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INSTITUTIONAL DETERMINANTS OF LOCAL FINANCIAL SUSTAINABILITY IN INDONESIA: A MULTIDIMENSIONAL INDEX APPROACH

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Nur Aisyah Kustiani[1], Titik Aryati ✉[2], Vinola Herawaty[3], Joko Sustiyo[4]
[1,2,3]Faculty of Economics, Universitas Trisakti, Indonesia
[4]Faculty of Science, The University of Queensland, Australia
Corresponding Author: titik.aryati@trisakti.ac.id ✉[2]
Jln. Kyai Tapa No.1, Grogol, West Jakarta, Indonesia
St Lucia QLD 4072, Australia

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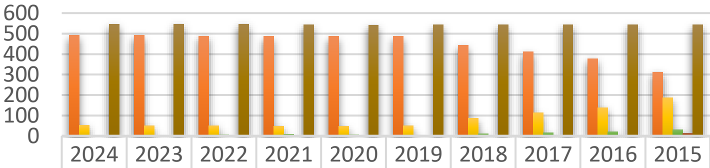
Abstract

Indonesia faces an accountability contradiction where nearly all local governments achieve Unqualified (WTP) audit opinions despite persistent vertical fiscal imbalances and high dependency on central transfers. Addressing the normative shifts introduced by Law No. 1 of 2022 (UU HKPD), this study develops a Local Financial Sustainability (LFS) Index that bridges IPSASB RPG 1 with specific national pillars, namely spending quality and local independence. Analyzing 404 local governments over the 2022–2023 period using Panel Corrected Standard Error (PCSE), the findings reveal that spending efficiency and budget transparency are potent drivers of financial sustainability, signaling managerial effectiveness and reduced agency costs. Notably, contrary to sticky cost theory, administrative intensity exhibits a strong positive influence, acting as a proxy for the institutional capacity required for regulatory transitions. This research redefines fiscal health through productive expenditure and institutional maturity. Practically, the LFS Index provides a self-assessment tool and a performance-based framework for central policymakers in the UU HKPD era.

INTRODUCTION

Fiscal decentralization in Indonesia since 1999 has brought about a significant transformation, marked by narrowing regional disparities and a sharp rise in formal accountability, as evidenced by "Unqualified" (WTP) audit opinions from the Audit Board of Indonesia (BPK). However, these administrative milestones have created a challenge: improved accountability has not been followed by robust financial independence. Based on audit results from the Audit Board of Indonesia (BPK) for the 2015–2024 period, there is a significantly positive trend in the quality of Local Government Financial Reports (LKPD). In 2015, only 312 entities managed to achieve an Unqualified Opinion (WTP). By 2024, this figure has surged dramatically to 491 entities, reflecting a maturing level of compliance with Government Accounting Standards (SAP).



	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Unqualified Opinion (WTP)	491	492	488	486	486	487	443	411	378	312
Qualified Opinion (WDP)	53	50	51	48	49	50	86	113	139	187
Disclaimer of Opinion (TMP)	1	3	7	8	6	5	12	16	22	30
Adverse Opinion (TW)	0	1	0	0	0	0	1	2	3	13
Total Audited Entities	545	546	546	542	541	542	542	542	542	542

Figure 1. Trend of Opinions on Local Government Financial Statement
Sources: processed from data of the Financial Audit Agency (Badan Pemeriksa Keuangan)

However, this administrative success triggers a critical discussion regarding the substance of regional financial health. Despite nearly all local governments (over 90% by 2024) reaching the highest accountability standard through WTP opinions, this achievement does not inherently guarantee long-term fiscal resilience. This reflects the essence of the accountability paradox: a WTP opinion merely guarantees that financial reports are devoid of significant errors and adhere to established accounting principles; it does not reflect a region's ability to maintain financial sustainability under economic shocks or central policy shifts.

The fundamental issue concerning regional financial sustainability in Indonesia is rooted in a persistent and significant vertical fiscal imbalance. An analysis of local revenue compositions (Figure 2) since the beginning of the autonomy era reveals an exponential growth trend in the volume of transfers from the central government. Since 2001, the Intergovernmental Transfer (Transfer ke Daerah dan Dana Desa/TKDD) scheme has undergone a complex structural evolution to accommodate changing regional needs.

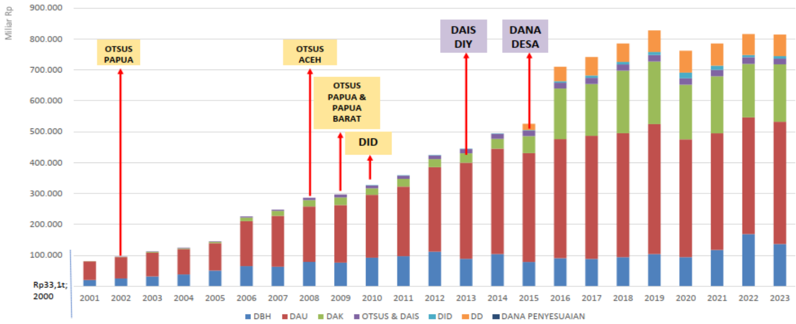


Figure 2. Composition of Local Revenue
Sources: Directorate General of Fiscal Balance

Historical data indicate that the volume of central transfers has surged dramatically, rising from approximately IDR 33.1 trillion in 2000 to over IDR 800 trillion during the 2022–2023 period. This fiscal framework is dominated by several primary instruments, most notably the General Allocation Fund (DAU), which serves as the backbone of regional revenue and is specifically designed to bridge the fiscal gap between regional expenditure requirements and local revenue capacity. Complementing this, the Special Allocation Fund (DAK) has been continuously developed to support specific national priorities implemented at the regional level. The fiscal landscape further expanded with the introduction of newer instruments, such as the Regional Incentive Fund (DID) in 2010 and the Village Fund (Dana Desa) in 2015, both of which introduced performance-based rewards and a focus on village-level development into central–regional relations. Furthermore, to address territorial asymmetries and unique regional histories, the central government established Special Autonomy Funds (Dana Otsus), initiated for Papua in 2002, Aceh in 2008, and West Papua in 2009, alongside the Privilege Fund (Dana Keistimewaan) for Yogyakarta in 2013 (World Bank, 2010).

