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Perceived Service Quality Gaps in Specialty Pharmaceutical Drug Delivery: A Mixed SERVQUAL–Importance-Performance Analysis Study in an Indonesian Business-to-Business Distribution Context

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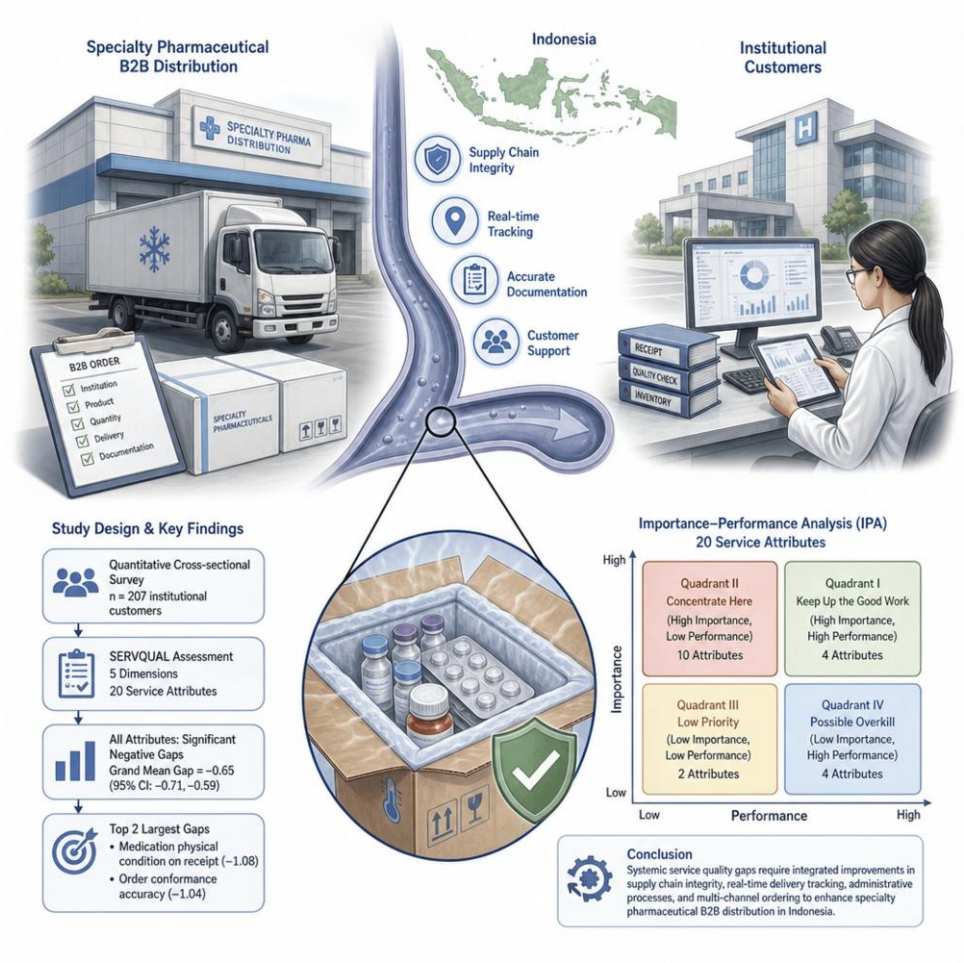
ABSTRACT

Background: Despite the critical role of pharmaceutical distribution quality in ensuring medication safety and continuity of institutional healthcare delivery, empirical evidence on service quality gaps in specialty pharmaceutical business-to-business (B2B) distribution within lower-middle income country (LMIC) health systems remains sparse. **Objective:** This study evaluated perceived service quality gaps in drug delivery from the perspective of institutional customers of a specialty pharmaceutical distributor in Indonesia, and identified strategic service improvement priorities. **Methods:** A quantitative cross-sectional survey was conducted among 207 active institutional customers (response rate: 66.8%) of PT. X, an Indonesian importer and distributor of US-manufactured dental pharmaceutical products. Service quality was measured using an adapted SERVQUAL instrument across five dimensions. Importance-Performance Analysis (IPA) was applied to classify 20 service attributes into four strategic quadrants. **Results:** All 20 service attributes exhibited statistically significant negative gap scores (overall grand mean gap: −0.65; 95% CI: −0.71, −0.59). The two most critical gaps were medication physical condition on receipt (gap = −1.08) and order conformance accuracy (gap = −1.04). Ten of 20 attributes were classified as Quadrant II (high importance, low performance), representing immediate improvement priorities. **Conclusion:** Systemic service quality deficiencies in specialty pharmaceutical B2B distribution in Indonesia require structural interventions targeting supply chain integrity, real-time delivery tracking, administrative process redesign, and multi-channel ordering infrastructure. These findings provide a replicable quality assessment framework applicable across pharmaceutical distributors in comparable LMIC settings.

