“Fiscal inputs, internal control systems, and minimum service standard achievement in Indonesian provinces”

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FISCAL INPUTS, INTERNAL CONTROL SYSTEMS, AND MINIMUM SERVICE STANDARD ACHIEVEMENT IN INDONESIAN PROVINCES

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Abstract

Despite sustained growth in regional expenditure following two decades of fiscal decentralization, Indonesian provincial governments continue to fall short of mandatory minimum service standard (MSS) targets. This study examines the effects of capital expenditure, social assistance expenditure, and regional own-source revenue on MSS achievement across 38 Indonesian provincial governments over 2019–2024, and evaluates the moderating role of the internal control system. An unbalanced panel of 210 province-year observations is analyzed using fixed effects moderated regression analysis, with robustness checks incorporating year fixed effects and cluster-robust standard errors. Capital expenditure ($\beta = 1.8076$, $p < 0.001$) and social assistance expenditure ($\beta = 1.9355$, $p < 0.001$) both exert significant positive direct effects on MSS achievement, confirming their roles as the primary supply-side and demand-side fiscal channels, respectively, while regional own-source revenue produces no significant direct effect. The internal control system positively moderates the revenue–MSS relationship ($\beta = 0.2173$, $p = 0.001$) but significantly weakens the positive effects of both capital ($\beta = -0.5236$, $p < 0.001$) and social assistance expenditure ($\beta = -0.5907$, $p < 0.001$) – an asymmetric pattern attributed to procedural rigidity and conservative budget absorption practices within SPIP Level 1-3 maturity. These findings establish that internal control systems produce asymmetric governance effects conditioned on the accountability structure of each fiscal instrument, and that fiscal autonomy generates MSS gains only when complemented by effective institutional governance. As these results derive from observational provincial panel data, they should be interpreted as robust associations rather than causal effects.

Keywords minimum service standards, fiscal decentralization, internal control, public expenditure, governance

JEL Classification H72, H83, H75, M42

INTRODUCTION

Fiscal decentralization in developing countries has exposed a persistent structural paradox: expanding public budgets do not automatically translate into improved basic service delivery. Between 2018 and 2024, rising debt servicing costs across 99 developing economies – representing 73% of all developing countries – increasingly crowded out allocations for schools, hospitals, and essential public investments, as interest payments consumed a growing share of government revenue that would otherwise fund public services (United Nations Conference on Trade and Development, 2026). At the subnational level, this fiscal-service gap manifests in qualitatively different ways. In India, substantial nominal budget allocations remain unrealized, producing a "paper budget" phenomenon in which public infrastructure deteriorates and essential services go undelivered despite significant fiscal commitments on paper (Bhardwaj, 2026). In South Africa, more than 80 local governments face systemic and structural fiscal distress

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– not episodic shortfalls – where planning processes serve as political patronage arenas rather than rational resource allocation mechanisms, and over 60% of local governments lack accurate revenue data to support even their most basic service obligations (Langa & Balkaran, 2026). Both cases are relevant to Indonesian provincial finance not because they involve comparable fiscal volumes, but because they isolate the same underlying mechanism examined here: service delivery gaps rooted in weak execution, monitoring, and financial governance capacity rather than in the scale of budget allocation. These converging international patterns point to a common underlying problem: the conversion of fiscal inputs into service outcomes is not a mechanical function of budget size but is fundamentally contingent upon governance quality and the integrity of public financial management systems.

Indonesia exemplifies this fiscal-governance paradox at the subnational level. Despite more than two decades of decentralization reform and sustained growth in regional expenditure, Indonesian provincial governments continue to fall short of mandatory minimum service standard (MSS) targets. The national MSS Achievement Index rose from 52.53% in 2019 to 87.86% in 2024. However, this trajectory has consistently failed to reach the 100% benchmark required under both the Kemendagri Strategic Plan 2019–2024 and the National Medium-Term Development Plan (RPJMN) 2024–2029. This demonstrates that "minimal" standards remain structurally difficult to achieve within a single development cycle (Indra et al., 2026). A quadrant analysis of 514 regencies and cities identified 103 localities with adequate fiscal capacity but subpar MSS performance, a pattern consistent with allocative inefficiency and governance-related constraints playing a more binding role than resource scarcity, though the cross-sectional nature of this evidence does not by itself establish the underlying causal mechanism. A complementary policy feasibility assessment further found that the financial and administrative dimensions of MSS implementation score low on feasibility, whereas the social dimension performs comparatively well, indicating that public demand for services exists, but the institutional mechanisms for converting fiscal resources into service outcomes remain structurally deficient (Firmansyah, 2025).

Therefore, it is interesting why fiscal inputs fail to consistently translate into minimum service standard outcomes across Indonesian provincial governments, and what governance mechanisms condition this fiscal expenditure, social assistance expenditure, and regional own-source revenue in subnational service delivery. No prior study has examined these three fiscal instruments simultaneously – together with the moderating role of the internal control system – within a unified panel regression framework applied to MSS achievement. This absence of a simultaneous, panel-based treatment of fiscal inputs and ICS moderation constitutes the research gap this study addresses.

1. LITERATURE REVIEW AND HYPOTHESES

The relationship between fiscal inputs and public service delivery outcomes has emerged as a central preoccupation in public sector accounting and fiscal governance research, yet the mechanisms through which budgetary resources are converted into tangible service results remain incompletely understood. A growing body of cross-country evidence demonstrates that the mere expansion of subnational expenditure does not automatically produce commensurate improvements in public service performance – the effectiveness of fiscal channels is systematically conditioned by institutional quality, governance capacity, and the specific accountability structures governing each expenditure category (Arends, 2020; Rajkumar & Swaroop, 2008). In developing country contexts, where fiscal decentralization has transferred substantial expenditure responsibilities to subnational governments, this fiscal service delivery gap is particularly pronounced: regional governments frequently possess adequate fiscal resources yet fail to translate them into mandated service outcomes, pointing to governance architecture rather than resource scarcity as the binding constraint (Dick-Sagoe, 2020; Hung & Thanh, 2022). Indonesia's experience with minimum service standard (MSS) achievement across its 38 provinces over 2019–2024 provides a theoretically rich empirical context for examining these fiscal governance dynamics, as the country's decentralized fiscal system channels capital expenditure, social assistance, and regional own-source revenue through provincial governments whose institutional quality varies considerably across the archipelago (Indra et al., 2026; Lewis, 2023).