Within the realm of local financial governance, institutional frameworks have been significantly enhanced through legislative mandates, most notably Law No. 14 of 2008 on Public Information Disclosure, alongside the strategic integration of e-government systems. The implementation of e-budgeting mechanisms has strengthened transparency within the Local Government Budget (APBD) across all phases, from planning to reporting, thereby facilitating greater public engagement in financial oversight. Furthermore, the enactment of Law No. 1 of 2022 concerning Financial Relations between the Central and Regional Governments (Hubungan Keuangan Pusat dan Daerah/HKPD) represents a pivotal shift by incentivizing innovative financing strategies, including local debt, the issuance of municipal bonds, and municipal sukuk (Islamic bonds). Although such policies provide opportunities for accelerated regional development, the inherent risk of excessive debt accumulation presents a significant challenge to fiscal sustainability, echoing local government debt crises observed in other jurisdictions, such as China. Analogously, empirical evidence indicated that while local government funding in the United Kingdom had risen, it had failed to align with population growth and escalating service demands (Commission Economic & Affairs European Economy Institutional Papers, 2015; European Commission, 2017; IFAC, 2013). Consequently, the application of fiscal prudence and sustainable management practices is essential to mitigate disproportionate financial burdens on future generations, thereby upholding the principle of intergenerational equity.

The discourse on the substantive value of audit opinions is further enriched by Almasshadrina (2026), who investigated the moderating role of audit opinions in strengthening the influence of Local Original Revenue (PAD) and capital expenditure on regional financial performance. Her findings reinforce the argument that an “Unqualified” opinion should not be viewed merely as an administrative milestone, but rather as a moderating catalyst that ensures local resources are effectively translated into improved financial outcomes. This supports the necessity of the Local Financial Sustainability (LFS) Index developed in this study, which seeks to look beyond formal compliance toward substantive fiscal resilience.

A consensus regarding the conceptualization of public financial sustainability remains indefinable within both academic and policy discourses. Notwithstanding this ambiguity, international organizations, most notably the European Commission (2017) and the International Federation of Accountants (IFAC, 2013, 2014), characterized the construct as a government's structural capacity to maintain long-term fiscal trajectories without compromising its solvency or risking default. On a global scale, authoritative standard-setting bodies, such as the International Public Sector Accounting Standards Board (IPSASB), have increasingly emphasized the integration of sustainability disclosures within broader financial reporting frameworks. Despite these institutional advancements, a fundamental challenge for contemporary research persists in the absence of a standardized and universally validated measurement instrument. Existing literature suggested that reliance on a single proxy was increasingly inadequate for comprehensively capturing the multifaceted dimensions of revenue resilience, service delivery obligations, and debt management.

Beyond the conceptual and methodological ambiguities outlined above, empirical investigations into the determinants of financial sustainability have produced equally fragmented and inconsistent findings, particularly regarding the role of external and internal factors. Research examining the external determinants of financial sustainability continued to yield mixed and contradictory results. While some studies identified positive correlations between certain variables and fiscal outcomes, others reported negative associations or statistical insignificance. Previous investigations documented that external factors, including unemployment rates, populations under the age of 16, total population size, dependency ratios, immigrant populations, and economic growth, significantly influenced the financial sustainability of local governments (Bolivar et al., 2014, 2016, 2021; Bolívar et al., 2018; Galera et al., 2016, 2019; Subires et al., 2019). Beyond these socio-economic and demographic variables, Lysiak et al. (2021) observed that exogenous shocks, such as the COVID-19 pandemic, profoundly disrupted regional financial resilience. In a comparative study of the United Kingdom and Spain, Bolivar et al. (2021) identified that while unemployment uniformly exerted negative effects in both contexts, other variables such as population size, density, and age cohorts demonstrated context-dependent impacts shaped by institutional arrangements.

Turning to internal and institutional dimensions, the evidence became even more fragmented. Institutional variables, including administrative culture, financing schemes, and economic growth rates, exhibited linear relationships with regional financial sustainability in both the UK and Spain. However, factors such as political stability, government effectiveness, credit risk, and corruption control showed divergent and occasionally contradictory effects across different national contexts (Bolivar et al., 2021). This inconsistency in empirical findings highlighted a significant research gap, particularly concerning Indonesian local governments, which operate within distinctive fiscal decentralization frameworks, political economies, and institutional legacies. Notably, many of the institutional variables examined in this study remain under-researched in the Southeast Asian context, where developmental pressures, governance challenges, and intergovernmental fiscal relations differ from those in Western Europe.

This study aims at examining the influence of internal government factors, specifically spending efficiency (SE), budget transparency (BT), and administrative intensity (AI), alongside external factors such as economic growth, population, and unemployment. The relationships among these variables can be explained through Institutional Theory and Agency Theory. Institutional Theory posited that organizations adapt to their institutional environments through isomorphism (DiMaggio & Powell, 1983). In this context, local leaders strived to mitigate high financial risks by implementing efficiency measures, particularly when facing specific demographic and socio-economic pressures. However, due to their discretionary authority, agents tended to prioritize self-interest by over-allocating operational expenditures, particularly personnel costs. From an Agency Theory perspective, transparency in budget management served as a mechanism for local governments (as agents) to reduce potential conflicts with the public and central government (as principals), who provided the necessary resources (Jensen & Meckling, 1976). While DiMaggio & Powell (1983) emphasized how external pressures through coercive, mimetic, and normative isomorphism drove organizations toward structural uniformity in order to gain formal legitimacy, recent research by Torres (2024) provided a more in-depth behavioral dimension regarding the sustainability of such compliance. Torres (2024) argued that substantive compliance, rather than merely ceremonial compliance, was largely determined by the extent to which agents within the organization viewed the institution as legitimate and the extent to which existing regulations aligned with internalized personal values. In the context of local governments in Indonesia, this perspective implies that achieving an unqualified audit opinion (as a form of coercive isomorphism) must go beyond a mere reaction to sanctions; rather, it must be rooted in the strengthening of value-based institutional capacity to ensure genuine and long-term fiscal resilience.