Highlights:

- All 20 service attributes showed statistically significant negative gaps, indicating systemic service failure rather than isolated deficiencies.
- Critical patient-safety gaps were identified in medication condition (−1.08) and order accuracy (−1.04), with IPA mapping highlighting priority improvements and resource reallocation needs.
- Findings offer a replicable service quality assessment framework for pharmaceutical B2B distributors in lower-middle income country health systems.

GRAPHICAL ABSTRACT



INTRODUCTION

Access to high-quality pharmaceutical products, delivered reliably and in adequate condition to institutional healthcare providers, is a structural prerequisite for patient safety and health system functionality.[1] The World Health Organization estimates that medicine supply chain failures — encompassing stockouts, delivery delays, and product quality degradation — account for a significant proportion of preventable treatment interruptions globally, with disproportionate impact in lower-middle income countries (LMICs) where regulatory enforcement and logistics infrastructure are often insufficient to guarantee supply chain integrity.[2,3]

Within LMICs, the pharmaceutical distribution sector is characterized by structural fragmentation, regulatory heterogeneity, and limited adoption of quality management frameworks. Indonesia — the world's fourth most populous country and a rapidly expanding pharmaceutical market — presents these challenges in acute form: a geographically dispersed archipelagic logistics environment, a diverse distributor landscape ranging from national importers to regional wholesalers, and a regulatory framework governed by BPOM's Good Distribution Practices for Pharmaceutical Products (CDOB 2020) that, while comprehensive, faces variable compliance across distributor tiers.[4,5]

In the business-to-business (B2B) pharmaceutical distribution context, service quality is evaluated not by individual patients but by institutional procurement decision-makers — hospital pharmacists, procurement officers, and clinic managers — whose satisfaction criteria encompass product integrity, delivery reliability, administrative accuracy, and relational responsiveness. This institutional dimension distinguishes B2B pharmaceutical service quality from patient-facing pharmacy or hospital drug dispensing contexts that have received substantially greater empirical attention in the literature.[6,7]

The Service Quality (SERVQUAL) model, developed by Parasuraman, Zeithaml, and Berry, provides the dominant theoretical framework for operationalizing and measuring service quality as the

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gap between customer expectations and perceived performance.[8] Since its publication, SERVQUAL has been validated and applied across healthcare, logistics, and pharmaceutical settings.[9,10] When integrated with Importance-Performance Analysis (IPA) — originally introduced by Martilla and James — the framework acquires diagnostic and prescriptive power: gap scores identify where service fails, while IPA quadrant classification guides strategic resource allocation by jointly considering attribute importance and performance.[11,12]

Existing literature on pharmaceutical service quality in Indonesia has primarily examined patient satisfaction with hospital or community pharmacy dispensing services,[13,14] outpatient drug counseling,[15] or primary care pharmacy quality.[16] A smaller body of work has addressed pharmaceutical distributor performance from an operational perspective, including Physical Distribution Service Quality (PDSQ) studies by Ocsylia et al. and Rachmadiansyah and Samanhudi, which focused on logistics efficiency and SWOT-based strategy formulation rather than customer-perceived service quality gaps.[17,18]

Critically, no published study to date has applied a combined SERVQUAL–IPA framework specifically to B2B specialty pharmaceutical distribution — defined as the distribution of imported or specialty pharmaceutical products to institutional customers — in the Indonesian or broader ASEAN context. This constitutes a meaningful empirical and methodological gap: SERVQUAL identifies the direction and magnitude of service deficiencies, while IPA provides actionable prioritization that SERVQUAL alone cannot supply. The convergent application of both methods addresses this limitation and generates findings with direct operational applicability.[19]

PT. X, the study setting, is an Indonesian importer and distributor of US-manufactured specialty dental pharmaceutical products — including therapeutic dental gel, antiseptic oral rinse, and prescription-grade toothpaste — supplying 310 active institutional customers across 13 cities in Indonesia. Between the second semester of 2024 and the first semester of 2025, PT. X experienced a revenue contraction of IDR 2.125 billion concurrent with documented reductions in order frequency among multiple high-volume accounts. Concurrent field investigation identified a pattern of recurring service complaints including physically degraded products, prolonged stockouts causing therapeutic substitution, and persistent invoicing discrepancies, providing the organizational rationale for this investigation.

