

Boosting Public Service Organizational Performance in Indonesia: An Integrated PLS-SEM and NCA Study of SAMSAT Offices

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ABSTRACT

Purpose – This study examines whether transformational leadership and service innovation improve public service performance directly and indirectly through organizational ambidexterity in SAMSAT offices delivering vehicle registration and taxation services under the Samsat Digital Nasional program, addressing contradictory evidence on leadership's effect on public performance.

Design/methodology/approach – Data from 120 SAMSAT officials, supervisors, and staff in Batam and Tanjung Pinang were analyzed using PLS-SEM combined with Necessary Condition Analysis (NCA) in SmartPLS 4, drawing on Transformational Leadership, Service Innovation, Organizational Ambidexterity, and Dynamic Capability Theory.

Findings/Results – All five direct paths were significant, and ambidexterity partially mediated both the leadership-performance and innovation-performance links (VAF = 27.5% and 34.5%). The model explained 38.1% of performance variance with acceptable fit (SRMR = 0.060) and medium predictive relevance ($Q^2_{\text{predict}} = 0.268$), while necessity analysis showed ambidexterity and service innovation, but not leadership, to be necessary conditions for performance.

Originality/Value – The findings are consistent with organizational ambidexterity acting as one plausible mechanism behind mixed leadership-performance evidence in the public-sector literature, rather than a definitive resolution of that inconsistency, since only one organizational context and one cross-sectional dataset are analyzed here; within this sample, ambidexterity and service innovation, but not leadership, met the threshold for a necessary condition. The main implication is that SAMSAT management should treat leadership development, innovation investment, and ambidextrous capability-building as complementary priorities, phased according to organizational feasibility, rather than assuming leadership alone is sufficient or that statistical importance translates directly into implementation priority.

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1. Introduction

Indonesia's vehicle registration and taxation service, SAMSAT, handles tens of millions of transactions nationally each year, a volume that pushed Korps Lalu Lintas Polri to launch the Samsat Digital Nasional (SIGNAL) application in 2021 to shorten renewal times and cut in-person queues. In Riau Islands Province, where Batam and Tanjung Pinang anchor cross-border trade with Singapore and Malaysia, SAMSAT offices must now deliver faster, more innovative service without abandoning the routine compliance and revenue-collection functions that fund regional government. That dual demand exposes these public service organizations to a persistent operational tension between exploiting proven procedures and exploring new digital service channels.

Transformational Leadership Theory Bass & Bass Bernard, (1985) has long framed visionary, individually considerate leadership as a driver of follower effort and, by extension, organizational performance, and public administration scholars have increasingly imported this logic into bureaucratic settings (Hoai et al., 2022). Parallel to this stream, Organizational Ambidexterity Theory (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2013) frames the capacity to pursue exploitation and exploration simultaneously as a mechanism through which leadership and innovation capabilities convert into performance, a conversion process that Dynamic Capability Theory (Teece, 2007) treats as the reconfiguration of resources toward sustained advantage.

Yet the empirical record on whether transformational leadership actually lifts public organizational performance is inconsistent. Using PLS-SEM on 205 public service organizations in Vietnam, Chau et al., (2022) found that transformational leadership exerted a significant positive effect on organizational performance, with results-oriented culture reinforcing the path. In a comparable PLS-SEM design applied to Indonesian civil servants (ASN) at the Medan Class I Railway Engineering Center, however, Ramadhan et al., (2026) reported a positive but statistically insignificant effect of transformational leadership on employee performance once human relations and work ethic entered the model. Same leadership construct, same analytical technique, opposite verdicts on significance. The divergence suggests the leadership-performance link is conditional on an intervening organizational capability rather than universal, and that an average-effect path coefficient alone cannot settle which conditions activate it.

Framed only as a contrast between two studies, this divergence would be unremarkable: different countries, sectors, and control variables routinely produce different coefficients without implying any missing theoretical mechanism. The gap this study addresses is narrower and more specific than sample or measurement variation. Public-management and organizational-ambidexterity research has generally modeled leadership and innovation as inputs with a direct, largely unconditional path to performance, without distinguishing which of those inputs public organizations can substitute for one another and which they cannot. Sufficiency-based estimation, the dominant analytical convention in this literature, is structurally unable to make that distinction, since an average positive coefficient is silent on whether the same performance level remains reachable when a given input is scarce. This is the specific limitation the SAMSAT setting is theoretically suited to expose: SAMSAT offices

operate under a dual mandate, routine compliance and revenue collection that cannot lapse, and a digital-innovation mandate under the Samsat Digital Nasional rollout that cannot be deferred, so that leadership, innovation, and ambidexterity are simultaneously in play and empirically separable in a way a single-mandate organization would not permit. Precisely because of this dual mandate, the contribution this study offers is not the combination of PLS-SEM and NCA as such, nor the application of familiar constructs to a new setting, but a substantive claim about which capabilities are indispensable and which are merely helpful: the results reported in Section 4 indicate that organizational ambidexterity and service innovation behave as necessary conditions public managers cannot substitute their way around, while transformational leadership behaves as a sufficient contributor that helps performance without being a precondition for it. This distinction, developed further in Sections 2.6 and 5.5, is offered as a proposition about public-sector performance formation that extends beyond Batam and Tanjung Pinang to any public organization simultaneously accountable for administrative reliability and service innovation, a combination increasingly common as digital-government mandates spread across middle-income-country bureaucracies.

This study responds by testing whether organizational ambidexterity is the missing conduit that explains when transformational leadership and service innovation translate into public service organizational performance. Using a cross-sectional survey of 120 structural officials, supervisors, coordinators, and senior staff across SAMSAT offices in Batam and Tanjung Pinang, the study estimates seven hypothesized paths with Partial Least Squares Structural Equation Modeling for average sufficiency effects and Necessary Condition Analysis for necessity effects, following the combined protocol of Ringle et al., (2020). Pairing these two logics lets the analysis distinguish paths that merely help performance from levels of leadership, innovation, or ambidexterity that public managers cannot do without.

Theoretically, the study clarifies a boundary condition behind the mixed leadership-performance findings that has not yet been tested in an Indonesian regional public service context. Practically, it gives SAMSAT management in Batam and Tanjung Pinang an evidence base for deciding whether leadership development, service innovation investment, or ambidextrous capability-building deserves priority. The next section develops the theoretical foundations and hypotheses, followed by the methodology and results.

2. Literature Review & Hypothesis Development

Four theoretical lenses underpin the proposed model. Transformational Leadership Theory (Bass, 1994; Bass & Bass Bernard, 1985) explains how idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration raise follower effort beyond formally mandated duties. Service Innovation Theory Den Hertog et al., (2010) frames the renewal of service concepts, client interfaces, delivery systems, and technological options as a learnable capability. Organizational Ambidexterity Theory Gibson & Birkinshaw, (2004) & O'Reilly & Tushman, (2013) explains how pursuing exploitation and exploration simultaneously sustains performance under competing demands. Dynamic Capability Theory Teece et al., (1997) & Teece, (2007) integrates these three by treating ambidexterity as the reconfiguration process through which leadership and innovation inputs become

performance-relevant routines. Figure 1 depicts the resulting model, in which transformational leadership (TL) and service innovation (SI) each exert a direct path to public service organizational performance (PSOP) and an indirect path through organizational ambidexterity (OA).