Two complementary theoretical frameworks provide the analytical foundation for this study. Agency theory, as formalized by Jensen and Meckling (1976), conceptualizes the relationship between principals (in this context, the central government and citizens) and regional governments acting as agents entrusted with fiscal authority to deliver mandated public services. The central insight of agency theory is that information asymmetry between principals and agents creates incentive misalignments that may lead agents to divert fiscal resources toward political or bureaucratic priorities rather than mandated service delivery obligations, generating a systematic wedge between fiscal inputs and service outputs (Muhtar et al., 2023; Scott & O'Brien, 2020). Monitoring mechanisms – particularly internal control systems – function as the primary institutional instruments through which principals constrain agent opportunism, enforcing procedural compliance, financial reporting obligations, and audit accountability structures that realign agent behavior with mandated service objectives (Brenya Bonsu et al., 2023; Rajala & Jalonen, 2025; Saputra et al., 2024). Fiscal federalism theory, foundationally established by Musgrave (1996) and Oates (2008), provides the complementary supply-side framework: subnational governments, being proximally closer to their constituents, are theoretically better positioned to allocate public resources toward locally salient service priorities than centralized distributions allow (Chandra Jha, 2015). Applied to Indonesia's decentralized governance architecture, fiscal federalism predicts that regional fiscal instruments – capital expenditure, social assistance, and regional own-source revenue – constitute the primary channels through which provincial governments discharge their MSS obligations, though the productive conversion of fiscal inputs into service outcomes is not automatic but fundamentally conditioned by institutional governance quality (Arends, 2020; Nakatani et al., 2023).

Capital expenditure constitutes the primary supply-side fiscal instrument through which regional governments expand the physical infrastructure underpinning MSS-mandated service delivery – generating fixed public assets including school buildings, health centers, roads, and social facilities across all six mandatory service sectors (Oates, 2008; Rahmadini et al., 2024). From a fiscal federalism perspective, capital investment by subnational governments directly addresses the supply-side constraints that prevent regions from meeting national service benchmarks, particularly in infrastructure-deficient provinces where physical gaps constitute the most immediate barrier to MSS compliance (Firmansyah et al., 2024; Gansauer et al., 2024). Cross-country evidence consistently documents capital spending as a primary driver of public service capacity expansion in developing country contexts (Arends, 2020; Wabukala et al., 2024), while subnational expenditure efficiency analyses confirm that capital allocation toward social infrastructure (education, health, and basic services) yields measurable improvements in service delivery outcomes (Dixit et al., 2024). In the Indonesian context specifically, the positive association between capital expenditure and public service capacity is well-documented across multiple regional settings, though the magnitude of this relationship varies considerably with governance quality and institutional context (Aisyah et al., 2026; Kis-Katos & Sjahrir, 2017; Niswani et al., 2022). Discretionary capital investment has been shown to improve local service delivery outcomes in decentralized systems more broadly (Dick-Sagoe, 2020), with infrastructure investment identified as the binding supply-side constraint in lower-performing regions (Gansauer et al., 2024). The weight of evidence thus consistently supports a positive relationship between capital expenditure and MSS achievement, conditioned by the governance environment in which it is deployed.

Social assistance expenditure represents the redistributive demand-side fiscal instrument through which regional governments address poverty-driven barriers to MSS access among vulnerable populations – providing transfers and welfare support to households whose inability to access mandated services reflects economic exclusion rather than infrastructure deficits (Oates, 2008; Wabukala et al., 2024). Government Regulation

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No. 2 of 2018 explicitly designates social protection as one of six mandatory MSS sectors, making social assistance expenditure a direct programmatic input into MSS coverage rather than merely an indirect poverty alleviation mechanism. Panel evidence from Indonesian provinces confirms that social assistance significantly reduces poverty – the primary demand-side barrier to MSS-eligible service access among vulnerable households (Thahira et al., 2025). In comparison, cross-country evidence documents government social spending as a redistributive channel reducing inequality-driven service access gaps more broadly (Beramendi & Rogers, 2020; Konstantinou, 2024). The developmental economics literature further establishes that social protection programs in developing countries play a critical role in expanding access to basic services by addressing affordability constraints that infrastructure provision alone cannot resolve (Banerjee et al., 2024). However, the effectiveness of social assistance in generating service delivery gains is not unconditional: it is substantially moderated by targeting accuracy, institutional coordination capacity, and the quality of program administration (Capano et al., 2025; Salvador & Sancho, 2023; Wabukala et al., 2024). Firmansyah's (2025) policy feasibility analysis of MSS implementation in Indonesia finds that the social dimension of MSS scores highest in feasibility assessments, confirming that public demand for services exists and that social assistance channels are operational, while simultaneously documenting that administrative bottlenecks in social program delivery remain a structural constraint on MSS achievement.

Regional own-source revenue (ROR) reflects the fiscal autonomy of regional governments: their capacity to self-finance MSS priorities using locally generated revenue without the conditionalities and earmarking restrictions attached to central government transfers such as the General Allocation Fund (DAU) and Special Allocation Fund (DAK) (Musgrave, 1996; Muthomi & Ndunda, 2024). From a fiscal federalism perspective, higher ROR endows regional governments with the allocative flexibility to respond to locally identified MSS gaps without transfer constraints, directing discretionary resources toward service priorities that central allocation formulas may inadequately capture (Arends, 2020; Desdiani et al., 2022). Beyond allocative flexibility, ROR generated through local taxation creates horizontal accountability pressures from taxpaying citizens that incentivize regional governments to deploy revenue toward visible, MSS-eligible public services – a democratic accountability mechanism absent from centrally transferred funds (Digdowiseiso et al., 2022; Ervina et al., 2025). Empirical evidence from Indonesian regional governments documents a positive association between ROR and regional fiscal performance and service capacity, though the relationship is heterogeneous across institutional contexts (Aisyah et al., 2026; Niswani et al., 2022). Cross-country panel evidence from devolved systems confirms a significant positive association between own-source revenue and subnational service delivery outcomes (Muthomi & Ndunda, 2024). Lewis' (2023) assessment of Indonesia's fiscal decentralization law highlights that ROR optimization is a central policy objective for improving regional service delivery financing. However, a growing body of evidence suggests that fiscal autonomy does not unconditionally generate service delivery improvements, as its productive deployment depends critically on the governance environment in which revenue discretion is exercised (Hung & Thanh, 2022; Nakatani et al., 2023).