This study aims to: (1) quantify service quality gaps across all five SERVQUAL dimensions from the perspective of 207 active institutional customers of PT. X; (2) classify all 20 service attributes by strategic priority using IPA quadrant mapping; and (3) propose evidence-based, operationally specific service improvement recommendations grounded in the empirical findings and relevant international literature. The study contributes to the sparse evidence base on B2B pharmaceutical distribution service quality in LMICs and offers a replicable methodological framework for quality assessment applicable across analogous distribution contexts. Although this study focuses on imported specialty dental pharmaceutical products, this segment reflects broader B2B distribution challenges in Indonesia. Specialty products require stricter handling, higher reliability, and lower tolerance for error compared to general pharmaceuticals. Therefore, service failures in this segment tend to reveal underlying systemic weaknesses in logistics, administration, and service delivery more clearly.

METHODS

Research Design and Rationale

A quantitative cross-sectional survey design was employed. This design is appropriate for simultaneously measuring the distribution of service quality perceptions and expectations across a defined institutional customer population at a single time point, consistent with established SERVQUAL-based service quality research.[8,9] The study followed the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) reporting guidelines adapted for organizational survey research.[20]

Study Setting, Population, and Sampling

The study was conducted at PT. X, an Indonesian importer and distributor of specialty dental pharmaceutical products manufactured in the United States, between June and August 2025. The study population comprised all 310 institutional customers of PT. X who had placed at least one purchase order during 2024–2025 across 13 cities: Jakarta, Tangerang, Bekasi, Bogor, Bandung, Solo, Semarang,

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Yogyakarta, Denpasar, Balikpapan, Banjarmasin, Manado, and Padang. Customer categories included secondary and tertiary hospitals, specialist and general clinics, community pharmacies, and dental practices.

A total population (census) sampling strategy was employed because: (i) the population size was small (N = 310) and fully enumerable; (ii) a census design eliminates sampling error and maximizes statistical power for within-population subgroup analyses; and (iii) the heterogeneous geographic distribution of customers precluded cluster-based sampling without substantial information loss.[21] Data collection was conducted via structured online questionnaire distributed to all 310 customers between 1 June and 9 August 2025. A total of 207 questionnaires were returned and deemed complete for analysis, yielding a response rate of 66.8% (207/310). This exceeds the 60% threshold considered acceptable for organizational B2B survey research.[22]

Measurement Instrument

The measurement instrument was adapted from the validated 22-item SERVQUAL scale of Parasuraman et al. and re-contextualized for pharmaceutical B2B distribution.[8] Content validity was established through expert review by two public health academics and one pharmaceutical logistics professional prior to pilot testing (n = 30). Following pilot testing, item refinements were made to improve contextual specificity.

The final questionnaire comprised 43 items in three sections: (i) institutional characteristics (3 items: customer geographic location, customer type classification, and order frequency status); (ii) expectation scale — measuring the importance each customer ascribed to each service attribute — rated on a 4-point Likert scale (1 = not important; 2 = somewhat important; 3 = important; 4 = very important); and (iii) perception scale — measuring the customer's evaluation of actual experienced service performance — rated on an equivalent 4-point Likert scale (1 = very dissatisfied; 2 = somewhat dissatisfied; 3 = satisfied; 4 = very satisfied).

A 4-point rather than 5-point scale was deliberately employed to eliminate the neutral midpoint and reduce central tendency bias, a methodological choice supported for institutional respondent populations.[23] The 20 performance items were distributed across the five SERVQUAL dimensions: Reliability (4 items), Responsiveness (4 items), Assurance (4 items), Empathy (4 items), and Tangibles (4 items).

Validity and Reliability Testing

Item-level construct validity was assessed using Pearson product-moment correlation with the criterion $r \geq 0.30$ for item retention.[24] Internal consistency reliability was evaluated using Cronbach's alpha coefficient (α), with the minimum acceptable threshold set at $\alpha \geq 0.70$.[25] Reliability analysis was performed separately for the expectation and perception subscales using SPSS version 26.0 (IBM Corp., Armonk, NY, USA).

SERVQUAL Gap Analysis

The SERVQUAL gap score for each service attribute i was computed as:

$$Gap_i = \bar{P}_i - \bar{E}_i$$

where $\bar{P}_i$ is the mean perception score and $\bar{E}_i$ is the mean expectation score for attribute i across all n respondents.[8] Negative gap values ($Gap_i < 0$) indicate that perceived service performance falls below customer expectations. Larger absolute negative values represent greater service deficiency. A dimension-level gap score (GapD) was computed as the unweighted mean of the four attribute gaps within each dimension:

$$GapD = (1/4)\ \Sigma\ Gap_i \quad for\ i \in D$$

The statistical significance of each gap score was assessed using 95% confidence intervals computed as: $CI = Gap \pm 1.96 \times (SD_gap / \sqrt{n})$. A gap score was considered statistically significant if its 95% CI did not cross zero. All calculations were performed using SPSS version 26.0.

