

EXAMINING SERVICE QUALITY GAPS AND OPERATIONS–SUPPLY CHAIN PERFORMANCE IN THE INDONESIAN AUTOMOTIVE PARTS INDUSTRY

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Abstract

Automotive-parts customers experience supply-chain performance through delivery reliability, timely information, and effective problem resolution. This article develops a diagnostic framework that connects adapted SERVQUAL gaps with operational indicators guided by the APICS/ASCM Supply Chain Operations Reference (SCOR) model. A dataset contains 96 records across 24 Indonesian firms. Five service dimensions are assessed using perception minus expectation scores. Paired comparisons and correlations demonstrate the proposed analysis. Reliability has the largest illustrated gap (-0.96), followed by responsiveness (-0.77). The overall gap correlates positively with the operational composite ($r = .47$), on-time-in-full delivery ($r = .40$), and forecast accuracy ($r = .39$), and negatively with order-cycle time ($r = -.51$) and defects ($r = -.34$). These patterns show how managers could connect customer concerns to process improvement. The contribution is a transparent measurement results that distinguish diagnostic priorities from causal explanations.

Keywords: supply chain performance, SERVQUAL, SCOR, APICS, ASCM, Indonesia

INTRODUCTION

An automotive-parts supplier can deliver a conforming component and still create serious problems for its customer. Late shipments, inaccurate schedules, and slow quality responses increase the burden on production and purchasing teams. Service quality therefore includes the customer's experience of operational execution. Logistics-service research supports this process perspective, while recent work connects service quality with logistics providers' operational performance (Mentzer et al., 2001; Singh et al., 2022). Customer surveys and operational dashboards often answer different questions. A survey identifies unmet expectations. A dashboard records delivery, quality, and planning outcomes. Connecting the two can help managers investigate why a service deficit occurs. This article develops that connection for Indonesian automotive parts, drawing on recent SCOR research and automotive logistics planning evidence (Hsieh & Zhang, 2022; Nguyen, 2024). The article asks which service dimensions deserve investigation, whether overall service gaps move with operational indicators, and how these signals could guide supplier development. Its contribution is a diagnostic framework. This bounded purpose recognizes that buyers and suppliers may judge the same relationship differently (Qian et al., 2023).

THEORY AND HYPOTHESES

SERVQUAL evaluates perceived performance against expectations through tangibles, reliability, responsiveness, assurance, and empathy. These dimensions require adaptation to an industrial relationship. Tangibles concern visible inspection capability, packaging, documentation, traceability, and digital interfaces. Reliability concerns dependable quantity, quality, and schedule commitments. Responsiveness concerns the speed and ownership of exception handling (Parasuraman et al., 1988; Trivedi et al., 2023).

Assurance concerns technical competence and confidence in corrective action. Empathy concerns understanding the customer's production constraints. In particular, Trivedi et al. (2023) found that tangibility was not relevant in their manufacturer–distributor setting. Retaining it here therefore requires content validation rather than assuming that the original five dimensions transfer unchanged (Parasuraman et al., 1988).

Performance-only measurement provides an important alternative to gap scores. A large insufficiency may reflect unusually demanding expectations, weak execution, or both. The framework therefore retains expectation and

perception means alongside their difference. H1 states that perceived service quality is lower than expected service quality across all five adapted dimensions. This is a testable proposition rather than an assumed property of industrial service (Cronin & Taylor, 1992). Delivery failures and slow responses can interrupt a customer's operations immediately. Forecasting, lead time, and stock availability also affect automotive order fulfillment. H2 states that reliability and responsiveness have larger negative gaps than tangibles, assurance, and empathy. This comparison requires direct tests between dimension-level gaps; separate tests against zero cannot establish it (Hsieh & Zhang, 2022; Mentzer et al., 2001).

Earlier product-development work examined organizational learning, development leadership, supplier-performance measurement, and internal process performance. These topics provide a historical basis for considering coordination across functions and firms. They do not validate the present service-quality relationships. The framework extends that operational concern to recurring customer–supplier service interfaces (Syamil et al., 1996). SCOR provides a process-based vocabulary for performance diagnosis. H3 states that the overall service-quality gap is positively associated with the SCOR-oriented composite. Because the gap equals perception minus expectation, a higher score means a smaller deficit. The proposed association links customer experience with process outcomes without treating either measure as a substitute for the other (Nguyen, 2024; Singh et al., 2022). H4 states that a higher overall gap score is associated with higher on-time-in-full delivery and forecast accuracy, and with lower order-cycle time and defect rates. Shared information and coordinated responses provide plausible explanations for these associations. However, digital integration, resilience, and relationship governance remain possible contextual influences, not mechanisms tested by this illustration (Franco et al., 2024; Ning et al., 2023).