Afonso & Alves (2023) examined the impact of spending efficiency on fiscal sustainability across 35 OECD countries, finding a generally positive impact; however, a negative effect was observed within the Eurozone subsample. At the local level, Ballesteros & Bisogno (2018)) identified a positive correlation in Italian and Spanish municipalities, especially during crises. This aligns with Bergman et al. (2016), who concluded that efficiency was a primary driver of sustainability when coupled with strict fiscal rules. Conversely, found that in New South Wales, efficient local governments were not necessarily fiscally sustainable, suggesting that efficiency gains without a robust fiscal structure were insufficient, a sentiment confirmed by Wojtowicz & Hodzic (2021)

Regarding budget transparency, most studies concluded that it had a positive influence. Puron-Cid et al. (2019) argued that online financial transparency fostered sustainability by encouraging responsible resource management and reducing corruption risks. Similarly, Bulai et al. (2019) demonstrated that open government data enabled optimized revenue collection. While Ballesteros & Bisogno (2022) suggested a reciprocal relationship between transparency and sustainability, Bulan et al. (2023) found that, in the Indonesian context, budget transparency did not significantly influence regional financial sustainability. Furthermore, administrative intensity was generally associated with negative sustainability outcomes. Studies by Yarram & Dollery (2023) and C. Tran & Dollery (2022) indicated that high administrative intensity increased fiscal risk. This was attributed to the sticky nature of administrative costs, which made it difficult for organizations to adjust when revenues stagnated, leading to operational deficits Tran et al. (2024)

The argument that administrative intensity has a negative influence is rooted in fiscal rigidity. Administrative expenditures, predominantly comprising personnel costs and bureaucratic overhead, tend to exhibit sticky cost behavior. In public sector accounting theory, these costs escalate rapidly during periods of revenue growth but are difficult to contract during economic downturns due to regulatory constraints and political pressures. A high proportion of administrative spending limits a local government’s flexibility to respond to external shocks, thereby increasing the risk of structural deficits that jeopardize long-term financial sustainability (C. Tran & Dollery, 2022). Consequently, organizations characterized by heavy administrative structures are more vulnerable to fiscal uncertainty than those that maintain leaner, more efficient operations.

The concept of financial sustainability in the government framework is fundamentally linked to intergenerational equity (Bolivar et al., 2021). However, a universal measurement remains obscure due to varying governance and financial systems. Traditionally, scholars have utilized the adjusted income statement as a proxy (Bolivar et al., 2016, 2021; Frintrup & Hilgers, 2023; Galera et al., 2016). This accrual-based approach is advocated by the IPSASB through Recommended Practice Guideline 1 (RPG 1), which emphasizes three dimensions: revenue, service, and debt. As its primary contribution, this research develops a composite financial sustainability index that integrates IPSASB’s RPG 1 with the relevant pillars of Indonesia’s Law No. 1 of 2022 (UU HKPD). This approach provides a contextually relevant evaluation tool for policymakers and a self-assessment mechanism for local governments.

While previous scholars have developed various indices to measure local government financial conditions (Cabaleiro et al., 2013; Ritonga & Buanaputra, 2022; Fahira et al., 2025). These frameworks were largely considered within more stable or fundamentally different fiscal legalities. The enactment of Law No. 1 of 2022 (UU HKPD) in Indonesia represents a paradigm shift in central-regional financial relations, moving beyond mere administrative compliance toward substantive fiscal synergy. Existing indices fail to capture the nuances of this new regime, particularly regarding mandated spending quality and the strategic pursuit of local independence. This study fills this critical gap by synthesizing the IPSASB’s Recommended Practice Guideline 1 (RPG 1) with the specific pillars of UU HKPD, offering a contextually grounded assessment tool that transcends the limitations of earlier, pre-reform models.

This study employed a multi-theoretical lens, synthesizing Institutional Theory and Agency Theory, to deconstruct the complex determinants of local financial sustainability in Indonesia. Institutional Theory provided a framework for understanding how local governments adapt to their environment through mechanisms of isomorphism (DiMaggio & Powell, 1983). In the decentralized Indonesian context, local authorities are subject to coercive pressures from central government regulations (e.g., Law No. 1/2022) and mimetic pressures to adopt global best practices in financial management. This theory suggests that regional entities implement governance reforms, such as spending efficiency, not only for functional gains but also to secure institutional legitimacy and ensure long-term survival amidst fiscal uncertainty.

Complementing this, Agency Theory explained the relationship between the central government and the public (principals) and local governments (agents). In this relationship, information asymmetry often arises, where agents might prioritize bureaucratic expansion or sticky costs over fiscal health (Jensen & Meckling, 1976). Within this framework, budget transparency acted as a crucial monitoring mechanism to align the interests of local agents with the long-term sustainability goals of the principals, thereby mitigating the risk of structural deficits.

To understand how internal and external dynamics shape regional fiscal resilience under the new regulatory framework, this study examined several key variables through the lenses of Institutional Theory and Agency Theory. Spending efficiency reflected the managerial capacity to optimize resource allocation, achieving maximum public output with minimal fiscal input. Drawing on Institutional Theory, efficient resource management was an isomorphic response to limited fiscal capacity. From a sustainability perspective, efficiency created fiscal space, allowing local governments to accumulate reserves and invest in high-multiplier infrastructure without increasing debt burdens. While global studies in OECD countries showed a positive correlation (Afonso & Alves, 2023), research in jurisdictions with strict fiscal rules suggested that efficiency was the primary defense against insolvency (Bergman et al., 2016).

Agency Theory suggested that transparency reduced the opportunity for rent-seeking behavior and budget manipulation. By making financial data publicly accessible, local governments signaled their commitment to fiscal discipline. This visibility discouraged the political budget cycle, where expenditures often surged during elections at the expense of long-term stability. While Puron-Cid et al. (2019) suggested that transparency could sometimes be a reaction to financial distress, in Indonesia's emerging digital governance era, it serves as a proactive driver of accountability that strengthens fiscal resilience.

Administrative intensity, often associated with bureaucratic overhead and personnel costs, was traditionally viewed as a source of fiscal rigidity. The literature suggested that high administrative costs exhibited sticky behavior, escalating during revenue growth but remaining rigid during downturns (C. Tran & Dollery, 2022; Yarram & Dollery, 2023). This rigidity limited a government's flexibility to respond to external shocks, potentially leading to operational deficits that jeopardize intergenerational equity.