The internal control system (ICS) constitutes the primary institutional mechanism through which principal–agent problems in regional fiscal management are constrained, ensuring that fiscal resources reach their intended programmatic destinations and generate tangible MSS outcomes. Operationalized through PP No. 60 of 2008 across five integrated components (control environment, risk assessment, control activities, information and communication, and monitoring), the ICS functions as the governance infrastructure that disciplines agent behavior toward mandated service delivery objectives (Ahmad & Furqan, 2025; Saputra et al., 2024). The theoretical prediction from agency theory is unambiguous: effective internal control systems should amplify the fiscal–service delivery relationship by constraining misallocation, reducing leakage, and enforcing accountability across all expenditure categories (Brenya Bonsu et al., 2023). Empirical evidence from Indonesia confirms that internal control quality is positively associated with capital expenditure effectiveness in generating public development outcomes (Saragih, 2022) and with public service quality directly (Utami & Widarjo, 2022). Financial accountability mechanisms – of which ICS is the institutional foundation – have similarly been documented to amplify the effectiveness of government expenditure and locally generated revenue on welfare and service outcomes (Ferryono et al., 2022; Isman et al., 2025). The broader public sector accountability literature corroborates that internal control systems, when effective, reduce agency costs and improve the alignment between fiscal resource allocation and mandated service obligations across diverse governance contexts (Brenya Bonsu et al., 2023; Hamed, 2023). However, the relationship between internal control maturity and fiscal effectiveness is not necessarily linear. Rajala and Jalonen (2025) identify theoretical contradictions between principal–agent compliance frameworks and institutional complexity, suggesting that control systems may generate unintended procedural rigidities that constrain rather than amplify expenditure effectiveness at intermediate maturity levels. This dynamic is particularly relevant to Indonesia's SPIP framework, where provincial governments remain predominantly within the lower maturity bands (Muhtar et al., 2023). This procedural-rigidity perspective implies a competing theoretical expectation to the baseline agency theory prediction: rather than uniformly amplifying fiscal effectiveness, internal control systems at intermediate maturity levels may instead constrain it, suggesting that the direction of ICS moderation is theoretically contestable rather than unambiguously positive.

The governance moderation of fiscal–service delivery relationships has attracted increasing scholarly attention across both developed and developing country contexts, yet the specific mechanisms through which internal control systems condition different fiscal instruments remain underexplored. Cross-country panel evidence consistently establishes that public expenditure effectiveness across capital, social, and revenue instruments is significantly moderated by governance quality – with weak institutional environments systematically undermining the fiscal–service delivery nexus regardless of expenditure volume (Miranda-Lescano et al., 2023; Nakatani et al., 2023; Rajkumar & Swaroop, 2008). In the health expenditure decentralization literature, Nakatani et al. (2023) demonstrate that fiscal decentralization improves health outcomes only where governance quality exceeds a threshold level – a finding that implies governance conditionality applies not uniformly but differentially across fiscal instruments and expenditure categories. Miranda-Lescano et al. (2023) extend this insight to human development outcomes more broadly, confirming that the development impact of decentralized public health expenditure is contingent on institutional quality at the subnational level. In the Indonesian public sector context, BPK RI audit findings consistently document that internal control weaknesses spanning capital procurement, social assistance disbursement, and revenue management are associated with elevated misallocation risk and reduced program effectiveness (Ervina et al., 2025; Saputra et al., 2024). Despite this evidence, no study has simultaneously examined whether ICS moderates the relationships between all three fiscal instruments – capital expenditure, social assistance, and ROR – and MSS achievement within a unified panel regression framework, representing a significant gap in the Indonesian public sector accounting literature that this study addresses.

The theoretical and empirical literature collectively establishes that fiscal inputs (capital expenditure, social assistance expenditure, and regional own-source revenue) are theoretically expected to drive MSS achievement through distinct supply-side and demand-side channels. However, the effectiveness of each fiscal channel is systematically conditioned by the governance architecture through which resources are deployed. Internal control systems occupy a theoretically central but empirically underexamined role in this fiscal–governance–service delivery nexus, with existing evidence suggesting that their effects may be asymmetric across expenditure categories rather than uniformly positive as agency theory predicts. The gap in the literature is therefore not merely empirical – the absence of panel evidence on ICS moderation of MSS achievement – but also theoretical: the conditions under which monitoring mechanisms amplify versus constrain fiscal effectiveness across different accountability structures remain incompletely specified.

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This study aims to examine the effects of capital expenditure, social assistance expenditure, and regional own-source revenue on minimum service standard achievement across 38 Indonesian provincial governments over the period 2019–2024, and to evaluate the moderating role of the internal control system on each of these fiscal–MSS relationships.

Based on the theoretical frameworks and empirical evidence reviewed above, the following hypotheses are advanced. Consistent with the baseline agency theory prediction, *H4* and *H5* are stated in directional (positive) form; however, as noted above, the procedural-rigidity and threshold-effect literature offers a plausible competing expectation of negative moderation, which is explicitly tested against the directional hypotheses.

H1: Capital expenditure has a positive effect on minimum service standard achievement.

H2: Social assistance expenditure has a positive effect on minimum service standard achievement.

H3: Regional own-source revenue has a positive effect on minimum service standard achievement.

H4: The internal control system strengthens the effect of capital expenditure on minimum service standard achievement.

H5: The internal control system strengthens the effect of social assistance expenditure on minimum service standard achievement.

H6: The internal control system strengthens the effect of regional own-source revenue on minimum service standard achievement.