METHOD

3.1 Design and unit of analysis

The research design is a cross-sectional assessment of a focal supplier–customer interface. The planning illustration contains 96 records, 24 firm identifiers, and four functional roles. For field application, eligible respondents would work in procurement, supply chain, operations, or quality and have at least six months of direct experience with the focal supplier. Functional stratification and matched buyer–supplier evidence would reduce dependence on one viewpoint. Multiple respondents evaluating the same firm would require clustering or aggregation at the appropriate level (Qian et al., 2023; Syamil et al., 2003)

3.2 Service and operational measures

Expected service and perceived performance use five-point ratings. The gap is $G = P - E$, with negative values indicating unmet expectations. Dimension means summarize the paired ratings. Field validation should examine content validity and the expectation and perception scales separately before treating the adapted measures as established constructs. No reliability coefficients or factor-analysis results are claimed here (Parasuraman et al., 1988; Trivedi et al., 2023). The operational layer includes a SCOR-oriented composite, on-time-in-full delivery (OTIF), order-cycle time, defect parts per million (PPM), and forecast accuracy. OTIF concerns delivery by the committed date in the required quantity. Cycle time runs from confirmed order release to receipt. The composite summarizes selected normalized indicators; it is not a certified or complete SCOR assessment (Hsieh & Zhang, 2022; Nguyen, 2024).

3.3 Analytical approach

The workflow compares expectation and perception means, reports paired *t* statistics and signed within-pair effect sizes (d_z), and examines Pearson correlations. The results reproduce the planning summaries without claiming a new analysis of respondent-level data. A field analysis should also compare performance-only scores, because gap scores can combine different expectation and performance patterns (Cronin & Taylor, 1992; Pranugroho et al., 2023). For field validation, H1 requires paired comparisons, H2 requires direct within-respondent contrasts between gaps, and H3–H4 require matched service and operational measures. Confidence intervals, clustering, outliers, and multiplicity should be assessed. Correlation with an overlapping composite also requires a sensitivity check that removes shared indicators. The diagnostic framework should complement transparent measurement rather than imply causal identification (Nguyen, 2024; Qian et al., 2023).

4 Results

4.1 Service gaps and H1–H2

Table 1 reports the summaries. All five perception means are below their expectation means, and all reported paired comparisons have $p < .001$. H1 is numerically consistent with the results. The gap convention follows the expectation–perception approach (Parasuraman et al., 1988).

Table 1

Expectation and perception gaps in the planning illustration

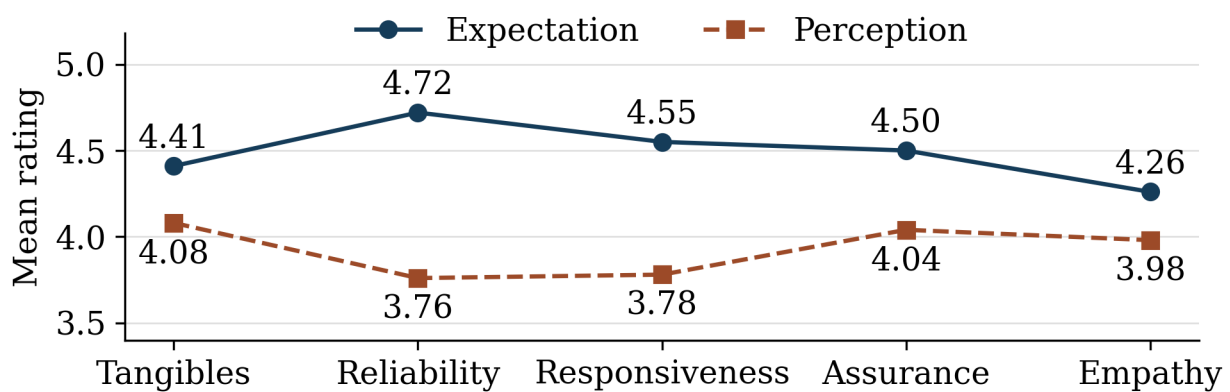
Dimension	E	P	P – E	t	d _z
Tangibles	4.41	4.08	–0.33	–6.67	–0.68
Reliability	4.72	3.76	–0.96	–21.30	–2.17
Responsiveness	4.55	3.78	–0.77	–14.97	–1.53
Assurance	4.50	4.04	–0.46	–10.60	–1.08
Empathy	4.26	3.98	–0.28	–6.47	–0.66

Note. E = expectation; P = perception; n = 96 planning records. All reported p values < .001. Signed d_z uses P – E. Measurement logic follows Parasuraman et al. (1988).