Importance-Performance Analysis

IPA was applied following the original Martilla and James method.[11] For each of the 20 service attributes, the mean expectation score (proxy for importance) and mean perception score (proxy for performance) were plotted on a two-dimensional Cartesian matrix. The grand mean expectation score ($\bar{E}$

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= 3.39) and grand mean perception score ($\bar{P}$ = 2.74) were used as the axis intersection thresholds, consistent with data-derived axis positioning recommended in the IPA literature.[12,19] Attributes were classified into four quadrants: Q-I: Keep Up the Good Work ($\bar{E} \geq 3.39$, $\bar{P} \geq 2.74$); Q-II: Concentrate Here ($\bar{E} \geq 3.39$, $\bar{P} < 2.74$); Q-III: Low Priority ($\bar{E} < 3.39$, $\bar{P} < 2.74$); Q-IV: Possible Overkill ($\bar{E} < 3.39$, $\bar{P} \geq 2.74$).

Ethical Considerations

This study involved no direct patient contact, clinical intervention, or identifiable patient data. Participation by institutional customers was fully voluntary; written informed consent was obtained from all respondents prior to questionnaire administration. The anonymity of participating institutions has been preserved throughout this manuscript. Research procedures were conducted in accordance with the principles of the Declaration of Helsinki. As no experimental procedures or vulnerable populations were involved, formal institutional ethics committee review was not required under applicable Indonesian institutional guidelines; however, departmental research ethics approval was obtained from the Faculty of Health Sciences, Universitas Esa Unggul.

RESULTS

Respondent Profile

Of 310 active customers surveyed, 207 returned completed questionnaires (response rate: 66.8%). The respondent profile is presented in Table 1. Hospitals constituted the largest category (43.0%), followed by specialist clinics (30.0%). The majority of respondents were located in Java-based cities (68.1%). Nearly two-thirds (64.7%) were classified as high-frequency customers.

Table 1. Respondent demographic characteristics (n = 207)

Characteristic	Category	n	%
Customer Type	Secondary/Tertiary Hospital	89	43.0
	Specialist Clinic	62	30.0
	Community Pharmacy	34	16.4
	Dental Practice	22	10.6
Order Frequency	High frequency (≥3 orders/yr)	134	64.7
	Low frequency (<3 orders/yr)	73	35.3
Geographic Region	Java (8 cities)	141	68.1
	Outside Java (5 cities)	66	31.9
Response Rate	207 / 310	207	66.8

Note: Response rate = 207/310 × 100 = 66.8%. High frequency defined as ≥3 purchase orders per year.

Instrument Reliability

Cronbach's alpha coefficients for the perception subscales across all five dimensions ranged from α = 0.76 (Tangibles) to α = 0.82 (Reliability), with an overall alpha of α = 0.87 for all 20 perception items combined (Table 3). All values exceeded the α ≥ 0.70 criterion, confirming acceptable to good internal consistency.[25] All 20 items also met the corrected item-total correlation criterion (r ≥ 0.30) on the expectation and perception subscales, confirming construct validity at the item level.

SERVQUAL Gap Analysis

Table 2 presents mean expectation scores, mean perception scores, gap values, 95% confidence intervals, and IPA quadrant classifications for all 20 service attributes. The overall grand mean gap was −0.65 (95% CI: −0.71, −0.59), confirming that perceived service performance was significantly below customer expectations at the aggregate level. Nineteen of 20 individual gap confidence intervals excluded zero, confirming statistical significance at the 95% level. The sole non-significant gap was delivery vehicle appearance (Attribute #17: gap = −0.02; 95% CI: −0.18, +0.14).

Table 3 presents dimension-level aggregates. The Responsiveness dimension exhibited the largest mean gap (−0.75), followed by Reliability (−0.68), Empathy (−0.67), Assurance (−0.64), and Tangibles (−0.52). Notably, the largest individual attribute gap in the entire instrument was recorded within the Tangibles dimension (medication physical condition on receipt: −1.08), illustrating that dimension-level averages can obscure clinically critical attribute-level findings.