Among these four lenses, Dynamic Capability Theory functions as the primary theoretical framework organizing the model, rather than as one perspective alongside three others of equal standing. Transformational Leadership Theory and Service Innovation Theory each supply a distinct input-side mechanism, follower effort raised beyond formal duties, and renewed service concepts and delivery systems, while Organizational Ambidexterity Theory supplies the specific form the reconfiguration process takes in this setting: the simultaneous exploitation of proven compliance routines and exploration of new digital-service routines. Dynamic Capability Theory is what links these three: it is the account of why leadership vision and innovation capability do not translate into performance directly but must first be converted into an organizational routine capable of holding exploitation and exploration in balance. The causal sequence tested empirically therefore runs as follows: transformational leadership shapes follower behavior toward both disciplined execution and experimentation; service innovation supplies new service concepts that expand what there is to exploit and explore; the resulting balance between exploitation and exploration, operationalized as organizational ambidexterity, is the reconfigured routine through which these upstream inputs become performance-relevant; and that reconfigured routine, not the upstream inputs directly, is theorized to carry the more consequential share of the effect on public service organizational performance, a claim tested directly through the mediation and necessity analyses that follow. To state this hierarchy explicitly, since the boundary between the two theories can otherwise appear blurred once ambidexterity is operationalized empirically: organizational ambidexterity is treated here as the specific organizational capability through which Dynamic Capability Theory's reconfiguration stage manifests in this setting, not as a freestanding theoretical mechanism running parallel to Dynamic Capability Theory, nor as a general synonym for dynamic capability itself. Sensing and seizing, in this framing, are carried by the leadership and innovation constructs upstream, while organizational ambidexterity represents the reconfiguring stage specifically, the point at which sensed opportunities and seized innovations are actually rebalanced into a working routine; this is why organizational ambidexterity, rather than transformational leadership or service innovation individually, is theorized and subsequently tested as the construct closest to Dynamic Capability Theory's reconfiguration mechanism.

2.1 Transformational Leadership and Public Service Organizational Performance

Transformational leadership describes a style built on idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, through which leaders raise followers' aspirations beyond narrow self-interest toward collective goals Theory (Bass, 1994; Bass & Bass Bernard, 1985). In public bureaucracies, this style is theorized to raise performance by strengthening employees' willingness to exceed formally mandated service standards. (Chau et al., 2022) found transformational leadership exerted a significant positive effect on the performance of 205 public service organizations in Vietnam, echoed by Hoai,

Hung, and Nguyen (2022), who reported it reinforced the innovation-performance link among Vietnamese public sector organizations. Other studies complicate the picture: Ramadhan et al., (2026) found the leadership-performance path positive but statistically insignificant among Indonesian ASN once work ethic and human relations were modeled, suggesting the effect depends on organizational conditions absent from a single-path specification. Following the majority direction of evidence and Dynamic Capability Theory's premise that leadership reconfigures resources toward performance-relevant ends (Teece, 2007), this study proposes:

H1: Transformational leadership has a positive effect on public service organizational performance.

2.2 Service Innovation and Public Service Organizational Performance

Service Innovation Theory conceptualizes the introduction of new or substantially improved service concepts, client interfaces, delivery systems, and technological options as a capability rather than a single event (den Hertog et al., 2010). In public administration, this capability is expected to raise performance because it converts citizen demand for faster, more accessible service into measurable gains in throughput, accuracy, and satisfaction. Using data from 125 units of Indonesia's Central Bureau of Statistics, Maqdliyan & Setiawan, (2023) found organizational innovation exerted a significant positive effect on public sector performance once internal control systems and culture were controlled. S. Alkaabi et al., (2024) similarly reported that public service innovation partially mediated the link between exploitation-based ambidexterity practices and public service quality across Omani government organizations, indicating innovation capability carries measurable performance consequences even in bureaucratic, resource-constrained settings comparable to SAMSAT. Building on this convergence, this study proposes:

H2: Service innovation has a positive effect on public service organizational performance.

2.3 Organizational Ambidexterity and Public Service Organizational Performance

Organizational Ambidexterity Theory holds that organizations able to exploit existing routines while simultaneously exploring new opportunities outperform those specializing in only one orientation, because the dual capacity buffers performance against environmental shifts (Gibson & Birkinshaw, 2004; O'Reilly & Tushman, 2013). Applying this logic to government agencies, Boukamel and Emery (2017) argued that public service organizations able to balance innovation and optimization tensions sustain performance more reliably than agencies locked into either pure compliance or pure innovation. Tukiran et al., (2022) extended this claim empirically, identifying factors that allow public sector managers to deliberately cultivate ambidexterity as a performance-relevant capability rather than an incidental byproduct of structure. Because ambidexterity requires holding exploitation and exploration in productive tension, Dynamic Capability Theory frames it as the mechanism through which resource reconfiguration becomes visible in outcomes (Teece, 2007). This study therefore proposes:

H3: Organizational ambidexterity has a positive effect on public service organizational performance.

2.4 Transformational Leadership and Organizational Ambidexterity

Transformational leaders are theorized to build ambidexterity by simultaneously legitimizing efficient execution of current routines and encouraging experimentation with new approaches,

a combination that transactional leadership alone rarely sustains (Van Wijk et al., 2008). Jansen et al., (2008) found that transformational leadership moderated the relationship between senior team attributes and organizational ambidexterity, strengthening the ambidexterity-building effect of a shared vision. Nemanich & Vera, (2009) extended this logic to a post-acquisition setting, showing that transformational leadership shaped ambidextrous behavior indirectly through the learning culture it cultivated. In a supply chain context, Ojha et al., (2018) similarly found transformational leadership fostered ambidexterity through organizational learning, strengthening under environmental uncertainty. Liu et al., (2019) added that transformational leadership amplifies the behavioral consequences of an ambidextrous culture. This study proposes:

H4: Transformational leadership has a positive effect on organizational ambidexterity.

2.5 Service Innovation and Organizational Ambidexterity

Service Innovation Theory and Organizational Ambidexterity Theory are typically studied as mutually reinforcing capabilities: an organization that continuously redesigns its service offerings must also hold exploitative delivery of current services and exploratory search for new concepts in balance, since neither can be abandoned without harming citizens who depend on continuity. S. Alkaabi et al., (2024) documented this association empirically, finding both exploitation and exploration were positively related to service innovation among Omani government organizations, consistent with earlier European and North American public sector ambidexterity studies. Applied to a SAMSAT context in which digitization under the Samsat Digital Nasional program must coexist with manual verification and revenue-compliance routines, the capacity to innovate services plausibly requires, and in turn reinforces, an ambidextrous posture rather than a one-directional shift toward either orientation alone. This directional choice should be stated cautiously rather than asserted as settled: a substantial prior literature, including the Omani evidence just cited, models the relationship in the reverse direction, treating ambidexterity as an antecedent of innovation rather than its consequence. Because a cross-sectional design cannot adjudicate between the two directions, or between a genuine one-directional effect and a reciprocal, co-evolving relationship, the hypothesis below is best read as a claim that service innovation and organizational ambidexterity are empirically associated capabilities that plausibly reinforce one another, with the specific direction tested here reflecting the sequence theoretically prioritized for this study's dynamic-capability framing rather than a demonstrated causal precedence. This study proposes: Framed this way, H5 should be read as testing one theoretically plausible specification among at least two competing alternatives, service innovation as antecedent, ambidexterity as antecedent, or a reciprocal relationship, rather than as a claim that this specification is causally superior to the reverse-direction models cited above; cross-lagged panel designs or longitudinal data tracking the Samsat Digital Nasional rollout, rather than a single additional cross-sectional wave, would be needed to adjudicate between these alternatives.

H5: Service innovation has a positive effect on organizational ambidexterity.

