pembuatan obat yang baik [Regulation of the National Agency of Drug and Food Control Number 7 of 2024 on standards for good manufacturing practice for medicines], Berita Negara Republik Indonesia Tahun 2024 Nomor 271, 2024. https://jdih.pom.go.id/view/slide/1564/7/2024/a4a23aca85acd7b6caabf9cb536a4326

[7] F. Aslamiyah, R.A. Windarti, S. Farleni, V.F. Sanjaya, Pendekatan resource-based view (RBV) dalam manajemen bisnis: Strategi untuk keunggulan, ***Jurnal Manajemen Bisnis Syariah***, ***1***(2), 2024, pp. 176-183.

[8] N.L. Agustina, Loyalitas Pelanggan (E. Damayanti, Ed.), CV Widina Media Utama, 2023.

[9] I.K. Arslan, The importance of creating customer loyalty in achieving sustainable competitive advantage, ***Eurasian Journal of Business and Management,*** 8(1), 2020, pp. 11-20. https://doi.org/10.15604/ejbm.2020.08.01.002

[10] V.R. Mekel, S. Moniharapon, J.L. Tampenawas, Pengaruh kualitas pelayanan dan kepuasan konsumen terhadap loyalitas konsumen pada perusahaan transportasi Gojek Manado, ***Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi***, ***10***(1), 2022, pp. 1285-1294.

[11] M. Othman, N. Kamarohim, A. Fadilah, M. Nizam, Brand credibility, perceived quality and perceived value: A study of customer satisfaction, ***International Journal of Economics and Management***, ***11***(S3), 2017, pp. 763-775. http://www.econ.upm.edu.my/ijem

[12] S. Alfani, B. Widjanarko, A. Sriatmi, Bauran pemasaran jasa (7P) terhadap keputusan pasien dalam memilih layanan di Rumah Sakit: Literature review, ***Holistik Jurnal Kesehatan***, ***17***(1), 2023, pp. 1-8. https://doi.org/10.33024/hjk.v17i1.8870

[13] H. Godbersen, D. Wenzel, Optimising Commercial Cleaning Services Based on Customer Expectations and Their Fulfilment: An Empirical Analysis with the Means-End Theory of Complex Cognitive Structures (KCMS Schriftenreihe, Vol. 8), FOM Hochschule für Oekonomie & Management, KompetenzCentrum für Marketing & Sales Management, 2022. https://hdl.handle.net/10419/266497

[14] V. Singh, M.P. Sharma, K. Jayapriya, B. Kiran Kumar, M.A. Raj, N. Chander, B.R. Kumar, Service quality, customer satisfaction and customer loyalty: A comprehensive literature review, ***Journal of Survey in Fisheries Sciences***, ***10***(4S), 2023.

[15] R. McMullan, A. Gilmore, Customer loyalty: An empirical study, ***European Journal of Marketing***, ***42***(9/10), 2008, pp. 1084-1094. https://doi.org/10.1108/03090560810891154

[16] G.P. Hafidz, R.U. Muslimah, Pengaruh kualitas layanan, citra merek, kepercayaan pelanggan dan kepuasan pelanggan terhadap loyalitas pelanggan produk Herbalife, ***Jurnal Ilmiah MEA (Manajemen, Ekonomi, dan Akuntansi)***, ***7***(1), 2023, pp. 253-274.

[17] I. Cepeda-Carrión, D. Alarcon-Rubio, C. Correa-Rodriguez, G. Cepeda-Carrion, Managing customer experience dimensions in B2B express delivery services for better customer satisfaction: A PLS-SEM illustration,

International Journal of Physical Distribution & Logistics Management, ***53***(7/8), 2023, pp. 886-912. https://doi.org/10.1108/IJPDLM-04-2022-0127

[18] S. Santosa, A.P. Syahada, R.T.Y. Yanto, Pengaruh kualitas pelayanan terhadap loyalitas pelanggan melalui kepuasan pelanggan sebagai variabel intervening: Studi kasus pada Pospay loket Kantor Pos Cabang Majalengka 45400, ***Jurnal Bisnis dan Pemasaran***, ***14***(2), 2024, pp. 18-34.

[19] N.X. Nguyen, K. Tran, T.A. Nguyen, Impact of service quality on in-patients' satisfaction, perceived value, and customer loyalty: A mixed-methods study from a developing country, Patient Preference and Adherence, 15, 2021, pp. 2523-2538. https://doi.org/10.2147/PPA.S333586

[20] E. Asti, E. Ayuningtyas, Pengaruh kualitas pelayanan, kualitas produk dan harga terhadap kepuasan konsumen (Resto Oto Bento Villa Nusa Indah, 2020), ***EKOMABIS: Jurnal Ekonomi Manajemen Bisnis***, ***1***(1), 2020, pp. 1-14. https://doi.org/10.37366/ekomabis.v1i01.2

[21] S. Rahayu, L. Nurlaela Wati, Pengaruh kualitas pelayanan terhadap kepuasaan pelanggan dan dampaknya terhadap loyalitas pelanggan, ***Jurnal Ekobis: Ekonomi, Bisnis, dan Manajemen***, ***8***(2), 2018, pp. 1-20. http://ejournal.stiemj.ac.id/index.php/ekobis

[22] Y.C. Lee, Y.C. Wang, S.C. Lu, Y.F. Hsieh, C.H. Chien, S.B. Tsai, W. Dong, An empirical research on customer satisfaction study: A consideration of different levels of performance, SpringerPlus, 5(1), 2016. https://doi.org/10.1186/s40064-016-3208-z

[23] M. Blut, D. Chaney, R. Lunardo, R. Mencarelli, D. Grewal, Customer perceived value: A comprehensive meta-analysis, ***Journal of Service Research, 27***(4), 2024, pp. 501-524. https://doi.org/10.1177/10946705231222295

[24] S. Khairawati, Effect of customer loyalty program on customer satisfaction and its impact on customer loyalty, ***International Journal of Research in Business and Social Science***, ***9***(1), 2020, pp. 15-23.