First, this study introduced novelty in two aspects. First, in terms of methodology, it developed a financial sustainability index using a composite index approach to represent the multidimensional concept of financial sustainability. This methodological innovation was expected to address the shortcomings of previous measurements that relied on a single proxy, the adjusted income statement (Bolivar et al., 2016; Galera et al., 2016; Lhutfi & Sugiharti, 2022; Subires et al., 2019; Syahriyal et al., 2023; Wardhani, 2020). Second, it involved identifying the dimensions of financial sustainability indicators by integrating international recommendations from the IPSASB's Practice Guidance (PG) 1 as well as the specific pillars of the Law of the Republic of Indonesia No. 1 of 2022 (HKPD Law), ensuring that these measurements aligned with the overarching framework for financial sustainability in Indonesia. Previous studies did not include the quality of government spending and local independency as variables or dimensions of fiscal conditions.

Theoretically, this research enriches the public sector accounting literature by deconstructing the accountability challenge in emerging economies, a condition where favorable audit opinions do not necessarily reflect fiscal health. Practically, the index developed in this study serves as a self-assessment tool for local governments to monitor their fiscal resilience and provides guidance for central policymakers in evaluating the effectiveness of transfer funds and creative financing schemes. This study provides a novel contribution to the public sector accounting literature by deconstructing the interplay between administrative intensity and fiscal sustainability, an area that remains under-researched within the context of decentralized financial management.

Building on the theoretical foundations of public financial management, Agency Theory, and Institutional Theory, particularly from the perspectives of efficiency, budget transparency, and administrative burden, this study examined the determinants of local financial sustainability in decentralized government systems. Efficient allocation and utilization of public resources were expected to enhance fiscal capacity and long-term sustainability, as governments were able to generate greater outcomes from limited budgets. At the same time, budget transparency played a critical role in strengthening accountability, reducing information asymmetry, and fostering public trust, all of which contributed to improved fiscal discipline and sustainability. Conversely, excessive administrative intensity reflected in a high proportion of administrative expenditures might crowd out productive spending and reduce the government's ability to sustain its financial position over time. Based on these arguments, this study proposed the following hypotheses:

H_1 : Spending Efficiency has a positive impact on local financial sustainability.
H_2 : Budget Transparency has a positive impact on local financial sustainability.
H_3 : Administrative Intensity harms local financial sustainability.

METHOD

This study was rooted in the positivist paradigm, utilizing a quantitative research design to objectively examine the causal relationships between internal governance determinants and local financial sustainability. The longitudinal nature of the study was captured through a balanced panel data approach, covering the fiscal years 2022 and 2023. This specific timeframe was of critical importance for the Indonesian context, as it represented the transitional phase of the implementation frontier of Law No. 1 of 2022 (UU HKPD).

The initial population of this study included all 514 local governments (regencies and cities). To ensure statistical validity and comparability of the results, a purposive sampling technique was applied based on the following criteria: only regions that were consistently operational and did not undergo administrative restructuring or division *(pemekaran)* during the 2022–2023 period were included, and regions were required to have published audited Local Government Financial Reports (LKPD) accessible through the Audit Board of Indonesia (BPK), with all required socio-economic data from the Central Bureau of Statistics (BPS) fully available for both years. The Special Capital Region of Jakarta (DKI Jakarta) was intentionally excluded from the sample, as its unique hierarchical structure and significantly larger revenue streams than other municipalities would have introduced extreme outliers, potentially biasing the regression coefficients and reducing the generalizability of the findings for standard regencies and cities. Following the application of these criteria, a final sample of 404 local governments was established, resulting in a total of 808 observations (N = 404, T = 2), providing a robust dataset for empirical testing. Financial variables were hand-collected from audited LKPDs, specifically from the Balance Sheet *(Neraca)*, Income Statement (Laporan Operasional), and Budget Realization Reports (Laporan Realisasi Anggaran), while socio-economic indicators were retrieved from the BPS Provinsi/Kabupaten/Kota in a number of annual publications.

The basis of this research was the construction of a Multidimensional Composite Index for Local Financial Sustainability. Adapting from the OECD (OECD, 2008) Handbook on Constructing Composite Indicators, the development process followed a rigorous five-stage methodology. Stage 1 involved conceptual framing and dimension mapping. The index was designed to bridge international best practices with Indonesian regulatory requirements. This study synthesized the three dimensions proposed by the IPSASB's Recommended Practice Guideline 1 (RPG 1) Revenue, Service, and Debt with two additional pillars derived from the UU HKPD (Law No. 1/2022): Spending Quality and Local Independence. This approach ensured that the index measured not only solvency but also compliance with mandatory development targets.

Stage 2 involved indicator selection and fit and proper testing. Initially, 25 indicators were identified from an extensive review of public sector accounting literature (Cabaleiro et al., 2013; Ritonga a, 2022) These indicators underwent a fit and proper assessment to ensure their relevance to Indonesia's specific accounting environment, which utilizes a modified accrual basis. Indicators that were highly volatile or redundant were excluded, resulting in 14 final indicators distributed across the five dimensions.

Stage 3 involved normalization via min–max rescaling. Given that the indicators were measured in varying units (e.g., currency, percentages, and ratios), they required normalization to a common scale [0, 1]. For positive indicators (where higher values indicated better sustainability, such as the PAD ratio), the formula used was:

$$Nxit = \frac{Xit - Xmin}{(Xmax - Xmin)} \text{ ....(1)}$$

For negative indicators (where higher values indicate higher risk, such as interest expense), we used

$$Nxit = 1 - \frac{Xit - Xitmin}{(Xitmax - Xitmin)} \text{ ....(2)}$$

N_{xit} is the rescaled indicator, where X_{it} represents the raw value for region 1 in year t, while Xmin and Xmax are the minimum and maximum values within the sample.

Stage 4 involved weighting and validation through PLS-SEM. To avoid the arbitrary assignment of weights, this study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to determine the relative contribution of each indicator to the overall sustainability construct. This method was preferred in exploratory research for its ability to handle complex models without requiring strict distributional assumptions. The construct's convergent validity was verified through Average Variance Extracted (AVE > 0.5) and reliability through Composite Reliability (CR > 0.7). The results of the regional financial sustainability measurement steps are presented in Table 1.