2.6 The Mediating Role of Organizational Ambidexterity

Beyond their direct paths, transformational leadership and service innovation are theorized to reach performance indirectly, through the ambidextrous capability they help build. Zhao et

al., (2010) distinguish complementary mediation, where both direct and indirect paths remain significant, from indirect-only mediation, where the direct path loses significance once the mediator is introduced, and this study tests both possibilities rather than assuming one. Boukamel & Emery, (2017) argued that leadership and innovation inputs rarely convert into public sector performance gains on their own; instead, they operate through the organization's capacity to hold exploitation and exploration in balance, consistent with evidence that these capabilities carry performance consequences mainly when routed through a balanced ambidextrous posture (Cao et al., 2009). Because Dynamic Capability Theory frames ambidexterity as the process through which leadership vision and innovation capability convert into performance-relevant routines (Teece, 2007), this study proposes:

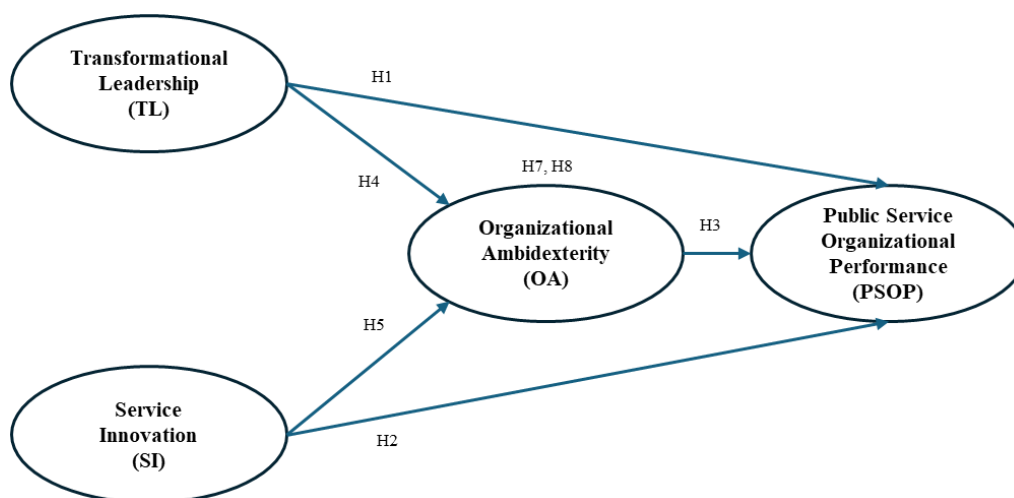
H6: Organizational ambidexterity mediates the relationship between transformational leadership and public service organizational performance.

H7: Organizational ambidexterity mediates the relationship between service innovation and public service organizational performance.

2.7 Research framework

The proposed structural model specifies seven hypothesized paths for empirical testing. Organizational Ambidexterity is hypothesized to exert a positive influence on Public Service Organizational Performance, consistent with its proposed central role as a proximal predictor of public service performance. Service Innovation is hypothesized to influence Organizational Ambidexterity, alongside a hypothesized direct effect on Public Service Organizational Performance. Transformational Leadership is hypothesized to influence both Organizational Ambidexterity and Public Service Organizational Performance directly, consistent with a proposed dual role within the model as both a direct antecedent of organizational performance and a driver of ambidextrous capability. Collectively, the framework proposes that leadership capacity and service innovation contribute to public sector organizational performance both directly and through the reinforcement of ambidextrous capability, a proposition tested empirically in Sections 4 and 5, including the mediating role of Organizational Ambidexterity specified in H6 and H7 above.

Figure 1. Research Framework



3. Methodology

3.1 Research Paradigm and Design

This study adopts a positivist paradigm, treating transformational leadership, service innovation, organizational ambidexterity, and public service organizational performance as measurable constructs whose hypothesized relationships can be tested against survey data. The design is quantitative and cross-sectional: all constructs were measured once, from the same respondents, at a single point in time, which fits the study's confirmatory objective of testing seven pre-specified paths.

3.2 Population, Sampling, and Sample Size

The unit of analysis and the unit of observation are both the individual SAMSAT employee. Transformational leadership, service innovation, organizational ambidexterity, and public service organizational performance were measured as employee perceptions of practices and outcomes at their workplace, following the common referent-shift convention in this literature; no formal aggregation of individual responses to the office level, for example through mean scores per office combined with interrater agreement or reliability indices such as r_{wg} , ICC (1), or ICC (2), was performed. Accordingly, the statistical relationships reported in Section 4 describe associations among employee-perceived constructs at the individual level; they do not constitute a validated test of organizational-level (between-office) relationships, and claims throughout this manuscript are stated, and should be read, at that level. Of the 120 respondents, 60 were drawn from the SAMSAT office in Tanjung Pinang and 60 from the SAMSAT office in Batam; the Batam respondents were in turn spread across that office's five service points (BCS Mall/Batam City Square, Harbour Bay Mall, Kepri Mall, Vitka Point in Tiban/Sekupang, and the Mega Mall Batam Center drive-thru counter). With only two SAMSAT offices represented, a formal aggregation to the organizational level, even had interrater agreement or reliability indices such as r_{wg} , ICC (1), or ICC (2) been computed, would rest on far too few upper-level units ($k = 2$) to support meaningful between-office inference; the five Batam service points are physical counters of one administrative office rather than independent organizational units, so they do not change this count. This two-office structure is accordingly reported for transparency, and it reinforces rather than merely qualifies the individual-level framing adopted throughout this study. The target population comprised structural officials, unit heads, supervisors, service coordinators, senior staff, and employees who understand SAMSAT's service process, service innovation initiatives, ambidextrous practice, and organizational performance, drawn from SAMSAT offices in Batam and Tanjung Pinang, Riau Islands Province. A purposive sampling technique was used, restricting eligibility to respondents who hold at least one year of tenure and direct involvement in service delivery or its supervision. A total of 120 valid responses were obtained and retained for analysis. The sample of 120 respondents satisfies the ten-times rule, under which the minimum sample equals ten times the largest number of structural paths pointing at a single construct; public service organizational performance receives three incoming paths (from transformational leadership, service innovation, and organizational ambidexterity), setting a floor of 30. Applying the more conservative inverse-square-root method for a minimum R^2 of 0.10 at a 5% significance level and three predictors (Hair et al., 2019) recommends a sample closer to 145–150 to detect small effects with adequate power; the achieved sample of 120 is

therefore adequate for the medium-to-large effect sizes typical of the leadership-performance literature, and this boundary condition for detecting small effects is disclosed in the limitations.

3.3 Instrument and Measurement

All constructs were measured on a seven-point Likert scale (1 = strongly disagree to 7 = strongly agree), with every scale adapted from an established, cited source. Transformational leadership items were adapted from Podsakoff et al., (1990) Service innovation items were adapted from den Hertog, van der Aa, and de Jong's (2010) four-dimension service innovation capability framework. Organizational ambidexterity items were adapted from (Jansen et al., 2008) exploratory and exploitative innovation scales. Public service organizational performance items were adapted from Andrews et al., (2006) public service performance measurement framework. All items were translated into Bahasa Indonesia and independently back-translated by two bilingual academic reviewers to confirm semantic equivalence, and a pilot test with SAMSAT employees outside the main sample confirmed item clarity prior to full-scale data collection.