[25] Sulistiono, Hendrajaya, S. Supriyanto, S.F. Nugraha, J.B. Herimahadi, Agatha, Pengaruh disiplin, kompetensi dan kinerja karyawan terhadap kepuasan pelanggan PT. Bank Perkreditan Rakyat Shinta Daya Yogyakarta, ***Journal of Tourism and Economic***, ***7***(1), 2024, pp. 99-108. https://doi.org/10.36594/jtec/fv588f94

[26] M.U.H. Uzir, H. Al Halbusi, R. Thurasamy, R.L. Thiam Hock, M.A. Aljaberi, N. Hasan, M. Hamid, The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country, ***Journal of Retailing and Consumer Services, 63***, 2021, 102721. https://doi.org/10.1016/j.jretconser.2021.102721

[27] Sugiyono, Metode Penelitian Kuantitatif, Kualitatif dan R&D, Alfabeta, 2016.

[28] Roesminingsih, M. Widyaswari, R.J. Rosyanafi, F. Zakariyah, Metodologi Penelitian Kuantitatif, CV Bayfa Cendekia Indonesia, 2024.

[29] M. Mushofa, D. Hermina, N. Huda, Memahami populasi dan sampel: Pilar utama dalam penelitian kuantitatif, ***Jurnal Syntax Admiration***, ***5***(12), 2024, pp. 5937-5948. https://doi.org/10.46799/jsa.v5i12.1992

[30] J. Cohen, ***Statistical Power Analysis for the Behavioral Sciences*** (second edition), Lawrence Erlbaum Associates, 1988.

[31] P. Kotler, Marketing Management (15th edition), Pearson, 2016.

[32] J.F. Hair, G.T.M. Hult, C.M. Ringle, M. Sarstedt, N.P. Danks, S. Ray, Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook, Springer, 2021.

[33] J. Henseler, T.K. Dijkstra, M. Sarstedt, C.M. Ringle, A. Diamantopoulos, D.W. Straub, D.J. Ketchen, J.F. Hair, G.T.M. Hult, R.J. Calantone, Common beliefs and reality about PLS: Comments on Rönkkö and Evermann (2013), Organizational Research Methods, 17(2), 2014, pp. 182-209. https://doi.org/10.1177/1094428114526928

[34] X. Zhao, J.G. Lynch, Q. Chen, Reconsidering Baron and Kenny: Myths and truths about mediation analysis, ***Journal of Consumer Research***, ***37***(2), 2010, pp. 197-206. https://doi.org/10.1086/651257

[35] S. Mugova, N.G. Kiliswa, M. Mashizha, The mediating role of customer satisfaction in the relationship between service quality and customer loyalty in multi-channel retail banking, Cogent Business & Management, 12(1), 2025, 2514937. https://doi.org/10.1080/23311975.2025.2514937

[36] A. Firatmadi, Pengaruh kualitas pelayanan dan persepsi harga terhadap kepuasan pelanggan serta dampaknya terhadap loyalitas pelanggan (Studi kasus PT. Pelita Air Service), ***Journal of Business Studies***, ***2***(2), 2017, pp. 80-105. http://journal.uta45jakarta.ac.id/index.php/jbsuta/article/viewFile/959/667

[37] A. Hasan, A.Y. Waworuntu, N.I. Otoluwa, Pengaruh kemudahan penggunaan dan kualitas interaksi pelayanan terhadap kepuasan dan loyalitas konsumen e-wallet di Provinsi Sulawesi Selatan, ***Jurnal Manajemen Bisnis dan Kewirausahaan***, ***9***(1), 2025, pp. 181-194. https://doi.org/10.24912/jmbk.v9i1.32712

[38] V. Leninkumar, The relationship between customer satisfaction and customer trust on customer loyalty, ***International Journal of Academic Research in Business and Social Sciences***, ***7***(4), 2017. https://doi.org/10.6007/ijarbss/v7-i4/2821

[39] N. Lestari, D.P. Sahara, P.N. Batam, The effect of price and product quality on customer loyalty with customer satisfaction as a mediating variable: Case study at Luargaris Coffee & Kitchen, ***Journal of Applied Business Administration***, 2025.

[40] Y. Li, H. Shang, Service quality, perceived value, and citizens' continuous-use intention regarding e-government: Empirical evidence from China, Information and Management, 57(3), 2020, 103197. https://doi.org/10.1016/j.im.2019.103197

[41] F. Zulviani, M.R. Linda, Analysis of the influence of product quality and service quality on repurchase intention with customer satisfaction as a mediating variable, ***Jurnal Economic Resource***, ***9***(1), 2025, pp. 397-416. https://doi.org/10.57178/jer.v9i1.2135

[42] G.E. Panjaitan, I. Asmadi, T. Lestari, Strategi manajemen sumber daya manusia dalam meningkatkan kinerja karyawan pada PT. Mitra Lestari Bumi Abadi, **Jurnal Manajemen dan Bisnis Ekonomi**, **1**(4), 2023, pp. 376-386.

[43] O.A. Alabi, F.A. Ajayi, C.A. Udeh, C.P. Efunniyi, The impact of workforce analytics on HR strategies for customer service excellence, ***World Journal of Advanced Research and Reviews***, ***23***(3), 2024, pp. 790-798. https://doi.org/10.30574/wjarr.2024.23.3.2718