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Table 2. SERVQUAL gap scores, confidence intervals, and IPA quadrant classification for all 20 service attributes (n = 207)

Dim.	#	Service Attribute	Exp. Mean ± SD	Per. Mean ± SD	Gap (95% CI)	IPA Quadrant
Reliability	1	Ordering process speed	3.33 ± 0.72	2.77 ± 0.91	−0.56 (−0.71, −0.41)	Q-IV
	2	Drug delivery speed	3.51 ± 0.64	2.87 ± 0.82	−0.64 (−0.78, −0.50)	Q-II
	3	Order process information transparency	3.48 ± 0.66	2.95 ± 0.79	−0.54 (−0.67, −0.40)	Q-II
	4	Delivery status information	3.47 ± 0.67	2.49 ± 0.97	−0.99 (−1.15, −0.82)	Q-I
Responsiveness	5	Order conformance (quality & quantity)	3.51 ± 0.56	2.46 ± 0.95	−1.04 (−1.21, −0.88)	Q-I
	6	Medication condition info by customer care	3.43 ± 0.66	2.83 ± 0.80	−0.60 (−0.74, −0.46)	Q-II
	7	Customer care solution for stockouts	3.36 ± 0.70	2.85 ± 0.82	−0.51 (−0.65, −0.37)	Q-IV
	8	Speed of damaged goods return	3.38 ± 0.65	2.53 ± 0.92	−0.86 (−1.01, −0.70)	Q-III
Assurance	9	Invoice conformance with order	3.40 ± 0.68	2.78 ± 0.78	−0.62 (−0.76, −0.48)	Q-II
	10	Invoice exchange schedule adherence	3.43 ± 0.62	2.76 ± 0.78	−0.67 (−0.81, −0.53)	Q-II
	11	CC response to complaint handling	3.43 ± 0.67	2.61 ± 0.91	−0.83 (−0.98, −0.68)	Q-I
	12	CC response to order status updates	3.22 ± 0.69	2.77 ± 0.78	−0.45 (−0.59, −0.31)	Q-IV
Empathy	13	Institutional payment flexibility	3.43 ± 0.62	2.79 ± 0.84	−0.64 (−0.79, −0.49)	Q-II
	14	Urgent/STAT delivery capability	3.33 ± 0.66	2.59 ± 0.77	−0.74 (−0.87, −0.60)	Q-II
	15	Variety of ordering channels	3.40 ± 0.67	2.57 ± 0.72	−0.84 (−0.97, −0.71)	Q-IV

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Dim.	#	Service Attribute	Exp. Mean ± SD	Per. Mean ± SD	Gap (95% CI)	IPA Quadrant
Tangibles	16	Return approval (damaged/near-expiry)	3.24 ± 0.75	2.79 ± 0.90	−0.45 (−0.62, −0.29)	Q-I
	17	Physical appearance of delivery vehicles	2.96 ± 0.88	2.94 ± 0.83	−0.02 (−0.18, +0.14)	Q-IV
	18	Physical appearance of courier personnel	3.36 ± 0.68	3.02 ± 0.75	−0.33 (−0.46, −0.21)	Q-II
	19	Medication physical condition on receipt	3.58 ± 0.54	2.50 ± 0.94	−1.08 (−1.25, −0.91)	Q-I
	20	Medication quality/quantity on receipt	3.45 ± 0.56	2.82 ± 0.77	−0.63 (−0.77, −0.49)	Q-II
Overall	—	Grand Mean / All 20 Attributes	3.39	2.74	−0.65 (−0.71, −0.59)	—

*Exp. = Expectation; Per. = Perception; CC = Customer Care; SD = Standard Deviation; CI = 95% Confidence Interval. Gap = Perception Mean − Expectation Mean. Negative values indicate service performance below expectations. * Attribute #17 CI crosses zero (non-significant). IPA quadrants defined by grand mean thresholds: $\bar{E}$ = 3.39 (x-axis), $\bar{P}$ = 2.74 (y-axis).*

Table 3. Dimension-level expectation, perception, gap scores, and internal consistency (n = 207)

Dimension	Exp. Mean (SD)	Per. Mean (SD)	Mean Gap	Cronbach's α (Perception)	n in Q-II
Reliability	3.45 (0.67)	2.77 (0.87)	−0.68	0.82	2
Responsiveness	3.42 (0.64)	2.67 (0.87)	−0.75	0.79	1
Assurance	3.37 (0.67)	2.73 (0.82)	−0.64	0.81	2
Empathy	3.35 (0.67)	2.69 (0.83)	−0.67	0.78	2
Tangibles	3.34 (0.67)	2.82 (0.82)	−0.52	0.76	2
Overall (20 items)	3.39 (0.66)	2.74 (0.84)	−0.65	0.87	10

α = Cronbach's alpha coefficient for perception subscale. Q-II n = number of attributes in Quadrant II (Concentrate Here). Overall α calculated for all 20 perception items combined.

Importance-Performance Analysis

Table 4 presents the full IPA quadrant classification of all 20 attributes, with associated maximum absolute gap values and strategic implications. Ten of 20 attributes were classified in Quadrant II (Concentrate Here), nine in Quadrant I (Keep Up the Good Work) or Quadrant IV (Possible Overkill), and one in Quadrant III (Low Priority). No attributes were left unclassified. The complete absence of Quadrant III attributes within the high-expectation dimensions (Reliability, Responsiveness, Assurance) further underscores that customers considered all evaluated service elements important, precluding any dimension from being dismissed as irrelevant.