3.4 Common Method Bias

Because all constructs were measured from the same self-reported source at one point in time, common method bias was addressed procedurally and statistically. Procedurally, respondent anonymity was assured, predictor and outcome items were separated within the questionnaire, and item wording was kept concise, following (Podsakoff et al., 2003) procedural remedies. Statistically, a full collinearity assessment was conducted following (Kock & Hadaya, 2018): inner VIF values at or below 3.3 across all structural paths would indicate that common method bias is not a substantial concern under this test. This full-collinearity test is nonetheless a partial safeguard rather than a definitive one: it detects one statistical signature associated with common method variance, elevated collinearity among predictors, but it cannot rule out common source bias arising from a single respondent providing predictor, mediator, and outcome ratings from a single cognitive frame of reference at one point in time. Because no independent or archival performance measure was collected in this study, common method bias is treated here as mitigated rather than eliminated, and this constraint is carried forward into the interpretation of effect sizes in Section 5 and disclosed explicitly among the limitations in Section 7. Common method bias is only one of several threats to the causal interpretation of these structural paths, and it should not be treated as covering endogeneity more broadly. Because leadership, innovation, ambidexterity, and performance were all measured simultaneously from the same respondents, the estimated paths may also be affected by simultaneity (performance plausibly strengthens leadership practices or ambidextrous behavior rather than only resulting from them), by reciprocal causality between service innovation and organizational ambidexterity specifically (Section 2.5), and by omitted variables that jointly influence an antecedent and performance, none of which a collinearity-based common-method check is designed to detect. This study did not implement a formal endogeneity correction; future work using this dataset or a successor wave should consider a Gaussian copula approach, which does not require an external instrument but relies on non-normality in the endogenous regressor, an instrumental-variable approach if a suitable instrument correlated with an antecedent but not directly with performance can

be identified, or longitudinal validation that measures antecedents and performance at different points in time. These options are discussed further as a specific limitation in Section 7 rather than presented as resolved here.

3.5 Data Analysis Technique

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) combined with Necessary Condition Analysis (NCA) in SmartPLS 4 (Ringle, Wende, & Becker, 2024), following the integrated protocol of Richter, Schubring, Hauff, Ringle, and Sarstedt (2020). The measurement model was evaluated first, through outer loadings, average variance extracted, composite reliability, and discriminant validity via the heterotrait-monotrait ratio (HTMT), and the measurement mode of each construct was confirmed through confirmatory tetrad analysis (CTA-PLS; Gudergan, Ringle, Wende, & Will, 2008). The structural model was then evaluated through path coefficients with bootstrapped (5,000 subsamples, two-tailed, bias-corrected and accelerated) confidence intervals, t-statistics, and p-values, alongside R^2 , f^2 effect sizes, and SRMR as a global fit index, following Hair, Risher, Sarstedt, and Ringle's (2019) two-stage protocol. Mediation hypotheses (H6, H7) were tested using bootstrapped 95% bias-corrected confidence intervals for the indirect effects and classified using Zhao, Lynch, and Chen's (2010) typology. Out-of-sample predictive relevance was assessed through PLSpredict (Shmueli, Ray, Velasquez Estrada, & Chatla, 2016) and the cross-validated predictive ability test (CVPAT; Liengard et al., 2021), and importance-performance map analysis (IPMA) was used to compare the relative importance and performance of the antecedent constructs. Finally, Necessary Condition Analysis was conducted to complement the sufficiency-based PLS-SEM estimates: ceiling lines were estimated using both the Ceiling Envelopment Free Disposal Hull (CE-FDH) and Ceiling Regression Free Disposal Hull (CR-FDH) techniques, effect sizes (d) were benchmarked against Dul's (2016) thresholds (small ≥ 0.1 , medium ≥ 0.3 , large ≥ 0.5), and the statistical significance of each effect size was tested with a permutation test (5,000 permutations, $\alpha = .05$) following Dul, Van der Laan, and Kuik (2020). Bottleneck tables were generated at 10 percentage-point intervals of the outcome range to identify the minimum necessary level of each predictor for successive levels of public service organizational performance.

This sequence of techniques is not applied uniformly for the same purpose, and two tiers should be distinguished. Three analyses are essential to testing the theory developed in Section 2: PLS-SEM path estimation, which tests the seven hypothesized sufficiency-based relationships (H1-H7); the mediation analysis, which tests whether organizational ambidexterity carries the effect of leadership and innovation onto performance as theorized in Section 2.6; and Necessary Condition Analysis, which tests the distinct, theoretically motivated claim that some antecedents are indispensable rather than merely helpful (Section 2.6, revisited in Section 5.5). The remaining techniques, confirmatory tetrad analysis, PLSpredict, CVPAT, and IPMA, are supplementary robustness checks rather than tests of a hypothesis: CTA-PLS verifies that the measurement mode assumed for each construct is empirically defensible before the path estimates built on it are interpreted; PLSpredict and CVPAT assess whether the estimated model generalizes to out-of-sample prediction rather than only fitting the observed data; and IPMA re-expresses already-estimated total effects and

construct means as a prioritization aid for Section 6.2, rather than testing any additional relationship. None of these four supplementary analyses is required to test H1 through H7, and none introduces additional claims beyond what the essential analyses already establish; they are reported for transparency and to allow readers to evaluate the robustness of the measurement and predictive assumptions underlying the central results.

4. Results and Discussion

4.1 Result

4.1.1 Measurement Model Assessment

Table 1 presents outer loadings and outer VIF values for all 18 indicators. Every loading exceeded the 0.708 threshold (Hair et al., 2019), ranging from 0.777 (TL3) to 0.893 (SI1 and SI2), indicating that each indicator explained more than 50% of its construct's variance. Outer VIF values ranged from 1.889 to 2.852, all comfortably below the conservative threshold of 5, indicating no problematic indicator-level multicollinearity.

Table 1. Outer Loadings and Outer Collinearity Statistics (VIF)

Indicator	Construct	Loading	VIF
OA1	Organizational Ambidexterity	0.801	2.086
OA2	Organizational Ambidexterity	0.822	2.313
OA3	Organizational Ambidexterity	0.841	2.170
OA4	Organizational Ambidexterity	0.863	2.681
OA5	Organizational Ambidexterity	0.848	2.465
OP1	Public Service Organizational Performance	0.886	2.469
OP2	Public Service Organizational Performance	0.865	2.354
OP3	Public Service Organizational Performance	0.823	2.112
OP4	Public Service Organizational Performance	0.881	2.507
SI1	Service Innovation	0.893	2.852
SI2	Service Innovation	0.893	2.559
SI3	Service Innovation	0.857	2.289
SI4	Service Innovation	0.813	1.959
TL1	Transformational Leadership	0.815	2.050
TL2	Transformational Leadership	0.848	2.286
TL3	Transformational Leadership	0.777	1.889
TL4	Transformational Leadership	0.856	2.378
TL5	Transformational Leadership	0.865	2.495

All loadings significant at $p < .001$ (bootstrapped, 5,000 subsamples).

Table 2 reports internal consistency reliability and convergent validity. Cronbach's alpha ranged from 0.888 to 0.892, composite reliability (qa) from 0.898 to 0.901, and composite reliability (qc) from 0.919 to 0.922, all exceeding the 0.70 threshold and none exceeding 0.95, indicating reliable but non-redundant measurement. Average variance extracted (AVE) ranged from 0.694 to 0.748, exceeding the 0.50 threshold for all four constructs and confirming convergent validity.

Table 2. Construct Reliability and Convergent Validity

Construct	Cronbach's α	qa	qc	AVE
Transformational Leadership	0.890	0.898	0.919	0.694

Construct	Cronbach's α	qa	qc	AVE
Service Innovation	0.888	0.898	0.922	0.748
Organizational Ambidexterity	0.892	0.899	0.920	0.698
Public Service Organizational Performance	0.888	0.901	0.922	0.747

Discriminant validity was assessed with the heterotrait-monotrait ratio (HTMT) and the Fornell-Larcker criterion (Table 3). All HTMT values ranged from 0.491 to 0.589, well below both the conservative threshold of 0.85 (Dijkstra & Henseler, 2015) and the applied social-science threshold of 0.90. Under the Fornell-Larcker criterion, the square root of each construct's AVE (diagonal) exceeded its correlation with every other construct (off-diagonal), confirming discriminant validity by both criteria.