Table 1. Local Financial Sustainability Dimensions and Indicators

No.	Dimension & Definition	Indikator (sources)	Code	Status
1	**Revenue:** The government's capacity to obtain and develop new revenue streams.	% Revenue / GRDP (Ballesteros & Bisogno, 2022; Cabaleiro et al., 2013)	P1	Fit
		Tax Revenue / Total Population (Cabaleiro et al., 2013)	P2	Fit
		Tax Revenue / (Personnel + Goods & Services + Interest Expenses (Cabaleiro et al., 2013)	P3	Fit
2	**Service:** The government's capacity to meet and expand public services.	Service Level Solvency = Total Assets / Total Population (Ritonga & Buanaputra, 2022)	L1	Fit
		Budgetary Solvency = (Total Local Revenue - DAK - Personnel Expenditure) / Total Operating Expenditure	L2	Excluded
		(Total Local Revenue - DAK) / Personnel Expenditure (Ritonga & Buanaputra, 2022)	L3	Excluded
		Total Local Revenue / Total Transfer Revenue (Cabaleiro et al., 2013)	L4	Excluded
		(Total Local Revenue - Total Transfer Revenue) / Total Expenditure (Cabaleiro et al., 2013)	L5	Fit
3	**Debt:** The government's capacity to meet financial commitments or increase borrowing.	(Cash & Equivalents + Short-term Investments) / Short-term Debt (Ritonga & Buanaputra, 2022)	U1	Excluded
		(Cash & Equivalents + Short-term Investments + Receivables) / Short-term Debt	U2	Excluded
		Current Assets / Short-term Debt (Ritonga & Buanaputra, 2022)	U3	Excluded
		Total Debt / GRDP(Tang, 2022)	U4	Excluded
		Total Debt / Local Original Revenue (PAD)	U5	Excluded
		Interest Expense / Total Local Revenue	U6	Fit
		Primary Balance = Total Revenue - Non-interest Expenditure (Dabbicco, 2019)	U7	Excluded
		Total Debt / Total Local Revenue (Cabaleiro et al., 2013)	U8	Excluded
		(Total PAD + Revenue Sharing + DAU - Mandatory Spending) / (Debt Principal Repayment + Interest + Other Finance Costs (Cabaleiro et al., 2013)	U9	Fit
4	**Spending Quality:** Fulfillment of specific expenditure proportions as mandated by regulations.	Capital Expenditure / Total Local Expenditure (Indonesia, 2017)	KB1	Fit
		Education Expenditure / Total Local Expenditure (Indonesia, 1945, 2003)	KB2	Fit
		Health Expenditure / Total Local Expenditure (Indonesia, 2023)	KB3	Fit
5	**Local Independence:** The region's ability to fulfill its budgetary needs from its own revenue.	Total PAD / Total Local Revenue (Ritonga & Buanaputra, 2022)	KD1	Fit
		Total PAD / Total Expenditure (Ritonga & Buanaputra, 2022)	KD2	Fit
		$RKFD_{it} = KFD \div Personnel\ Expenditure$	KD3	Excluded
		Transfer Revenue / Total Local Revenue (Yushkov, 2015)	KD4	Fit
		Transfer Revenue / Total Expenditure (Yushkov, 2015)	KD5	Fit

Source: Processed Data (2025)

The proposed Local Financial Sustainability (LFS) index transcended traditional solvency-based measures, as illustrated in Table 2. While earlier models by Ritonga (2022) and Cabaleiro (2013) provided essential foundations for assessing financial conditions, they did not account for the normative or mandatory expenditure requirements and fiscal independence targets mandated by Indonesia's latest regulatory landmark, Law No. 1/2022 (UU HKPD). By integrating “Spending Quality” and “Local Independence” as fundamental dimensions, this study provided a context-specific tool that evaluated whether a local government’s “Unqualified” audit opinion reflected substantive fiscal resilience or merely ceremonial compliance.

Table 2. Comparison of Financial Sustainability Framework

Dimension	Previous Models	Proposed LFS Index	Conceptual Novelty & Regulatory Alignment
Revenue	Focused on general revenue growth and tax ratios.	Capacity to develop new streams via GRDP and population-based tax potential.	Aligns with IPSASB RPG 1 and the new fiscal decentralization targets.
Service	Often measured via budgetary solvency or liquidity ratios.	Asset-based service level solvency and transfer-to-expenditure ratios.	Focuses on the long-term capacity to maintain public services, not just short-term cash flow.
Debt	Primarily focused on short-term debt and liquidity.	Long-term commitment indicators, including interest expense and repayment capacity.	Reflects the creative financing risks (loans/bonds) introduced by UU HKPD.
Spending Quality	Rarely included as a primary dimension of financial health.	Mandatory spending ratios for Education, Health, and Capital Expenditure.	Directly derived from UU HKPD. Evaluates if administrative excellence translates into productive spending.
Local Independence	Usually treated as a standalone ratio, not a sustainability dimension.	Multidimensional PAD (Local Revenue) ratios relative to total revenue and expenditure.	Measures the region's structural ability to reduce central dependency, a core pillar of Law No. 1/2022.

The independent variables in this study were spending efficiency, budget transparency, and administrative intensity. Spending efficiency was calculated using Data Envelopment Analysis (DEA), a non-parametric technique that created an efficiency frontier based on the best-performing units in the sample. This study utilized an input-oriented model under the assumption of Variable Returns to Scale (VRS).

The operationalization of spending efficiency using Data Envelopment Analysis (DEA) in this study was constructed upon a production function that conceptualized the technical relationship between the allocation of financial resources as inputs and social welfare outcomes as outputs. Specifically, the input variables were defined as the realized expenditures in the three fundamental pillars of human development: education, health, and infrastructure. These sectors were strategically selected as they represent the core functional mandates of local governments under Indonesia's fiscal decentralization framework and constitute the largest portion of discretionary regional spending aimed at improving local quality of life. Simultaneously, the Human Development Index (HDI) was designated as the primary output variable, serving as a robust multidimensional proxy for the tangible results of government interventions. The HDI effectively captures the cumulative effects of public spending across the vital dimensions of longevity, knowledge, and a decent standard of living. By modeling this interaction between budgetary inputs and development outputs, the DEA produced a standardized efficiency score ranging from 0 to 1. This score fundamentally reflected the managerial capacity of local governments to transform finite financial resources into meaningful social outcomes, thereby providing a robust metric for assessing the effectiveness of regional financial governance in fostering long-term fiscal resilience and sustainable regional development.

Budget transparency was operationalized using the transparency dimension of the Regional Financial Management Index (IPKD), published annually by the Ministry of Home Affairs. This index scored local governments based on the accessibility and timeliness of their budget publications on official websites. This measure captured the signaling aspect of transparency, reflecting the degree of information disclosure to the public.