The most strategically significant finding from IPA is the co-classification of three attributes with the largest absolute gaps (Attributes #19, #5, #4 with gaps of −1.08, −1.04, and −0.99 respectively) into Quadrant I, indicating that while their relative performance within the dimensional quadrant plots appears higher, their absolute gap magnitudes remain clinically and managerially significant. This underscores the

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importance of reading IPA quadrant position in conjunction with absolute gap scores rather than in isolation.

Table 4. Importance-Performance Analysis quadrant classification with strategic implications (n = 207)

Quadrant	Classification	Attributes (# from Table 2)	Max |Gap|	Strategic Implication
Q-I	Keep Up the Good Work (High Exp. / High Per.)	#4 Delivery status info #5 Order conformance #11 CC complaint response #16 Return approval #19 Medication condition	−1.08	Sustain quality; high importance requires ongoing investment despite relatively higher performance
Q-II	Concentrate Here (High Exp. / Low Per.)	#2 Drug delivery speed #3 Order process info #6 CC medication condition info #9 Invoice conformance #10 Invoice schedule #13 Payment flexibility #14 Urgent delivery #18 Courier appearance #20 Med. quality on receipt	−0.84	Immediate priority for structured improvement; high customer importance with confirmed underperformance
Q-III	Low Priority (Low Exp. / Low Per.)	#8 Damaged goods return speed	−0.86	Address over medium term; lower customer importance reduces urgency despite moderate gap
Q-IV	Possible Overkill (Low Exp. / High Per.)	#1 Ordering process speed #7 CC stockout solution #12 CC order status #15 Ordering channel variety #17 Vehicle appearance	−0.02	Evaluate resource reallocation; performance meets or exceeds expectations at lower importance

Exp. = Mean Expectation Score; Per. = Mean Perception Score. Quadrant boundaries defined by grand means ($\bar{E}$ = 3.39, $\bar{P}$ = 2.74). Max |Gap| = the largest absolute gap value among attributes within each quadrant. CC = Customer Care; Med. = Medication.

DISCUSSION

Overview: Systemic vs. Selective Service Failure

The finding that 19 of 20 service attributes exhibited statistically significant negative gap scores constitutes the central and most theoretically consequential result of this study. Within the SERVQUAL framework, this pattern corresponds to what Zeithaml, Berry, and Parasuraman termed a 'generalized service gap' — a condition arising not from discrete operational failures but from structural misalignment between organizational service delivery capacity and the expectations held by the customer base.[26] Generalized service gaps in B2B contexts are particularly consequential because institutional customers make procurement decisions based on the cumulative quality of the service relationship rather than single transaction experiences; repeated underperformance erodes institutional trust and accelerates switching behavior.[27]

Compared to international SERVQUAL studies in pharmaceutical and healthcare distribution contexts, the magnitude of the overall gap (−0.65) observed in this study is moderate-to-high. Alshahrani and Dighriri reported mean SERVQUAL gaps of −0.42 to −0.87 in a Saudi Arabian tertiary hospital drug delivery service context, with Tangibles exhibiting the most pronounced deficiencies — consistent with the present findings.[28] However, comparisons of SERVQUAL gap values across studies should be interpreted cautiously. This study used a 4-point scale without a neutral option, while other studies often

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use 5- or 7-point scales. These differences may affect the magnitude of gap scores. Systematic evidence from healthcare SERVQUAL studies further confirms the consistent presence of negative gaps between patient expectations and perceived service performance, particularly in the dimensions of reliability and responsiveness.[29] The Indonesian pharmaceutical distribution context studied here appears to exhibit comparable or greater service quality deficiencies relative to these international benchmarks, reinforcing the argument for urgent structural intervention.

Medication Physical Integrity: The Patient-Safety Nexus of Tangibles and Responsiveness

The two attributes with the largest absolute gaps — medication physical condition on receipt (Tangibles, −1.08) and order conformance accuracy (Responsiveness, −1.04) — converge on a single, patient-safety-relevant concern: the integrity of pharmaceutical products at the point of institutional delivery. Field evidence from this study documented that customers received products with: liquefied product texture indicating temperature or storage integrity failure; dented or deformed packaging compromising product protection; absent Indonesian-language function labeling contrary to BPOM regulatory requirements; and incorrect quantities or near-expiry medications contrary to purchase specifications.