Table 3. Discriminant Validity: HTMT and Fornell-Larcker Criterion

Construct	OA	PSOP	SI	TL
Organizational Ambidexterity (OA)	0.835	–	–	–
Public Service Org. Performance (PSOP)	0.525 / 0.574	0.864	–	–
Service Innovation (SI)	0.480 / 0.523	0.485 / 0.538	0.865	–
Transformational Leadership (TL)	0.445 / 0.491	0.481 / 0.528	0.531 / 0.589	0.833

Values shown as Fornell-Larcker correlation / HTMT ratio. Diagonal values are $\sqrt{\text{AVE}}$.

Because organizational ambidexterity was specified as a higher-order reflective construct combining exploitation- and exploration-related indicators, confirmatory tetrad analysis (CTA-PLS) was run for all four constructs to empirically verify the measurement mode (Gudergan et al., 2008). At the 0.10 significance level used for this test, all non-redundant tetrads for transformational leadership, service innovation, and public service organizational performance were statistically non-significant (p ranging from .158 to .831), supporting a reflective specification for these three constructs. For organizational ambidexterity, three of the five non-redundant tetrads were non-significant ($p = .082$ –.789) while two were significant ($p = .005$ and $p = .086$), yielding mixed evidence. Given that the majority of tetrads did not reject the null of vanishing tetrads, and consistent with how organizational ambidexterity is conventionally operationalized as a reflective higher-order construct in the PLS-SEM literature (Gibson & Birkinshaw, 2017; O'Reilly & Tushman, 2013), the reflective specification was retained; this mixed tetrad evidence is nonetheless disclosed here as a measurement robustness caveat rather than suppressed.

4.1.2 Structural Model Assessment

Inner VIF values ranged from 1.390 to 1.553 (Table 4), all well below the 3.3 threshold (Kock, 2015), confirming that the structural model is free of problematic collinearity and providing additional statistical evidence against common method bias. Organizational ambidexterity

showed an R^2 of 0.281 (adjusted $R^2 = 0.268$), a weak-to-moderate level of explained variance, while public service organizational performance showed an R^2 of 0.381 (adjusted $R^2 = 0.365$), a moderate level of explained variance (Hair, Hult, Ringle, & Sarstedt, 2017).

Table 4 reports the bootstrapped path coefficients (5,000 subsamples) with bias-corrected and accelerated (BCa) 95% confidence intervals. All five hypothesized direct paths were positive and statistically significant, so H1 through H5 are all supported.

Table 4. Structural Model: Path Coefficients, Significance, Effect Sizes, and Hypothesis Decisions

Hyp.	Path	β	t	p	95% BCa CI	f^2	Decision
H4	TL $\rightarrow$ OA	0.264	2.859	.004	[.074, .437]	0.070	Supported
H1	TL $\rightarrow$ PSOP	0.226	2.557	.011	[.051, .397]	0.055	Supported
H5	SI $\rightarrow$ OA	0.340	3.829	<.001	[.164, .517]	0.115	Supported
H2	SI $\rightarrow$ PSOP	0.209	2.387	.017	[.038, .386]	0.045	Supported
H3	OA $\rightarrow$ PSOP	0.325	4.286	<.001	[.174, .467]	0.122	Supported

TL = Transformational Leadership; SI = Service Innovation; OA = Organizational Ambidexterity; PSOP = Public Service Organizational Performance. f^2 benchmarks: small $\geq .02$, medium $\geq .15$, large $\geq .35$ (Cohen, 1988). All f^2 values fall in the small range, indicating that each predictor's practical contribution, while statistically significant, is individually modest within this multi-predictor model.

Model fit indices support the estimated model: SRMR = 0.060, below the 0.08 threshold recommended by (Henseler & Chin, 2010), and NFI = 0.870. Taken together with the collinearity and R^2 results above, the structural model is adequately specified for hypothesis testing.

4.1.3 Mediation Analysis

Table 5 reports the specific indirect effects for H6 and H7, tested with 5,000 bootstrapped subsamples and BCa 95% confidence intervals. Both indirect paths were statistically significant, and because both direct effects (H1, H2) were also significant and pointed in the same positive direction as their respective indirect effects, both mediations are classified as complementary (partial) mediation under Zhao et al., (2010) typology rather than the outdated Baron & Kenny, (1986) causal-steps approach. Variance accounted for (VAF) was 27.5% for the transformational leadership path and 34.5% for the service innovation path, both within the 20–80% band that (Jr. et al., 2017) associate with partial mediation. H6 and H7 are therefore supported.

Table 5. Mediation Analysis: Specific Indirect Effects

Hyp.	Indirect path	Indirect β	t	p	95% BCa CI	Direct β (p)	Total β	VAF	Type
H6	TL $\rightarrow$ OA $\rightarrow$ PSOP	0.086	2.160	.031	[.022, .180]	0.226 (.011)	0.312	27.5%	Complementary (partial)
H7	SI $\rightarrow$ OA $\rightarrow$ PSOP	0.110	2.955	.003	[.050, .200]	0.209 (.017)	0.319	34.5%	Complementary (partial)

4.1.4 Predictive Relevance

Blindfolding-based Q^2_{predict} values were positive for both endogenous constructs — organizational ambidexterity (0.249) and public service organizational performance (0.268) — exceeding the 0.15 medium-relevance benchmark and confirming that the model has medium in-sample predictive relevance (Hair et al., 2019).

Out-of-sample predictive power was assessed with PLSpredict Shmueli et al., (2016) and the cross-validated predictive ability test (CVPAT; Liengaard et al., 2021). At the indicator level, PLS-SEM's RMSE was lower than both the linear model (LM) and indicator-average (IA) naive benchmarks for all nine indicators of the two endogenous constructs, and indicator-level Q^2_{predict} values were positive throughout (range = 0.098–0.249), indicating the model outperforms naive prediction. Table 6 summarizes the CVPAT results at the construct level: PLS-SEM's prediction loss was significantly lower than both the IA benchmark (overall average loss difference = -0.214 , $t = 2.817$, $p = .006$) and the LM benchmark (overall average loss difference = -0.100 , $t = 4.633$, $p < .001$), providing formal statistical evidence that the specified model has genuine predictive, not merely explanatory, value.

Beyond statistical validation, this predictive performance carries a specific meaning for public management research: because PLS-SEM's out-of-sample prediction outperformed both naive benchmarks, the model does not only explain why past leadership, innovation, and ambidexterity scores were associated with past performance scores, it also suggests these constructs can help anticipate future organizational performance for offices not included in this sample, conditional on the model's cross-sectional and single-context limitations discussed in Section 7. For SAMSAT and comparable public-sector managers, this reframes leadership development, innovation investment, and ambidexterity-building from retrospective explanatory factors into potential forward-looking diagnostic indicators, an interpretation that strengthens rather than merely supplements the theoretical contribution of the model, and one that future research should test directly by validating predictions against performance data collected in a subsequent period.

Table 6. Cross-Validated Predictive Ability Test (CVPAT), Construct Level

Construct	PLS loss	IA loss	Diff. vs IA (t, p)	LM loss	Diff. vs LM (t, p)
Organizational Ambidexterity	1.143	1.373	-0.230 (2.423, .017)	1.262	-0.119 (3.478, $<.001$)
Public Service Org. Performance	0.809	1.004	-0.195 (2.752, .007)	0.886	-0.077 (3.267, .001)
Overall	0.995	1.209	-0.214 (2.817, .006)	1.095	-0.100 (4.633, $<.001$)

Negative average loss differences favor the PLS-SEM model over the indicator-average (IA) and linear-model (LM) benchmarks; significant t-values confirm PLS-SEM's predictive superiority.