Following the conceptualization by C. Tran & Dollery (2022), Administrative Intensity (AI) was measured as the ratio of administrative overhead to total regional expenditure. Specifically, the sum of personnel expenditures and general office operational costs was divided by total spending. This variable captured the bureaucratic burden and provided an empirical test for the presence of sticky costs in the Indonesian public sector. The measurements of variables used in this study are presented in Table 3.

Table 3. Measurement of Variables

Variable Name	Operational Definition & Measurement	Data Source
	Dependent Variable	
Local Financial Sustainability (LFS)	A composite index consisting of 5 dimensions: (1) Revenue (3 indicators), (2) Service (5 indicators), (3) Debt (9 indicators), (4) Spending Quality (3 indicators), and (5) Local Independence (5 indicators). Validated using PLS-SEM with 14 final indicators.	Audited LKPD (BPK)
	Independent Variables	
Spending Efficiency (SE)	Efficiency score calculated using Data Envelopment Analysis (DEA). *Inputs:* Health, Education, and Infrastructure expenditures. *Output:* Human Development Index (HDI).	Audited LKPD & BPS
Budget Transparency (BT)	Measured by the transparency score within the Regional Financial Management Index (IPKD).	Ministry of Home Affairs
Administrative Intensity (AI)	The ratio of administrative overhead to total regional expenditure:	Audited LKPD (BPK)
	Control Variables	
Economic Growth (EG)	Annual percentage growth rate of Gross Regional Domestic Product (GRDP).	BPS
Population (Pop)	Total number of residents in each municipality/city (log-transformed for normality).	BPS
Unemployment Rate (Unemp)	The percentage of the labor force that is unemployed (Open Unemployment Rate).	BPS

RESULTS

The results of the measurement model assessment of local financial sustainability, including internal consistency reliability and convergent validity, are summarized in Table 4.

Table 4. Reliability and Validity of LFS

Dimensions	Cronbach's Alpha	rho_A	CR	AVE
Revenue	0.690	0.807	0.820	0.616
Service	0.496	0.571	0.790	0.656
Debt	0.558	0.595	0.815	0.689
Spending Quality	0.730	0.805	0.856	0.678
Local Independence	0.974	0.978	0.981	0.930

As shown in Table 4, the measurement model demonstrated robust internal consistency. While Cronbach's Alpha for the "Service" (0.496) and "Debt" (0.558) dimensions fell below the traditional 0.7 threshold, these values were acceptable in exploratory research given that their Composite Reliability (CR) scores remained well above the 0.7 benchmark (0.790 and 0.815, respectively). Following Hair et al. (2017), CR was considered a more nuanced measure of reliability in PLS-SEM, as it accounted for the varying weights of indicators.

Furthermore, the Average Variance Extracted (AVE) for nearly all dimensions exceeded the 0.5 threshold, indicating strong convergent validity. Although the main "Financial Sustainability" construct showed an AVE of 0.497, this was considered marginally acceptable in the context of complex composite index development, provided that the reliability scores (CR > 0.9) remained high. The "Regional Independence" dimension displayed exceptional reliability and validity metrics (CR = 0.981; AVE = 0.930), underscoring its significant role within the construct.

The diversity of regional fiscal environments in Indonesia during 2022–2023 was depicted in the descriptive statistics presented in Table 5. The dependent variable, Local Financial Sustainability (LFS), exhibited a mean of 0.1297 with a remarkably high standard deviation of 1.0065. The index scores ranged from a minimum of −1.7076 to a maximum of 3.1407. This high degree of variability suggested a disparity in fiscal resilience among Indonesian local governments. The presence of negative index scores was particularly concerning, as it identified regions in a state of fiscal distress, where current revenue streams and central transfers were insufficient to cover accrued service obligations and debt commitments without jeopardizing future generations.

In terms of independent variables, Spending Efficiency (SE) showed a mean of 0.8371 with a very low standard deviation (0.0774). This indicated a high level of convergence among Indonesian local governments toward the efficiency frontier. This trend was likely an isomorphic response to the strict auditing environment maintained by the BPK and the performance-based incentives provided through the Regional Incentive Fund (DID). Conversely, Budget Transparency (BT) displayed a wide distribution, ranging from 0.2590 to 15.0000. This suggested that while some regions had fully embraced digital accountability, others remained in the early stages of information disclosure, reflecting a significant digital divide in regional governance. Administrative Intensity (AI) averaged 0.6474, suggesting that, on average, nearly two-thirds of regional spending was consumed by bureaucratic and personnel overhead, a figure that provided a critical baseline for subsequent hypothesis testing.

Table 5. Descriptive Statistics of Research Variables

Variable	N	Min	Max	Mean	Deviation Standard
LFS	808	-1.7076	3.1407	0.129716	1.006552
SE	808	0.3933	1	0.83718	0.0774221
BT	808	0.259	15	11.25512	3.947128
AI	808	0.3575	0.9368	0.647416	0.090183
EG	808	0.0036	3.4115	0.09751	0.2312751
Pop	808	10.1272	15.1301	12.80025	0.9424466
Unemp	808	0.26	11.82	4.634975	2.192034

Before hypothesis testing, the optimal regression model was determined using the Hausman test. The results yielded a chi-square value of 93.88 with a significance level of 0.000. This indicated systematic differences between the coefficients produced by the Fixed Effects Model (FEM) and the Random Effects Model (REM), leading to the conclusion that FEM was the more consistent and efficient estimator for this study. The application of FEM was particularly advantageous as it allowed for the control of unobserved heterogeneity, specific regional characteristics that remained constant throughout the 2022–2023 observation period.

In the context of Indonesian local government finance, the FEM approach was highly relevant, given that each region possessed unique administrative, geographic, and governance profiles that did not fluctuate in the short term. By controlling for these entity-specific fixed effects, variables such as administrative intensity and economic growth could be estimated with greater precision. However, given the close policy and economic interconnections among Indonesian local governments, the assumption that error terms are independent across regions had to be empirically verified. Detecting cross-sectional dependence (CSD) was crucial; ignoring this issue could result in biased standard errors, thereby compromising the validity of statistical inferences regarding regional financial sustainability factors. CSD was assessed using the Breusch-Pagan LM test following the FEM estimation. The results revealed a significance level of 0.000 ($p < 0.05$), indicating the presence of dependence between observation units within the sample. This dependency likely stemmed from shared macroeconomic characteristics and uniform fiscal policies applied to Indonesian local governments during the 2022–2023 period. Consequently, to ensure robust and unbiased results, this study employed the Panel Corrected Standard Error (PCSE) technique to correct for these inter-sectional correlations.