2. METHOD

This study employs an unbalanced panel dataset covering 38 Indonesian provinces over 2019–2024, yielding 210 province-year observations (see Table 1 for sample construction details). The six-year observation window spans pre-pandemic (2019), pandemic (2020–2021), and post-pandemic recovery fiscal cycles (2022–2024), providing rich temporal variation in both fiscal conditions and MSS achievement trajectories across the Indonesian archipelago. The dataset was compiled through systematic documentation from publicly accessible government agency portals, and the complete panel dataset is publicly available via the institutional repository to support replication and transparency.

To ensure transparency regarding the panel structure, Table 1 summarizes the sample construction process. The theoretical maximum of 38 provinces observed annually over the six-year window (2019–2024) yields 228 possible province-year observations. Two sources of data unavailability reduce this to the analyzed sample of 210 observations. First, four provinces – Papua Selatan, Papua Tengah, Papua Pegunungan, and Papua Barat Daya – resulted from the 2023 territorial pemekaran (division) of Papua and Papua Barat and therefore did not exist as autonomous provincial government entities prior to 2023, precluding the availability of fiscal and MSS data for 2019–2022 (16 province-year observations). Second, Budget Realization Reports (LKPD/LRA) for Sulawesi Tenggara for fiscal years 2020 and 2021 could not be accessed through the DJPK portal at the time of data collection (2 province-year observations). No other provinces or years exhibit missing data across any of the study's variables, and the resulting panel is therefore unbalanced.

Table 1. Sample construction

Item	Provinces	Years affected	Observations
Theoretical maximum (38 provinces × 6 years)	38	2019–2024	228
Reduce: new provinces not yet established (2023 Papua pemekaran)	Papua Selatan, Papua Tengah, Papua Pegunungan, Papua Barat Daya (4)	2019–2022	–16
Reduce: LRA/LKPD data inaccessible	Sulawesi Tenggara	2020–2021	–2
Final analyzed sample	38	2019–2024	210

Table 2. Variable operationalization

Variable	Measurement	Source
Minimum Service Standard Achievement (MSS)	Annual MSS score (%)	Kemendagri e-SPM
Capital Expenditure (CE)	Capital expenditure / Total APBD (%)	LRA – DJPK Kemenkeu
Social Assistance Expenditure (SE)	Social assistance / Total APBD (%)	LRA – DJPK Kemenkeu
Regional Own-source Revenue (ROR)	ROR / Total regional revenue (%)	LRA – DJPK Kemenkeu
Internal Control System (ICS)	SPIP maturity score: Level 1 (Undocumented) – Level 5 (Optimized)	BPKP Annual Report

Data on capital expenditure, social assistance expenditure, and regional own-source revenue were extracted from the Regional Government Budget Realization (LRA) Reports published annually by the Directorate General of Fiscal Balance (DJPK), Ministry of Finance. MSS achievement data were obtained from the Ministry of Home Affairs (Kemendagri) through the e-SPM monitoring and evaluation system, which records annual provincial MSS achievement scores across all six mandatory service sectors. Data on internal control system quality were obtained from the annual SPIP Maturity Assessment Reports published by the Financial and Development Supervisory Agency (BPKP), which evaluates the maturity of government internal control systems at the provincial level.

The dependent variable, minimum service standard achievement (MSS), is measured using the annual MSS score published by Kemendagri for each provincial government. In accordance with Permendagri No. 7 of 2018, Minimum Service Standards constitute a mandatory benchmark of public service performance that regional governments must fulfill across six obligatory service sectors: education, health, public works and spatial planning, public housing, social protection, and public order and civil protection. Capital expenditure (CE) is measured as the ratio of realized capital expenditure to total realized APBD expenditure, expressed as a percentage. Social assistance expenditure (SE) is measured as the ratio of realized social assistance expenditure to total realized APBD expenditure, expressed as a percentage. Regional own-source revenue (ROR) is measured as the ratio of realized ROR to total realized regional revenue, expressed as a percentage, reflecting the fiscal autonomy of each provincial government. The internal control system (ICS) is operationalized using the SPIP maturity level score published annually by BPKP, following the assessment framework under BPKP Regulation No. 5 of 2021. The maturity scale comprises five levels: Level 1 (Undocumented), Level 2 (Documented), Level 3 (Defined), Level 4 (Managed and Measured), and Level 5 (Optimized). A complete summary of variable operationalization is presented in Table 2.

To test the hypotheses, this study employs Moderated Regression Analysis (MRA) within a panel data framework. MRA is appropriate for testing interaction effects between an independent variable and a moderating variable on a dependent variable, and has been widely applied in public sector accounting and fiscal studies examining governance moderation effects (Saragih, 2022; Utami & Widarjo, 2022). The full moderated regression model is specified as follows:

$$\begin{aligned} MSS_{it} &= \alpha + \beta_1 CE_{it} + \beta_2 SE_{it} + \beta_3 ROR_{it} \\ &+ \beta_4 ICS_{it} + \beta_5 \left(CE_{it} \cdot ICS_{it} \right) \\ &+ \beta_6 \left(SE_{it} \cdot ICS_{it} \right) + \beta_7 \left(ROR_{it} \cdot ICS_{it} \right) + \varepsilon_{it}, \end{aligned} \tag{1}$$

where MSS_{it} denotes the *MSS* achievement score for province i in year t; *CE*, *SE*, and *ROR* are the fiscal independent variables; *ICS* is the SPIP maturity score; the interaction terms (*CE* × *ICS*), (*SE* × *ICS*), and (*ROR* × *ICS*) capture the moderating effects hypothesized in *H4*, *H5*, and *H6*, respectively; and ε_{it} is the error term. The coefficients β_1-β_3 test the direct effects (*H1-H3*), while β_5-β_7 test the moderating effects (*H4-H6*). A positive and significant β_5, β_6, or β_7 indicates that stronger ICS amplifies the respective fiscal variable's effect on MSS achievement.

The appropriate panel estimator was determined through two specification tests. The Hausman test was conducted to choose between fixed effects (FE) and random effects (RE) estimators, where the fixed effects estimator controls for time-invariant provincial heterogeneity – including geographic,

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demographic, and historical institutional factors – that may confound the fiscal–MSS relationship. Variance Inflation Factor (VIF) diagnostics were computed to assess multicollinearity among the interaction terms and their constituent variables, with a threshold of VIF < 10 indicating acceptable levels (Wooldridge, 2025). To strengthen robustness, year fixed effects were introduced to control for time-varying macroeconomic shocks – including the COVID-19 fiscal shock of 2020–2021 – isolating within-province fiscal effects from aggregate temporal trends. Variance-covariance estimation was further adjusted using cluster-robust standard errors at the provincial level (vce(cluster id)), accounting for heteroskedasticity and serial correlation within provincial clusters (Wooldridge, 2025). All estimation procedures were performed using Stata 17.