4.1.5 Importance-Performance Map Analysis

An importance-performance map analysis (IPMA) was conducted with organizational ambidexterity as the target construct to compare the relative importance (unstandardized total

effect) and performance (rescaled 0–100 mean score) of its two antecedents. Service innovation showed both higher importance (0.340) and marginally higher performance (58.37) than transformational leadership (importance = 0.264, performance = 58.01). Both antecedents scored in a similar mid-range performance band (approximately 58 out of 100), while service innovation carried a larger total effect on organizational ambidexterity, indicating it as the comparatively higher-leverage lever for strengthening ambidexterity within the current sample.

Table 7. IPMA for Organizational Ambidexterity

Antecedent construct	Importance (total effect)	Performance (0–100)
Service Innovation	0.340	58.37
Transformational Leadership	0.264	58.01

4.1.6 Necessity Analysis (Necessary Condition Analysis)

Necessary Condition Analysis (NCA) complements the sufficiency-based PLS-SEM results by testing whether a minimum level of each antecedent is indispensable for public service organizational performance, rather than merely contributing to it on average. Table 9 reports the ceiling-line effect sizes for both the Ceiling Envelopment Free Disposal Hull (CE-FDH) and Ceiling Regression Free Disposal Hull (CR-FDH) techniques, together with permutation-based significance tests (5,000 permutations).

Table 8. NCA Effect Sizes and Necessity Test Results

Construct	CE-FDH d	CE-FDH p	CR-FDH d	CR-FDH p	Necessity Decision
Organizational Ambidexterity	0.355	<.001	0.330	<.001	Necessary (medium effect)
Service Innovation	0.234	.001	0.222	<.001	Necessary (small-to-medium effect)
Transformational Leadership	0.185	.073	0.153	.109	Not necessary (ns)

Effect size (d) benchmarks: small $\geq .10$, medium $\geq .30$, large $\geq .50$ (Dul, 2016). p values from a permutation test with 5,000 permutations at $\alpha = .05$ (Dul, Van der Laan, & Kuik, 2020).

Organizational ambidexterity produced the largest effect size under both ceiling techniques and was statistically significant, indicating that, within this sample, a minimum level of ambidexterity was empirically necessary for public service organizational performance: no combination of the other predictors observed in this dataset reached the performance levels associated with low ambidexterity. Service innovation was also significant, with a smaller but still non-trivial effect size, indicating it too functioned as a necessary, if less demanding, condition in this sample. Transformational leadership showed the smallest effect size under both techniques and did not reach statistical significance, indicating that leadership behaved as a sufficient contributor to performance in the PLS-SEM model but not as a strict necessity here: high performance was empirically attainable in this sample even at comparatively modest levels of transformational leadership, provided ambidexterity and service innovation were adequately present. These necessity results describe empirical patterns within this specific sample of 120 employees from two SAMSAT offices rather than universal

organizational laws, since necessity thresholds depend on sample characteristics, measurement quality, and the observed range of the data; they should accordingly be treated as a first, context-specific approximation pending replication across broader public-sector settings before being generalized into managerial necessity claims beyond this setting.

Table 9 reports the CR-FDH bottleneck table, which translates the necessity result into concrete minimum thresholds at successive levels of public service organizational performance, expressed as a percentage of the observed performance range. An entry of “NN” indicates that no minimum level of the corresponding predictor is required (not necessary) to reach that performance level.

Table 9. Bottleneck Table for Public Service Organizational Performance (CR-FDH)

PSOP level	Organizational Ambidexterity	Service Innovation	Transformational Leadership
0%	NN	NN	NN
10%	NN	2.37	NN
20%	2.25	2.61	NN
30%	2.70	2.85	NN
40%	3.16	3.09	NN
50%	3.62	3.33	NN
60%	4.07	3.57	2.37
70%	4.53	3.81	3.21
80%	4.98	4.05	4.05
90%	5.44	4.29	4.89
100%	5.90	4.52	5.73

Values are minimum required levels on the original 1–7 measurement scale. NN = not necessary at that performance level.

The bottleneck table shows that organizational ambidexterity and service innovation impose a minimum requirement starting from low performance aspirations (20% and 10% of the performance range, respectively), and the required level rises steadily as the performance target increases. Transformational leadership, by contrast, shows no minimum requirement until roughly 60% of the performance range, consistent with its non-significant overall necessity effect size; where non-zero thresholds for leadership do appear at higher performance targets, they are reported descriptively and should be interpreted with the same caution as the non-significant permutation test above, rather than as a confirmed necessity claim.

4.2 Discussion

All seven hypothesized paths were supported, and the pattern is not uniform: organizational ambidexterity emerged as the strongest determinant of performance, transformational leadership and service innovation each retained a significant direct effect alongside a significant indirect effect through ambidexterity, and the two antecedents diverged in where their influence concentrated. The following subsections interpret each result against the theoretical lenses and prior studies introduced in Section 2, then return to the leadership-performance contradiction that motivated this study.

A scope note applies throughout this section. Consistent with Section 3.2, all constructs, including organizational ambidexterity and public service organizational performance, were measured as individual employees' perceptions, and no formal aggregation to the office level was performed. The interpretations below therefore describe associations among employee-perceived constructs; language such as "organizational ambidexterity predicts performance" is a shorthand for "employees who perceive higher ambidexterity in their office also report higher performance," not a claim independently verified at the between-office level.

4.2.1 Transformational Leadership and Service Innovation as Direct Drivers of Performance

Transformational leadership exerted a significant positive effect on public service organizational performance, supporting H1 and aligning with Chau et al., (2022) finding that transformational leadership significantly lifted the performance of public service organizations in Vietnam, and with Hoai et al., (2022), who showed it reinforcing an innovation-performance link among Vietnamese public sector organizations. Service innovation likewise exerted a significant positive effect on performance, supporting H2 and echoing Maqdliyan & Setiawan, (2023) finding that organizational innovation significantly raised performance across Indonesia's Central Bureau of Statistics units, as well as (S. Alkaabi et al., 2024) evidence that service innovation carried measurable performance consequences in Omani government organizations. Neither effect was dominant on its own, and their coexistence with organizational ambidexterity indicates SAMSAT's performance is multiply determined rather than driven by a single lever, consistent with how public sector performance is typically modeled once several capability-based predictors are entered simultaneously (Boukamel & Emery, 2017).

4.2.2 Organizational Ambidexterity as the Strongest Proximal Determinant

Organizational ambidexterity emerged as the strongest of the three predictors, both in path coefficient and practical effect size, supporting H3 and confirming it as the most consequential construct in this model. This ordering is consistent with Dynamic Capability Theory's premise that ambidexterity functions as the reconfiguration mechanism positioned closest to the performance outcome, while leadership and innovation operate further upstream as inputs that must first be converted into capability before they register as performance (Teece, 2007). The finding empirically extends Boukamel & Emery, (2017) argument that public service organizations balancing innovation and optimization tensions sustain performance more reliably than agencies anchored to either orientation alone, and moves Tukiran et al., (2022) claim about facilitating factors for ambidexterity a step further by showing that, once cultivated, ambidexterity is performance-consequential in a SAMSAT setting. It also lends empirical support to O'Reilly et al., (2013) broader claim that ambidexterity outperforms specialization in exploitation or exploration alone, here demonstrated in a bureaucratic rather than market-facing organization.

4.2.3 Leadership and Innovation as Antecedents of Ambidexterity

Transformational leadership significantly predicted organizational ambidexterity, supporting H4 and reproducing the pattern Jansen et al., (2008) found when transformational leadership strengthened the ambidexterity-building effect of senior team attributes. The result is also consistent with (Nemanich & Vera, 2009), who showed transformational leadership shaping

ambidextrous behavior through the learning culture it cultivates, and with Liu et al., 2019 & Ojha et al., (2018), who reported comparable paths in supply chain and culture-based settings. Service innovation predicted ambidexterity even more strongly, supporting H5 and standing as the most influential antecedent tested.