To evaluate the hypothesized relationships between independent variables and local financial sustainability, this study conducted a panel data analysis using the PCSE estimator. This method was specifically chosen to address potential issues of cross-sectional dependence and heteroskedasticity inherent in the dataset. The empirical results, including the estimated coefficients, standard errors, and significance levels, are summarized in Table 6. The model demonstrated strong explanatory power, with an R^2 of 0.4646, suggesting that nearly half of the variance in local financial sustainability was captured by the identified predictors. Furthermore, the Wald chi2 statistic confirmed the overall statistical validity of the estimated model ($p < 0.01$).

Table 6. Robust FEM Estimation Results (PCSE)

Variabel	Coefficient	Std. Err.	z	Sig
Constant	-7.688	0.382	-20.140	0.000
Spending Efficiency (SE)	1.263	0.217	5.820	0.000
Budget Transparency (BT)	0.018	0.007	2.560	0.011
Administration Intensity (AI)	0.497	0.098	5.050	0.000
Economic Growth (EG)	1.682	0.059	28.490	0.000
Population (Pop)	0.431	0.021	20.680	0.000
Unemployment Rate (Unemp)	0.120	0.026	4.640	0.000
	R-squared		0.4646	
	Wald chi2		1301.670	
	Prob>chi2		0.000	

Dependent Variable: Local Financial Sustainability (LFS)
Source: Regression output from Stata-19

Statistical results demonstrated that Spending Efficiency (SE) had a positive coefficient of 1.2631 ($p < 0.01$). This finding was consistent with the hypothesized proposition; consequently, H1 was supported, providing empirical evidence that efficiency in regional expenditure allocation played a significant role in enhancing local financial sustainability, where optimal resource management was a key determinant of long-term fiscal resilience in Indonesian local governments. The Budget Transparency (BT) variable yielded a positive coefficient of 0.0184 with a p-value of 0.011, and given that the direction of the coefficient was consistent with the hypothesis and reached the required significance level, H2 was accepted, confirming that transparent budget management supported financial sustainability at the local level by reducing information asymmetry between the government and the public.

Hypothesis 3 (H3) suggested that Administrative Intensity (AI) would have a negative impact on regional financial sustainability. However, the data analysis revealed a significant positive coefficient of 0.4972 ($p < 0.01$). Because the empirical results showed a relationship direction opposite to the proposed theory (positive rather than negative), H3 was rejected. This unexpected finding suggested that within this research sample, an increase in administrative intensity, potentially reflecting higher bureaucratic capacity and institutional maturity, contributed positively to financial sustainability instead of weakening it.

The control variables also provided significant contributions to the model’s explanatory power. Economic Growth (EG) exhibited the strongest positive influence (1.6815), confirming that macroeconomic stability was a fundamental factor for regional fiscal health. Population (Pop) showed a positive effect (0.4305), indicating that regions with larger populations tended to possess more stable financial sustainability within the context of this study. The Unemployment Rate (Unemp) recorded a positive coefficient of 0.1198, showing a significant concurrent relationship with the sustainability index.

DISCUSSION

The empirical results demonstrated a positive and highly significant relationship between Spending Efficiency (SE) and Local Financial Sustainability ($b = 1.2631$, $p < 0.01$), supporting Hypothesis 1. This finding confirmed that the technical optimization of resource allocation was a primary determinant of local financial sustainability in Indonesia. In the context of local governments, efficiency was not merely an accounting exercise; it was a vital managerial capacity that created the fiscal space necessary for long-term survival.

These findings contrast with those of Drew & Dollery (2016) in Australia's local government system, where efficiency improvements were often deemed insufficient to ensure sustainability due to exogenous factors such as unmanageable debt. However, they aligned more closely with Bergman et al. (2016) and Afonso & Alves (2023), who argued that in regions with strict fiscal rules, efficiency becomes a primary internal defense against insolvency. In Indonesia, the balanced budget mandate prevents regions from experiencing operating deficits. Therefore, every unit of resources saved through technical efficiency, particularly in the health and education sectors, directly strengthens regional liquidity and solvency. By achieving more with fewer resources, efficient local governments fulfill the principle of intergenerational equity, ensuring that current service levels are funded not by future debt but by current financial management.

This finding also suggests that in regions with high technical efficiency, transfers are converted into fiscal space for long-term survival. By achieving more with fewer resources, efficient local governments do not just satisfy an accounting requirement; they fulfill the principle of intergenerational equity. The balanced budget mandate, as stipulated in Law No. 17/2003, is the most critical constraint on local financial management. It prohibits regions from experiencing operating deficits, meaning that every rupiah spent must be backed by realized revenue or approved financing. This creates a situation where technical efficiency directly strengthens regional liquidity and solvency. If a local government can achieve its education or health targets using 10% fewer resources through better teacher deployment or pharmaceutical procurement, that 10% remains in the regional treasury as a cash buffer, directly improving the sustainability score of the region.

The acceptance of Hypothesis 2 ($b = 0.0184$, $p < 0.05$) indicated that Budget Transparency functioned as a driver of financial sustainability. Through the lens of Agency Theory, transparency served as a crucial monitoring mechanism that reduced information asymmetry between the local government (the agent) and the public and central government (the principals). By providing access to detailed budget documents (29 documents) on official websites, local governments increased their reputational risk, thereby discouraging the political budget cycle, where resources were often diverted for short-term political gains at the expense of long-term stability. These findings aligned with the proposition of Bisogno & Ballesteros (2024), which suggested that fiscal transparency had evolved from a mere administrative obligation into a strategic instrument that bolstered institutional legitimacy and regional financial resilience.

This result provides an update to the findings of Bulan et al. (2023), who previously found transparency to be statistically insignificant in the Indonesian context. This study suggests that, in the post-pandemic fiscal era (2022–2023), transparency has evolved from a ceremonial act of compliance into a functional signaling tool. As the central government implemented the UU HKPD, which introduced more rigorous performance-based monitoring, local governments utilized transparency to signal their institutional maturity and fiscal discipline to the central principal. This mimetic isomorphism led to a standardization of accountability that ultimately stabilized regions’ long-term financial positions and reduced the risk of moral hazard in regional financial management.