3. RESULTS

Table 3 presents the descriptive statistics for all variables across 210 province-year observations from 38 Indonesian provinces over 2019–2024. The mean MSS achievement score of 76.55% (SD = 0.2439) indicates that Indonesian provinces fulfill approximately three-quarters of their minimum service obligations on average, with substantial variation ranging from 1.11% to 100%. Capital expenditure constitutes a mean of 30.37% of total APBD, while social assistance expenditure averages 22.66%, reflecting their considerable shares in provincial budget structures. Regional own-source revenue averages 54.81% of total regional revenue, indicating moderate but heterogeneous fiscal autonomy across provinces. The mean ICS maturity score of 2.44 (SD = 0.698) – with a sample maximum of 3 – confirms that no province reached Level 4 (Managed and Measured) or Level 5 (Optimized) during the observation period, meaning all sampled provinces remained within the Defined level of internal control maturity.

Table 4 presents the VIF diagnostics. All variables exhibit VIF values well below the threshold of 10, with the highest values recorded for ROR (3.25) and ICS (3.01), which is expected given their involvement in interaction terms. The mean VIF of 2.45 confirms the absence of problematic multicollinearity among the independent and moderating variables, validating the reliability of the regression estimates.

Table 5 presents the Hausman test results. The test yields a chi-square statistic of 59.38 with seven degrees of freedom ($p < 0.001$), rejecting the null hypothesis that coefficient differences between fixed effects and random effects estimators are unsystematic. This confirms that the fixed effects estimator is appropriate, as unobserved time-invariant provincial heterogeneity is correlated with the regressors (Wooldridge, 2025). The F-test further confirms that provincial fixed effects are jointly significant ($F(37,165) = 7.53$, $p < 0.001$), validating the within-province estimation approach. Accordingly, all subsequent analyses employ the fixed effects estimator.

Table 3. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
MSS Achievement (MSS)	210	0.7655	0.2439	0.0111	1.0000
Capital Expenditure (CE)	210	0.3037	0.1402	0.0041	0.6285
Social Assistance Expenditure (SE)	210	0.2266	0.1239	0.0157	0.6506
Regional Own-Source Revenue (ROR)	210	0.5481	0.1515	0.0180	1.0000
Internal Control System (ICS)	210	2.4429	0.6980	1.0000	3.0000

Table 4. Variance Inflation Factor (VIF) – Multicollinearity test

Variable	VIF	1/VIF
Capital Expenditure (CE)	1.83	0.5478
Social Assistance Expenditure (SE)	1.73	0.5785
Regional Own-Source Revenue (ROR)	3.25	0.3081
Internal Control System (ICS)	3.01	0.3320
Mean VIF	2.45	

Table 5. Hausman specification test

Criteria	Value
Chi-square statistic $\chi^2(7)$	59.38
Prob > chi^2	0.0000
Decision	Fixed Effects (FE) model selected

Table 6 presents the fixed effects MRA results. The model demonstrates strong explanatory power with an R^2 within of 0.9306, indicating that 93.06% of within-province variation in MSS achievement is explained by the regressors. This high within-R^2 is consistent with the strong within-province persistence of both fiscal allocation patterns and MSS achievement trajectories across the six-year observation window, combined with the substantial explanatory contribution of provincial fixed effects in absorbing time-invariant institutional and geographic heterogeneity. A comparably high explained variance has been reported in prior Indonesian panel studies employing a similarly focused set of programmatically-linked fiscal and governance regressors (Saragih, 2022), suggesting that the magnitude, while high, is not anomalous for this class of model and data structure. The *F*-statistic of 315.97 ($p < 0.001$) confirms joint significance of all regressors. Regarding direct effects, capital expenditure exerts a positive and significant effect on MSS achievement (β = 1.8076, $p < 0.001$), supporting *H1*. Social assistance expenditure similarly demonstrates a positive and significant effect (β = 1.9355, $p < 0.001$), supporting *H2*. Regional own-source revenue produces a positive but statistically insignificant direct effect (β = 0.1509, p = 0.324), providing no support for *H3*. The ICS maturity score itself exerts a significant positive direct effect (β = 0.3203, $p < 0.001$), confirming that stronger internal control systems are independently associated with higher service delivery performance. Regarding moderating effects, the CE × ICS interaction is negative and significant (β = −0.5236, $p < 0.001$), indicating that stronger ICS weakens the positive effect of capital expenditure on MSS achievement – contrary to *H4*, which is thus rejected. Similarly, the SE × ICS interaction is negative and significant (β = −0.5907, $p < 0.001$), providing no support for *H5*. In contrast, the ROR × ICS interaction is positive and significant (β = 0.2173, p = 0.001), confirming that stronger ICS amplifies the positive effect of regional own-source revenue on MSS achievement, supporting *H6*.

To further interpret the significant interaction effects, simple slopes for each fiscal variable were estimated at the three observed levels of ICS maturity (Level 1, 2, and 3) using the margins post-estimation command in Stata. As shown in Table 7, the marginal effect of capital expenditure on MSS achievement is positive and significant at all three ICS levels. However, it declines substantially in magnitude as ICS maturity increases – from β = 1.2840 (SE = 0.1862, $p < 0.001$) at ICS Level 1, to β = 0.7604 (SE = 0.1157, $p < 0.001$) at Level 2, to β = 0.2368 (SE = 0.0932, p = 0.011) at Level 3. A parallel pattern holds for social assistance expenditure, whose marginal effect weakens from β = 1.3448 (SE = 0.1858, $p < 0.001$) at Level 1 to β = 0.7541 (SE = 0.1155, $p < 0.001$) at Level 2, and becomes statistically insignificant at Level 3 (β = 0.1634, SE = 0.0984, p = 0.097). In contrast, the marginal ef-

Table 6. Fixed effects moderated regression analysis results

Variable	β	Std. Error	t	p-value	Decision
CE	1.8076	0.2694	6.71	< 0.001	Supported
SE	1.9355	0.2706	7.15	< 0.001	Supported
ROR	0.1509	0.1525	0.99	0.324	Not Supported
ICS	0.3203	0.0323	9.93	< 0.001	
CE x ICS	−0.5236	0.0911	−5.75	< 0.001	Not Supported
SE x ICS	−0.5907	0.0936	−6.31	< 0.001	Not Supported
ROR x ICS	0.2173	0.0623	3.49	0.001	Supported
Constant	−0.6531	0.0817	−8.00	< 0.001	
R^2	0.9306				
F(7,165)	315.97			< 0.001	
Observations	210				
Groups (Provinces)	38				

Note: CE = Capital Expenditure; SE = Social Assistance Expenditure; ROR = Regional Own-Source Revenue; ICS = Internal Control System.