This last result deserves comparison with S. Alkaabi et al., (2024), who modeled the relationship in the opposite direction, treating exploration and exploitation as antecedents of service innovation in Omani government organizations. The present data instead show service innovation strongly predicting ambidexterity. Because both directions find support in different samples, the more defensible reading is that service innovation and organizational ambidexterity are mutually reinforcing capabilities that likely co-evolve rather than stand in a single, fixed causal order, a question a cross-sectional design cannot adjudicate and future longitudinal research on SAMSAT or comparable agencies should test directly.

4.2.4 Organizational Ambidexterity as a Candidate Mechanism Addressing the Leadership-Performance Contradiction

The Introduction opened with a contradiction: Chau et al., (2022) found transformational leadership significantly improved public organizational performance in Vietnam, while Ramadhan, Rizky, and Rahayu (2026) found the same construct positive but statistically insignificant among Indonesian ASN once human relations and work ethic were modeled alongside it. The present results speak directly to that contradiction. Transformational leadership retained a significant direct effect on performance even after organizational ambidexterity was added, and also carried a significant indirect effect through ambidexterity, classified as complementary mediation under Zhao, Lynch, and Chen's (2010) typology. Service innovation showed the same pattern.

A plausible reading of why Ramadhan et al., (2026) found leadership's effect wash out is that their model routed it through human relations and work ethic, variables somewhat tangential to the specific capability leadership is theorized to operate through in a bureaucracy managing an efficiency-innovation tension. When the intervening mechanism is instead the theoretically matched one, organizational ambidexterity, leadership's effect resurfaces as significant both directly and indirectly, consistent with Boukamel & Emery, (2017) argument that leadership and innovation inputs in public organizations convert into performance mainly through the organization's capacity to hold exploitation and exploration in balance. Read together, the two studies suggest the leadership-performance link depends on whether the model captures the capability that actually carries it; this study's evidence is consistent with, though it does not by itself prove, organizational ambidexterity being that capability in the SAMSAT context, a claim the single cross-sectional sample examined here can support but not establish definitively.

4.2.5 Sufficient but Not Necessary: What the Necessity Analysis Adds

The complementary necessity analysis sharpens rather than repeats the sufficiency-based picture above. Organizational ambidexterity and service innovation each qualified as necessary conditions, meaning a minimum level of each is indispensable and cannot be substituted by an abundance of the other predictors. Transformational leadership did not meet this threshold, even though it remained a significant sufficiency-based contributor throughout Sections 5.1 and 5.4. Read together with Zhao et al., (2010) mediation typology applied earlier, this pattern refines rather than contradicts the resolution offered for the Chau et al., (2022) &

Ramadhan et al., (2026) contradiction: leadership's contribution is real and helps explain why it converts to performance on average, but it is not a precondition SAMSAT offices must clear before performance becomes possible, whereas a baseline of ambidexterity and innovation appears to be. This distinction, between a lever that helps and one an organization cannot do without, is the boundary condition an average-effect path alone cannot reveal, consistent with Richter et al., (2020) argument that sufficiency and necessity logics answer different managerial questions even within the same model. This necessity claim should nonetheless be read as evidence from a single sample rather than as a universally applicable threshold: the ceiling lines and effect sizes underlying it are estimated from 120 self-reported, cross-sectional responses drawn from two cities in one province, so the specific necessity thresholds reported here are a first approximation whose magnitude, and possibly whose statistical significance, may shift with a larger or more geographically diverse sample.

4.2.6 Practical Significance Despite Modest Individual Effect Sizes

Although each predictor's individual contribution to performance was modest in magnitude by conventional benchmarks (Cohen, 1988), the three predictors jointly explained a moderate proportion of the variance in public service organizational performance (Jr. et al., 2017). This is not a contradiction: it reflects a performance outcome shaped by several modest but statistically robust levers rather than one dominant cause, matching how Boukamel & Emery, (2017) describe performance formation in public bureaucracies generally. This modesty should nonetheless be read together with a post-hoc statistical power assessment: the two direct paths to performance carrying the smallest effect sizes, TL → PSOP and SI → PSOP, were also the two paths with the lowest achieved statistical power (.72 and .64, respectively), so their statistical significance in this sample should not be read as evidence that the true effects are precisely estimated. Section 6.2 develops the practical prioritization this pattern implies. The R^2 of .381 for public service organizational performance also means that nearly two-thirds of its variance remains unexplained by the three predictors modeled here, and this gap is substantive rather than merely a statistical residual. Plausible omitted determinants include organizational culture, digital infrastructure quality, employee competencies, bureaucratic flexibility, public trust, institutional support from provincial or national government, budget adequacy, political influence, and regulatory complexity, any of which could independently affect public service performance in a SAMSAT-type setting and, if correlated with the constructs modeled here, could also bias the estimated paths. Future studies extending this model should treat these factors as candidate additions rather than incidental controls, since several, particularly digital infrastructure and budget adequacy, plausibly interact with the Samsat Digital Nasional rollout that motivates this study's ambidexterity framing in the first place.

5. Implications

5.1 Theoretical Implications

As in Section 5, the propositions below concern employee-perceived organizational ambidexterity and employee-perceived organizational performance rather than independently verified organizational-level capabilities or outcomes; this qualification applies throughout this section and Section 6.2, and is not repeated at every sentence for readability.

Beyond confirming individual paths, the overall pattern supports a general proposition for public administration research: transformational leadership's effect on performance appears contingent on whether the model captures the specific capability through which leadership is theorized to operate, rather than being a fixed, context-free effect. Read against (Chau et al., 2022; Ramadhan et al., 2026), leadership's apparent inconsistency across prior findings is less a property of leadership itself than of model specification, reframing the boundary-condition question raised in the Introduction as a proposition future study can test by varying the intervening mechanism rather than only the sample or country context. The study also extends Dynamic Capability Theory's reach. Teece, (2007) sensing, seizing, and reconfiguring logic has been developed mainly around market-facing firms; this study shows the same reconfiguration logic manifesting as organizational ambidexterity inside a non-market bureaucracy, where competitive pressure is replaced by a citizen-service and compliance mandate. That ambidexterity carried both a direct and mediating role suggests Dynamic Capability Theory travels further into public administration than its market-origin literature has so far tested.

A further implication concerns measurement. The mixed confirmatory tetrad evidence for organizational ambidexterity indicates the field has not fully settled whether ambidexterity, operationalized as a single higher-order construct, behaves reflectively in every context. Because the construct was originally validated in private-firm settings (Gibson & Birkinshaw, 2004), its measurement behavior in a public bureaucracy is an open question this study surfaces rather than resolves, one that matters because a mis-specified measurement model would distort the mediating role documented here. The reversed directional pattern relative to S. Alkaabi et al., (2024) on the service innovation-ambidexterity link points to a genuine gap: whether the two are linked by a single causal direction or by mutual reinforcement over time, a question neither study can settle with cross-sectional data. The necessity analysis adds a further contribution: by showing that ambidexterity and service innovation, but not leadership, meet the threshold for a necessary condition, this study demonstrates that sufficiency and necessity are separate properties a predictor can hold independently, echoing Richter et al., (2020) methodological argument but grounding it in a substantive finding. For transformational leadership theory, this means its sufficiency-oriented claim, that more leadership produces more performance on average, and its necessity-oriented claim, that a minimum level is required before performance is possible at all, should be evaluated as separate propositions rather than assumed to follow from one another. A substantive, theory-level reason for the mixed tetrad pattern is worth considering directly rather than treating it only as a statistical artifact: exploitation and exploration are typically theorized as complementary but distinct strategic orientations, refining existing SAMSAT compliance procedures draws on different skills, incentives, and risk tolerance than experimenting with new Samsat Digital Nasional service channels, so an employee's standing on one is not guaranteed to move in lockstep with their standing on the other, which is precisely the interchangeability reflective indicators are assumed to exhibit. In a public bureaucracy where exploitation is bound by compliance rules and exploration is bound by a top-down digitalization mandate rather than by discretionary market experimentation, the two

orientations may be even less substitutable for one another than in the private-firm settings where the reflective specification was originally validated, which would make mixed tetrad evidence more, not less, expected in this context. Future public-sector applications of organizational ambidexterity should accordingly test a formative or second-order specification separating exploitation and exploration explicitly, rather than defaulting to the reflective specification retained here on the basis of prior literature alone.