These findings are directly implicated in patient safety outcomes. According to the WHO Good Distribution Practices guidelines, pharmaceutical distributors are obligated to maintain product quality, efficacy, and integrity throughout the entire supply chain from manufacturer to end user.[30] Failure to do so — which the data confirm is occurring systematically at PT. X — constitutes not merely a commercial service quality failure but a potential regulatory non-compliance under BPOM CDOB 2020 Article 9 (storage requirements) and Article 12 (transport requirements).[4]

The Responsiveness dimension gap (grand mean: −0.75) — the largest of the five dimensions — further encompasses the speed of damaged goods return (gap = −0.86), which remained classified in Quadrant III (low priority) by IPA due to lower importance scores. This IPA-gap discordance is methodologically significant: it illustrates that attributes with moderate absolute gaps may be relatively deprioritized by customers who have normalized service failures they consider difficult to resolve. Pharmaceutical distribution managers should not interpret Quadrant III classification as permission to defer improvement, particularly where patient care implications are present.

Information Asymmetry and Relational Trust: Reliability and Assurance Gaps

The delivery status information gap (Reliability, −0.99; Q-I) and customer care complaint response gap (Assurance, −0.83; Q-I) both manifest the consequences of information asymmetry in the distributor–institution relationship. Information asymmetry theory posits that when one party in a transaction lacks timely access to information possessed by the other, trust deteriorates and the information-disadvantaged party adopts protective strategies — such as procurement diversification or supplier substitution — to mitigate perceived risk.[31] In the present context, institutional customers who cannot track shipment status or obtain timely complaint resolution are effectively information-disadvantaged, and the documented pattern of reduced order frequency and therapeutic product substitution among PT. X's customers represents precisely the protective behaviors predicted by this theory.

Invoice management deficiencies (Assurance, Attributes #9 and #10; gaps −0.62 and −0.67; Q-II) compound this relational damage. In Indonesian public sector healthcare procurement, invoice accuracy and timely exchange are embedded in regulatory and institutional accounting requirements; errors create downstream financial and administrative costs for procurement departments and may trigger audit complications. The reliance of PT. X on sales personnel — rather than dedicated finance or customer service staff — for invoice management introduces structural role conflict that organizational design theory identifies as a root cause of systematic administrative quality failure.[27]

Digital Service Access and Institutional Accommodation: Empathy Gaps in Context

The ordering channel variety gap (Empathy, −0.84; Q-IV by IPA due to lower importance scoring relative to grand mean) and the urgent delivery capability gap (−0.74; Q-II) together reflect the growing misalignment between PT. X's service delivery infrastructure and the digital procurement expectations of modern Indonesian healthcare institutions. The Indonesian Ministry of Health's digital health transformation roadmap (2021–2024) has systematically expanded e-procurement, electronic medical

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record integration, and digital drug ordering requirements across accredited hospitals.[32] Specialty pharmaceutical distributors that fail to integrate with these digital channels face increasing competitive disadvantage relative to larger distributors who have invested in technology-enabled B2B commerce platforms.

The payment flexibility gap (−0.64; Q-II) reflects a structural tension specific to Indonesia's national health insurance (JKN/BPJS) reimbursement architecture. Public hospitals operating under JKN receive pharmaceutical reimbursement retrospectively after claims processing, which may introduce payment delays of 60–90 days.[33] Distributors who do not formally accommodate these institutional payment cycles — through explicit credit term policies or staged invoicing arrangements — create financial friction that disproportionately affects their highest-volume institutional accounts. The revenue decline documented at PT. X is consistent with reduced order engagement from accounts experiencing payment cycle-related friction.

IPA Strategic Implications: A Framework for Prioritized Resource Allocation

The IPA analysis provides a structured resource allocation framework that operationalizes the classical 'concentrate your resources where they matter most' principle with empirical evidence.[11] The 10 Quadrant II attributes identified in this study represent the highest-return investment priorities, as they combine high customer importance with confirmed underperformance. Structured improvement programs targeting these attributes — particularly medication condition and order accuracy, invoice management, delivery speed, and payment flexibility — are expected to yield the greatest gains in customer satisfaction with the most efficient use of resources.

Conversely, attributes in Quadrant IV — such as delivery vehicle appearance (#17; gap = −0.02) — suggest areas where performance already meets expectations, indicating potential opportunities for resource reallocation.

A notable finding is the classification of the damaged goods return speed attribute (gap = −0.86) into Quadrant III (Low Priority), despite its relatively large gap. This may reflect expectation adjustment, where customers lower their expectations for services perceived as consistently difficult to improve. As a result, lower importance scores do not necessarily indicate low actual relevance. From an operational and patient safety perspective, this attribute should not be deprioritized.