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Table 7. Simple slopes (marginal effects) of fiscal variables at observed ICS levels

ICS Level	Variable	dy/dx	Std. Error	Z	p-value	95% CI
1	CE	12.840	0.1862	6.89	< 0.001	[0.9190, 1.6490]
2	CE	0.7604	0.1157	6.57	< 0.001	[0.5336, 0.9871]
3	CE	0.2368	0.0932	2.54	0.011	[0.0540, 0.4195]
1	SE	13.448	0.1858	7.24	< 0.001	[0.9806, 1.7089]
2	SE	0.7541	0.1155	6.53	< 0.001	[0.5277, 0.9804]
3	SE	0.1634	0.0984	1.66	0.097	[−0.0296, 0.3563]
1	ROR	0.3682	0.1027	3.59	< 0.001	[0.1670, 0.5695]
2	ROR	0.5855	0.0748	7.83	< 0.001	[0.4389, 0.7321]
3	ROR	0.8028	0.0917	8.75	< 0.001	[0.6230, 0.9826]

Note: CE = Capital Expenditure; SE = Social Assistance Expenditure; ROR = Regional Own-Source Revenue; ICS = Internal Control System.

fect of regional own-source revenue strengthens monotonically with ICS maturity, rising from β = 0.3682 (SE = 0.1027, p < 0.001) at Level 1 to β = 0.5855 (SE = 0.0748, p < 0.001) at Level 2, to β = 0.8028 (SE = 0.0917, p < 0.001) at Level 3. These simple slopes confirm that the negative CE × ICS and SE × ICS interactions reported above reflect a genuine attenuation of fiscal effectiveness at higher control maturity – rather than a sign reversal – while the positive ROR × ICS interaction reflects a substantive strengthening of the revenue–MSS relationship as internal control maturity increases.

Table 8 presents the robustness check results across two alternative specifications. The year fixed effects model controls for time-varying macroeconomic shocks, including the COVID-19 fiscal shock of 2020–2021. The year dummies for 2021–2024 are statistically significant (p < 0.01), confirming a consistent upward temporal trend in MSS achievement independent of fiscal inputs. Despite controlling for temporal shocks, all key coefficients retain their direction and significance: CE (β = 1.6339, p < 0.001), SE (β = 1.9109, p < 0.001), CE × ICS (β = −0.4483, p < 0.001), SE × ICS (β = −0.5420, p < 0.001), and ROR × ICS (β = 0.1324, p = 0.028). The cluster-robust standard errors model addresses heteroskedasticity and serial correlation within provincial clusters, with all core findings remaining consistent: CE (β = 1.8076, p = 0.002), SE (β = 1.9355, p = 0.001), CE × ICS (β = −0.5236, p = 0.007), SE × ICS (β = −0.5907, p = 0.002), and

Table 8. Robustness check

Variable	Year-FE Model		Cluster Robust Model		Decision
	β	p-value	B	p-value	
CE	1.6339	< 0.001	1.8076	0.002	Supported (Robust)
SE	1.9109	< 0.001	1.9355	0.001	Supported (Robust)
ROR	0.2172	0.127	0.1509	0.637	Not Supported (Robust)
ICS	0.3129	< 0.001	0.3203	< 0.001	
CE x ICS	−0.4483	< 0.001	−0.5236	0.007	Not Supported (Robust)
SE x ICS	−0.5420	< 0.001	−0.5907	0.002	Not Supported (Robust)
ROR x ICS	0.1324	0.028	0.2173	0.091	Supported (Robust)
Constant	−0.6209	< 0.001	−0.6532	< 0.001	
Year Dummies					
2020	0.0160	0.193			
2021	0.0344	0.006			
2022	0.0445	0.003			
2023	0.0680	< 0.001			
2024	0.0833	< 0.001			
R^2	0.9429		0.9306		
F-statistic	220.12	< 0.001	361.91	< 0.001	
Observations	210		210		
Groups (Provinces)	38		38		

Note: CE = Capital Expenditure; SE = Social Assistance Expenditure; ROR = Regional Own-Source Revenue; ICS = Internal Control System.

ROR × ICS (β = 0.2173, p = 0.091). Although the p-value for ROR × ICS increases to 0.091 under cluster-robust standard errors, it remains significant at the 10% level, providing consistent support for *H6* across all specifications.

4. DISCUSSION

The positive and significant effect of capital expenditure on MSS achievement (β = 1.8076, $p < 0.001$) confirms that subnational capital investment constitutes a critical supply-side mechanism through which provincial governments expand their capacity to fulfill mandatory service obligations – a finding consistent with fiscal federalism theory's prediction that decentralized capital allocation addresses locally binding infrastructure constraints (Musgrave, 1996; Oates, 2008). This result extends and strengthens prior Indonesian evidence documenting a positive capital expenditure–service capacity relationship in single-region settings (Niswani et al., 2022; Rahmadini et al., 2024) to a nationally representative panel of all 38 provinces, substantially broadening the external validity of this relationship. The finding aligns with Kis-Katos and Sjahrir (2017), who document that fiscal and political decentralization in Indonesia significantly improves local public investment outcomes, and with Dixit et al. (2024), who demonstrate that subnational capital allocation toward social infrastructure generates measurable service delivery improvements across developing country contexts. The relatively large coefficient magnitude is consistent with cross-country evidence identifying capital spending as the primary driver of public service expansion in infrastructure-deficient developing economies (Arends, 2020; Wabukala et al., 2024), and underscores the particular importance of infrastructure investment for eastern Indonesian provinces where physical gaps constitute the most immediate barrier to MSS compliance (Firmansyah, 2025; Indra et al., 2026). Taken together, these convergent findings establish capital expenditure allocation as a necessary – though not sufficient – condition for MSS achievement, with its effectiveness further contingent on the governance environment through which it is deployed.