Transparency aligned the interests of agents with those of principals, ensuring that fiscal policy remained on a sustainable (prudent) path. It also served as a positive signal to both the central government and constituents. Transparent regions tended to have an easier time securing fiscal incentives such as the Regional Incentive Fund (DID). This additional non-recurring revenue served as a significant fiscal buffer for the sustainability of local finances, especially during economic crises. Transparency also boosted public trust in the government, leading to greater tax compliance.

The most significant finding was the positive and statistically significant influence of Administrative Intensity (AI) on sustainability ($b = 0.4972$, $p < 0.01$). This result led to the rejection of Hypothesis 3, which had posited a negative relationship based on sticky cost theory commonly observed in developed Western economies (C. Tran & Dollery, 2022; Yarram & Dollery, 2023). Under Institutional Theory, the transition to complex regulatory frameworks such as Law No. 1/2022 (UU HKPD) and, specifically, the implementation of the Regional Government Information System (*Sistem Informasi Pemerintah Daerah*/SIPD) required a strong administrative infrastructure. A higher administrative ratio in this sample likely represented a strategic investment in qualified human resources, internal audit functions (APIP), and digital risk management systems. Several studies on local governments have found that implementing SIPD requires significant costs for adapting information technology infrastructure and preparing human resources (Hasanah et al., 2025; Tumija & Erlambang, 2023; Zosadak, 2025). This finding suggested that, in the context of Indonesian local governments, administrative intensity functioned more as a manifestation of institutional capacity rather than a source of fiscal rigidity. While traditional perspectives viewed bureaucratic overhead as "waste," this study aligned with the compliance framework proposed by Torres (2024), which posited that substantive and sustainable compliance occurred when regulatory mandates were internalized and perceived as legitimate by internal agents. In the transition to complex frameworks like UU HKPD and SIPD, a robust administrative structure provided the necessary human capital and internal audit functions required to transform these regulations into actual fiscal resilience, moving beyond mere ceremonial compliance. Without this baseline of administrative strength, local entities could not effectively implement the efficiency and transparency measures required for long-term survival.

This suggested a capacity threshold at which administrative overhead was a prerequisite for effective fiscal governance in decentralized markets. This finding provided a novel contribution to the public sector accounting literature by deconstructing the "bureaucracy as waste" narrative and offering a more nuanced view of administrative costs in decentralized emerging markets. The unexpected positive influence of administrative intensity on sustainability in this study indicated that bureaucratic overhead functioned as a strategic investment in institutional capacity. As argued by Efawati et al. (2025), the success of digital transformation in building organizational resilience was significantly mediated by digital literacy. In the context of Indonesian local governments, a robust administrative structure often viewed as overhead was essential in providing the human capital and digital skills necessary to navigate complex systems like SIPD, thereby translating regulatory mandates into substantive fiscal resilience.

Financial sustainability depended heavily on a region's ability to collect local revenue (PAD). A high level of administrative efficiency, manifested in competent tax staff, a well-organized system for recording taxable items, and disciplined collection mechanisms, actually increases the fiscal self-reliance ratio. A robust administrative framework typically included internal audit functions and multi-layered verification. This minimized the risk of corruption, inefficiency, and recurring findings from audit agencies (such as the BPK). Regions with strong administrative systems tended to have better data for conducting cost-benefit analyses. As a result, budgets were not allocated randomly or based solely on political pressure but were directed toward programs that generate a multiplier effect for the local economy, thereby ensuring long-term financial sustainability.

Economic growth ($b = 1.6815$) remained a powerful determinant of fiscal health, confirming that stable and high local economic growth was a key guarantor of sustainability. However, the Unemployment Rate recorded a contradictory positive coefficient ($b = 0.1198$, $p < 0.01$). This anomaly could be explained through the lens of redistributive fiscal policy and the Flypaper Effect. The formula for the General Allocation Fund (DAU) incorporates a "fiscal gap" component; regions with high unemployment, often reflecting a weak local tax base, automatically trigger larger allocations of central transfers. These external funds tended to stick to the budget, maintaining high liquidity and preventing default even when internal economic productivity was low. While this mechanism ensured short-term sustainability as measured by the composite index, it highlighted a systemic dependency. This finding indicated that the observed sustainability in high-unemployment regions was a product of external cushioning rather than internal resilience, a distinction that was vital for future policy evaluations of fiscal decentralization in Indonesia.

CONCLUSION

This study addressed the accountability paradox in Indonesia, where widespread unqualified audit opinions (WTP) fail to reflect substantive local fiscal resilience. By synthesizing IPSASB RPG 1 with the mandates of Law No. 1/2022 (UU HKPD), this study developed a multidimensional Local Financial Sustainability (LFS) Index that incorporated spending quality and local independence as core pillars. This framework provided a more rigorous assessment of fiscal health than traditional liquidity-based proxies. The empirical analysis yielded three pivotal insights. First, Spending Efficiency was the primary internal engine of sustainability, enabling local governments to fulfill intergenerational equity by optimizing resource allocation under strict balanced-budget constraints. Second, Budget Transparency evolved into a functional signaling tool that fostered fiscal discipline and reduced agency costs. Most notably, contrary to the bureaucratic waste narrative, Administrative Intensity acted as a proxy for institutional capacity. In the context of complex regulatory transitions like UU HKPD, a robust administrative backbone was a prerequisite, not a drain, for sophisticated fiscal governance and digital risk management.

Theoretically, this research contributed to the public sector accounting literature by deconstructing the interplay between institutional capacity and financial health in decentralized emerging markets. Practically, it is recommended that central policymakers integrate the LFS Index into the performance-based criteria for the Regional Incentive Fund (DID), shifting the focus from mere administrative compliance to substantive fiscal synergy. Local leaders should utilize this multidimensional framework as a self-assessment dashboard to identify vulnerabilities across revenue, debt, service, spending quality, and financial independence pillars. While this study provided a robust baseline for the post-pandemic era, its two-year observation period limited its ability to capture long-term reform impacts. Future research should employ longitudinal panels to track these determinants across full political cycles and integrate political variables, such as local election cycles, to further deconstruct the drivers of fiscal discipline.

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