Reliability has the largest gap (–0.96), followed by responsiveness (–0.77), assurance (–0.46), tangibles (–0.33), and empathy (–0.28). H2 is descriptively consistent with this order. No direct between-gap comparison is available. Figure 1 shows the same means, allowing the relative shortfalls to be read alongside their component ratings (Cronin & Taylor, 1992).

Figure 1

Expectation and perception profile in the planning illustration



The profile in Figure 1 identifies candidate priorities rather than explaining their causes. Reliability insufficiency could arise from planning, delivery, quality, or communication failures. The operational layer is therefore needed to guide further investigation, consistent with the process view of logistics service quality (Mentzer et al., 2001).

4.2 Operational associations and H3–H4

Table 2 reports the operational means and their correlations with the overall gap. The illustrated composite mean is 78.3, OTIF is 87.5%, cycle time is 4.99 days, defects are 961 PPM, and forecast accuracy is 75.8%.

Table 2

Operational summaries and correlations with the overall gap

Indicator	Mean	r	p
SCOR-oriented composite	78.3	.47	< .001
OTIF (%)	87.5	.40	< .001
Order-cycle time (days)	4.99	–.51	< .001
Defect PPM	961	–.34	.001
Forecast accuracy (%)	75.8	.39	< .001

Note. $n = 96$ planning records. Correlations are illustrative and unadjusted for firm clustering. SCOR-oriented measurement follows Nguyen (2024).

The overall gap correlates positively with the composite ($r = .47, p < .001$). H3 is numerically consistent with the results. A less negative gap coincides with a higher composite score. This illustrates the proposed diagnostic connection. (Nguyen, 2024; Singh et al., 2022). The correlations with OTIF ($r = .40, p < .001$) and forecast accuracy ($r = .39, p < .001$) are positive. Correlations with cycle time ($r = -.51, p < .001$) and defects ($r = -.34, p = .001$) are negative. All four directions in H4 are numerically consistent the results.

4.3 Translating the results into action

Reliability and responsiveness merit the first investigation because they have the largest illustrated deficits. Delivery reviews should examine original commitment dates, quantity accuracy, and repeated deviations (Manalu et al., 2024). Exception reviews should separate time to acknowledge a problem, time to contain it, and time to implement a verified corrective action (Urbaniak et al., 2023). Planning and quality recovery provide the next diagnostic steps. Managers could review forecast bias, schedule changes, traceability, and defect recurrence for the same account and period as the survey. A shared action record should identify the responsible process, owner, measure, and review date. Automotive supplier assessment research supports disciplined customer–supplier reviews, although sustainability assessment should not be treated as direct evidence about service gaps (Bartos et al., 2022).

5 Discussion and Implications

The framework contributes a practical link between customer experience and process performance. It operationalizes service dimensions in automotive terms and links them to delivery, quality, and planning indicators. Its value lies in directing investigation toward a specific interface rather than treating satisfaction as a stand-alone score (Mentzer et al., 2001; Nguyen, 2024). The contribution is methodological. The proposed management rule is to look for agreement between independent signals. A negative reliability gap accompanied by poor OTIF would justify investigation of fulfillment processes. A negative gap despite satisfactory recorded delivery would require review of date definitions, communication, or expectations. Buyer and supplier views should remain separate until their differences are understood (Qian et al., 2023).

Digital tools could support this process by making schedules, traceability, and exceptions visible. Automotive evidence identifies governance, networks, empowerment, automation, and workforce capabilities as related dimensions of digital transformation. Recent manufacturing research also links digital transformation with resilience and robustness. These findings support a broader implementation rationale, while leaving the effect on service gaps open to testing (Valdivia et al., 2024; Wu et al., 2024). Implementation depends on people and decision rights. Shortage recovery requires an accountable owner and authority to act. Research on human resource practices, alliances, and digital transformation supports examining organizational capabilities alongside technology. Their effects are not estimated here (Dubey et al., 2024; Gu et al., 2023).

5.1 Limitations

The limited dataset cannot establish prevalence or generalizability. A stronger field study would validate the adapted instrument, report response and missing-data patterns, account for firm clustering, and directly compare dimension gaps. Longitudinal measurement could then assess whether process changes precede service

improvement. Demand volatility, account requirements, and supplier capability should be considered as alternative explanations. Performance-only measurement offers an additional robustness comparison (Cronin & Taylor, 1992; Trivedi et al., 2023).

6 Conclusion

The framework connects customer gaps with operational diagnosis. The results prioritize reliability and responsiveness. H1, H3, and H4 show numerical consistency; H2 has descriptive consistency only. Managers could investigate delivery commitments, exception ownership, planning, and quality recovery using repeated account-level evidence (Hsieh & Zhang, 2022; Nguyen, 2024; Urbaniak et al., 2023).

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