The positive and significant effect of social assistance expenditure on MSS achievement (β = 1.9355, $p < 0.001$), yielding the largest coefficient among all three fiscal variables, confirms that demand-side barriers to MSS access are at least as binding as supply-side infrastructure constraints across Indonesian provinces. This finding is consistent with Thahira et al.'s (2025) panel evidence that social assistance significantly reduces poverty – the primary demand-side access barrier to MSS-eligible services among vulnerable households – and extends that poverty-reduction finding to the direct MSS achievement context. The result aligns with Banerjee et al.'s (2024) comprehensive review of social protection in developing countries. They document that cash transfers and welfare programs substantially improve access to basic services by addressing affordability constraints that infrastructure provision alone cannot resolve. Moreover, the finding corroborates cross-country evidence from Beramendi and Rogers (2020) and Konstantinou (2024), documenting government social spending as a redistributive channel reducing inequality-driven service access gaps. The coefficient magnitude exceeding that of capital expenditure (β = 1.9355 vs. β = 1.8076) is theoretically notable. It suggests that in the Indonesian provincial context, poverty-driven exclusion from MSS-eligible services represents a more immediately binding constraint than infrastructure deficits for many provinces. This finding is consistent with Firmansyah et al.'s (2024) policy feasibility analysis showing the social dimension of MSS implementation scoring highest among all six mandatory sectors. The result also reflects the institutional design of PP No. 2 of 2018, which explicitly positions social protection as one of six mandatory MSS sectors, making social assistance a direct programmatic input into MSS coverage rather than merely an indirect poverty alleviation mechanism. However, consistent with concerns documented by Salvador and Sancho (2023) and Capano et al. (2025) regarding the governance-conditionality of social program effectiveness, the aggregate provincial evidence suggests that while social assistance does translate into measurable MSS gains, the quality of this translation remains contingent on institutional and governance factors – as confirmed by the significant ICS moderation results.

The non-significant direct effect of regional own-source revenue on MSS achievement (β = 0.1509, p = 0.324) represents a departure from fiscal

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federalism theory's baseline prediction that fiscal autonomy enhances service delivery efficiency through preference-matching and allocative flexibility (Musgrave, 1996; Oates, 2008). This finding diverges from Muthomi and Ndunda's (2024) panel evidence confirming a positive and significant own-source revenue-service outcome relationship in Kenya's devolved county system, but is consistent with the heterogeneous findings in Indonesian fiscal studies where PAD effects on service-related performance indicators are sensitive to regional governance capacity and institutional context (Aisyah et al., 2026; Niswani et al., 2022). The result also aligns with Arends' (2020) cross-country conclusion that fiscal decentralization effects on service delivery are empirically inconclusive across institutional settings, particularly where local revenue capacity does not automatically translate into local service capacity. This pattern is confirmed by Hung and Thanh (2022) across a broader sample of developing economies. Three complementary explanations are offered. First, despite ROR averaging 54.81% of total provincial revenue, it is subject to competing expenditure pressures – personnel costs, operational expenditures, and politically visible infrastructure projects – that may crowd out MSS-directed allocations in the absence of strong governance frameworks. Second, the non-significance is consistent with Lewis' (2023) assessment that Indonesia's fiscal decentralization architecture creates structural incentive misalignments between revenue generation and service delivery performance that PAD increases alone cannot resolve. Third, and most theoretically significant, the non-significant direct effect of ROR must be interpreted alongside the significant positive ROR × ICS interaction. ROR's contribution to MSS achievement is not unconditional but fundamentally contingent on the quality of the internal control system. This evidence is consistent with Nakatani et al. (2023) that decentralized fiscal resources improve service outcomes only where governance quality exceeds a threshold level, and with agency theory's prediction that fiscal autonomy generates service delivery benefits only when effective monitoring mechanisms align agent resource allocation with principal service expectations (Rajkumar & Swaroop, 2008; Scott & O'Brien, 2020).

The moderating effects of the internal control system constitute the most theoretically significant and empirically novel contribution of this study, suggesting an asymmetric governance pattern not previously documented in the Indonesian public sector accounting literature. The negative and significant interactions of ICS with both capital expenditure ($\beta = -0.5236$, $p < 0.001$) and social assistance expenditure ($\beta = -0.5907$, $p < 0.001$) are contrary to the agency theory prediction that monitoring mechanisms amplify fiscal effectiveness (Brenya Bonsu et al., 2023; Jensen & Meckling, 1976). Moreover, they diverge from prior Indonesian evidence that ICS quality is positively associated with capital expenditure effectiveness (Saragih, 2022) and public service quality (Utami & Widarjo, 2022). This warrants multi-layered theoretical interpretation. As the empirical model does not directly measure procedural rigidity, budget absorption behavior, or administrative bottlenecks, the following explanations should be read as plausible interpretations of the observed pattern rather than directly tested mechanisms. Three alternative explanations are advanced.