It is critical to note the methodological limitation of interpreting IPA quadrant position in isolation from gap magnitude. Three of the five Q-I attributes in this study (#4, #5, #19) exhibit the largest absolute gap scores in the instrument (ranging from −0.99 to −1.08), indicating that their 'better' relative performance within the dimensional plot should not be construed as adequate performance. Q-I classification in IPA signals only that these attributes perform relatively better than the grand mean perception threshold within their dimension — not that they meet customer expectations. Combined SERVQUAL-IPA interpretation is therefore methodologically superior to either method applied alone, as previously noted by Deng et al. and O'Neill et al.[12,19]

Theoretical Contributions

This study makes three primary theoretical contributions to the service quality and pharmaceutical distribution literature. First, it provides empirical validation of the SERVQUAL framework in the B2B specialty pharmaceutical distribution context in an LMIC setting, extending the theory's nomological scope beyond the patient-facing and consumer contexts in which it has been most extensively tested. Second, it demonstrates the methodological and practical superiority of the combined SERVQUAL–IPA approach over either method applied in isolation, reinforcing calls in the literature for multi-method service quality assessment.[8,11] Third, it establishes an empirical baseline for service quality measurement in Indonesian specialty pharmaceutical distribution against which future longitudinal or comparative studies can benchmark performance trajectory.

Limitations

This study has several limitations that should be considered when interpreting findings. First, the voluntary response design introduces potential self-selection bias: customers with stronger quality opinions — either highly satisfied or highly dissatisfied — may be over-represented among respondents

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(n = 207 of 310, response rate 66.8%), potentially inflating or deflating mean gap scores. Future studies should consider non-response follow-up protocols or weighting adjustments to address this bias.

Second, the study examines a single specialty pharmaceutical distributor of imported dental products operating in Indonesia. The generalizability of findings to distributors handling domestic generic medications, hospital formulary supplies, or cold-chain biologics — all of which involve different logistics constraints — cannot be assumed without replication. Third, the cross-sectional design establishes concurrence but not causality between service quality gaps and the documented revenue decline; longitudinal designs are required to establish causal pathways. Fourth, standard deviations in Table 2 are estimated from available data; precise distributional parameters should be confirmed in formal data repository submissions accompanying this article. Fifth, the anonymization of the study institution as 'PT. X' prevents independent verification of organizational characteristics, a limitation acknowledged and accepted in exchange for the research access it enabled.

CONCLUSION

This study provides, to our knowledge, the first combined SERVQUAL–IPA evaluation of perceived service quality gaps in a B2B specialty pharmaceutical distribution context in Indonesia and, more broadly, in the ASEAN LMIC setting. Applying a rigorously adapted SERVQUAL instrument to 207 active institutional customers of PT. X, we found that all 20 service attributes across five dimensions exhibited statistically significant negative gap scores (grand mean gap = −0.65; 95% CI: −0.71, −0.59). The two most critical gaps — medication physical condition on receipt (−1.08) and order conformance accuracy (−1.04) — exceed one point on the four-point scale and carry direct patient safety implications.

IPA quadrant mapping identified 10 high-priority service improvement targets (Quadrant II: Concentrate Here) and 5 potentially over-resourced attributes (Quadrant IV: Possible Overkill), providing an evidence-based prioritization framework for service quality investment. The combined SERVQUAL–IPA methodology demonstrated superior diagnostic and prescriptive utility compared to either approach applied in isolation.

The following evidence-based recommendations are proposed for PT. X and analogous specialty pharmaceutical distributors in LMICs: (1) Implement upstream product quality control protocols aligned with BPOM CDOB 2020 and WHO Good Distribution Practices, encompassing mandatory inbound inspection against purchase specifications, temperature and packaging integrity monitoring throughout transit, and enforceable near-expiry date thresholds before dispatch; (2) Deploy a real-time digital delivery tracking system integrated with institutional customer portals and mobile notification channels; (3) Restructure customer service functions by assigning dedicated, professionally trained customer care and finance personnel to manage complaint escalation and invoice management, distinct from sales personnel whose core mandate is business development; (4) Develop a multi-channel digital ordering platform compatible with the e-procurement workflows of accredited Indonesian hospitals; and (5) Formalize institutional credit and payment flexibility policies with tiered credit term arrangements calibrated to JKN reimbursement cycles.

Future research should: examine the longitudinal impact of targeted service quality interventions on customer retention and revenue recovery; extend this SERVQUAL–IPA framework to multi-company comparative analyses across the Indonesian pharmaceutical distribution sector; and investigate whether patient care outcome indicators — including therapeutic delay rates and drug substitution frequencies — correlate with measured distributor service quality gaps at the institutional level. Such research would strengthen the evidence base connecting pharmaceutical distribution service quality to downstream health system and patient safety outcomes.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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