5.2 Practical and Managerial Implications

These recommendations are drawn from employees' perceptions of their own offices rather than from independently verified organizational records, and should be read as a starting diagnostic for management attention rather than an audited assessment. For SAMSAT management in Batam and Tanjung Pinang, the finding that ambidexterity carries the largest performance consequence argues against leaving it to emerge informally as a by-product of leadership or innovation; management can instead institutionalize it by protecting dedicated time for experimentation with Samsat Digital Nasional channels alongside routine compliance work. Because leadership and innovation each retained an effect beyond what they contributed through ambidexterity, the two levers warrant parallel rather than sequential investment; where budget constraints force a choice, service innovation showed a larger contribution to ambidexterity than leadership did. The necessity analysis gives this a firmer footing: because ambidexterity and innovation are necessary conditions, SAMSAT cannot compensate for a deficiency in either by investing more in leadership, and the bottleneck table indicates how much of each must be in place before a given performance target becomes achievable, with leadership functioning as an amplifier on an adequate base rather than a precondition; supervisors auditing underperforming offices should check these bottlenecks before attributing shortfalls to weak leadership. Because ambidexterity's measurement behavior remains partly unsettled, dashboards should track exploitation- and exploration-oriented indicators as distinct metrics, and evaluation frameworks should assess this balance directly rather than inferring it from leadership ratings alone.

These recommendations should nonetheless be read as statistical priorities rather than an implementation plan: path coefficients and necessity thresholds indicate which capabilities matter most for performance in this sample, but they say nothing about how feasible building those capabilities is within a public-sector context. In practice, SAMSAT offices operate under civil-service hiring and promotion rules that constrain how quickly leadership development can be scaled, an organizational culture shaped by decades of compliance-first practice that experimentation-oriented ambidexterity building may take time to shift, political and provincial oversight that can slow or redirect innovation investment regardless of its statistical importance, and budget cycles set at the provincial or national level rather than by individual office managers. A more realistic translation of these findings is therefore a phased capability-development sequence, for example securing baseline digital and procedural infrastructure first, then building ambidextrous routines incrementally within existing compliance constraints, then layering leadership development on top of an adequate ambidexterity base, rather than the simultaneous, statistically-optimal joint investment the path coefficients and

necessity results alone would suggest. Framing these results only as a ranked priority list risks implying a feasibility the public-sector implementation context does not support.

6. Limitations and Future Research

This study's conclusions are bounded by eight limitations. First, and most fundamentally, all constructs were measured as individual employee perceptions without formal aggregation to the SAMSAT office level (Section 3.2); the sample of 120 was drawn from only two SAMSAT offices, 60 respondents each, so the reported relationships should be read as associations among employee-perceived constructs rather than as validated organizational-level (between-office) relationships, and readers seeking evidence of office-to-office variation in ambidexterity, innovation, or performance will not find it in this design, nor would two offices have supported such a comparison even had aggregation been attempted. The sample of 120 falls below the power-based threshold for detecting small effects with three predictors, so smaller path coefficients warrant caution, and replication across other Riau Islands SAMSAT offices would confirm whether they persist at greater power. An explicit post-hoc power assessment, computed from the f^2 effect sizes reported in Table 4 using the noncentral F distribution for each structural path's unique contribution at $n = 120$ (Cohen, 1988), makes this concrete: achieved power was .82 for $TL \rightarrow OA$ ($f^2 = .070$), .72 for $TL \rightarrow PSOP$ ($f^2 = .055$), .96 for $SI \rightarrow OA$ ($f^2 = .115$), .64 for $SI \rightarrow PSOP$ ($f^2 = .045$), and .97 for $OA \rightarrow PSOP$ ($f^2 = .122$). The two direct paths from the exogenous constructs to performance, $TL \rightarrow PSOP$ and especially $SI \rightarrow PSOP$, therefore fall below the conventional .80 power threshold, and their significant p-values in Table 4 should be interpreted alongside this elevated risk of Type II error for comparably small true effects, rather than as evidence that power is uniformly adequate across the model. At $n = 120$ with three predictors, the minimum path-level f^2 detectable at 80% power is approximately .067, meaning true effects smaller than this were unlikely to be detected regardless of whether they exist in the population. The cross-sectional design cannot establish whether service innovation precedes organizational ambidexterity, follows it, or co-evolves with it, a question sharpened by this study's diverging direction from S. Alkaabi et al., (2024); a longitudinal design tracking the Samsat Digital Nasional rollout would allow a causal test. All constructs were measured from the same employees at one time; though common method bias checks were favorable, pairing perceptions with archival records such as processing times or complaint logs would validate performance independently. Beyond common method bias, the simultaneous measurement of all constructs also leaves the model exposed to endogeneity from simultaneity, reciprocal causality, and omitted variables, since performance may itself strengthen leadership practices or ambidextrous behavior rather than only following from them; this study did not implement a formal correction such as a Gaussian copula or instrumental-variable approach, and doing so, alongside longitudinal validation, is recommended before the structural paths reported here are treated as evidence of causal direction rather than of association. The mixed tetrad evidence for ambidexterity leaves open whether a reflective specification best represents it in a public-sector setting, warranting comparison against alternative specifications. Data came only from Batam and Tanjung Pinang, offices with high digital infrastructure, limiting generalizability until replicated across more diverse SAMSAT offices. Finally, with $n = 120$, the CE-FDH and CR-FDH ceiling lines

and bottleneck thresholds, though permutation-tested, should be treated as a first approximation pending replication with a larger sample.

7. Conclusion

This study set out to test whether organizational ambidexterity explains when, and why, transformational leadership and service innovation translate into stronger public service organizational performance, using SAMSAT offices in Batam and Tanjung Pinang as a setting where efficiency and innovation demands visibly compete for the same organizational attention. All seven hypothesized relationships were supported. Organizational ambidexterity proved to be the most consequential single predictor of performance, and it partially channeled the effects of both transformational leadership and service innovation rather than replacing them outright. The complementary necessity analysis added a further layer to this picture: organizational ambidexterity and service innovation each qualified as a necessary condition for performance, while transformational leadership, though a significant sufficiency-based contributor throughout the model, did not.

These results offer evidence consistent with, rather than a definitive resolution of, the contradiction that opened this paper: transformational leadership's effect on public organizational performance may not be uniformly weak or strong across studies because the effect can depend on whether the intervening organizational capability that carries it, here organizational ambidexterity, is present in the model, and because leadership may operate as a contributor that helps performance rather than a threshold an organization must clear before performance is possible at all. These are evidence-based propositions from a single cross-sectional sample of 120 respondents in two cities, offered for replication rather than as an established finding: they should be tested with larger, multi-region samples, alternative measurement specifications for organizational ambidexterity, and, where feasible, longitudinal or multi-source designs before being generalized. For SAMSAT management navigating the Samsat Digital Nasional transition, and for public administration researchers studying comparable bureaucracies elsewhere, the tentative practical and theoretical implication is the same: building the organizational capacity to hold routine efficiency and continued innovation in balance appears not to be incidental to good leadership and strong service innovation, but a foundation on which they become performance, a proposition this study's modest effect sizes and single-sample design invite further researchers to test rather than take as settled.

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