First, a procedural rigidity explanation: high SPIP maturity in Indonesian provincial governments is associated with intensified compliance requirements – multi-layered verification, documentation, and approval procedures – that generate administrative bottlenecks slowing the realization and deployment of capital assets and social transfers. In settings where SPIP maturity reflects procedural formalism rather than substantive control effectiveness, compliance overhead may reduce the agility of expenditure execution without proportionally improving MSS impact. This dynamic is consistent with Rajala and Jalonen's (2025) theoretical identification of contradictions between principal-agent compliance frameworks and institutional complexity, and with Muhtar et al.'s (2023) documentation of how control rigidities in Indonesian local governments generate unintended misallocation effects. Second, a conservative absorption explanation: provinces with higher SPIP scores tend to adopt more conservative budget absorption practices – prioritizing procedural correctness over expenditure velocity – which may reduce the short-run MSS impact of capital and social spending while improving long-run financial accountability (Saputra et al., 2024; Utami & Widarjo, 2022). This interpretation aligns with Hamed's (2023) finding that the relationship between internal control system quality and financial performance sustainability is non-linear and context-dependent, and with Ahmad and Furqan's (2025) evidence that SPIP implementation in Indonesian local governments is more strongly associated with budget compliance than budget optimization outcomes. Third, a maturity ceiling explanation: given that all provinces in the sample fall within SPIP Level 1–3, the observed ICS scores may not yet reflect the threshold maturity at which internal control genuinely amplifies rather than constrains expenditure effectiveness. This result is consistent with Nakatani et al.'s (2023) threshold governance findings and with Miranda-Lescano et al.'s (2023) demonstration that the development impact of decentralized public expenditure is only positive beyond certain institutional quality thresholds. The positive amplification predicted by agency theory may only materialize at SPIP maturity levels 4–5, which no Indonesian province had attained during the observation period.

In contrast, the positive and significant ROR × ICS interaction (β = 0.2173, p = 0.001) reveals an asymmetric governance dynamic: ICS strengthens the MSS impact of locally generated revenue while simultaneously constraining the effectiveness of centrally allocated expenditures. This asymmetry is theoretically coherent from both agency and fiscal federalism perspectives. Unlike transfer-funded capital and social expenditures, ROR is subject to horizontal accountability from taxpaying citizens, creating intrinsic incentives for provincial governments to direct revenue toward visible, MSS-eligible services independent of formal control mechanisms (Oates, 2008; Rajkumar & Swaroop, 2008). However, this citizen-accountability channel is not directly measured in the present data and is offered as a theoretical interpretation rather than an empirically established mechanism. When this citizen accountability is reinforced by institutional governance mechanisms operationalized through SPIP maturity, the allocative efficiency of ROR toward mandated service priorities is further amplified. This idea is consistent with Isman et al.'s (2025) finding that governance accountability mechanisms amplify the effectiveness of locally generated revenue on public service outcomes. In addition, Ferryono et al. (2022) evidence that internal control strengthens the social welfare impact of government revenue, and Brenya Bonsu et al. (2023) document that institutional integrity mechanisms produce differentiated accountability effects across revenue types. The complementarity between horizontal citizen accountability and vertical institutional monitoring thus constitutes the channel through which ICS produces positive service delivery effects specifically for ROR, distinguishing it structurally from transfer-funded expenditures where horizontal accountability is absent. Collectively, these asymmetric moderation findings extend counterintuitive governance moderation patterns documented in the Indonesian public sector literature (Saragih, 2022; Utami & Widarjo, 2022). Moreover, they contribute panel evidence that ICS does not uniformly strengthen fiscal-service delivery relationships across expenditure categories – a nuance that has significant implications for both public sector accounting theory and regional financial management practice in Indonesia.

These findings are subject to several limitations inherent to observational panel designs. First, the associational relationships documented here are subject to standard panel endogeneity concerns, including potential reverse causality – provinces with higher MSS achievement may subsequently attract greater fiscal allocation or governance investment – and omitted time-varying confounders not fully captured by province and year fixed effects. While the fixed-effects specification absorbs time-invariant provincial heterogeneity, it does not rule out simultaneity bias between fiscal inputs, governance quality, and service delivery outcomes. Second, the explanatory mechanisms advanced above for the asymmetric moderation pattern – procedural rigidity, conservative budget absorption, and horizontal citizen accountability – are theoretically grounded interpretations rather than directly tested mechanisms, as the empirical model does not measure administrative process indicators or citizen monitoring behavior directly. Third, because all sampled provinces fall within SPIP Level 1–3, the findings cannot speak to whether the observed moderation pattern would persist, attenuate, or reverse at higher maturity levels (4–5). Future research employing instrumental variable or dynamic panel (system-GMM) approaches, together with direct measures of administrative process quality, would help establish the direction of causality and more precisely identify the mechanisms underlying the asymmetric governance effects documented here.

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CONCLUSION

This study examined the effects of capital expenditure, social assistance expenditure, and regional own-source revenue on minimum service standard achievement across 38 Indonesian provincial governments over 2019–2024, and evaluated the moderating role of the internal control system on each of these fiscal-MSS relationships.

Panel estimation across 210 province-year observations reveals that capital expenditure and social assistance expenditure both exert significant positive direct effects on MSS achievement, confirming their roles as the primary supply-side and demand-side fiscal channels, respectively. Regional own-source revenue produces no significant direct effect, but its MSS impact is significantly amplified by stronger internal control systems. Paradoxically, stronger ICS weakens rather than amplifies the MSS contributions of capital and social assistance expenditure – an asymmetric moderation pattern robust across all specifications.

Three conclusions follow. First, internal control systems produce asymmetric governance effects conditioned on the accountability structure of each fiscal instrument – constraining transfer-funded expenditures through procedural rigidity while amplifying locally generated revenue through governance–citizen accountability complementarity – a dynamic absent from existing public sector agency theory frameworks. Second, fiscal autonomy through regional own-source revenue does not independently generate MSS gains; governance quality is the complementary condition through which revenue capacity translates into service delivery improvements. Third, to our knowledge, this is among the first studies to position MSS achievement as a direct dependent variable in a national fiscal panel regression framework, demonstrating that fiscal–governance relationships operate differently when measured against mandatory service delivery outcomes rather than conventional welfare proxies. These conclusions should be understood as robust associations derived from observational provincial panel data rather than causal estimates; as noted above, establishing causality would require quasi-experimental or instrumental variable designs.

These findings imply that MSS improvement strategies must prioritize reforming governance architecture alongside expanding fiscal allocations – specifically through risk-based internal control approaches that reduce procedural bottlenecks in expenditure execution while simultaneously strengthening local revenue mobilization and SPIP maturity as mutually reinforcing mechanisms. Future research should examine higher SPIP maturity levels (4–5), conduct disaggregated sector-level analyses across the six mandatory MSS domains, and employ quasi-experimental designs to establish causal estimates of the fiscal-governance-MSS nexus.

AUTHOR CONTRIBUTIONS

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