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Bureaucratic Reform and Government Performance Accountability on Local Government Expenditure Efficiency in West Nusa Tenggara

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Abstract
This study examines the impact of bureaucratic reform and government performance accountability on local government expenditure efficiency in West Nusa Tenggara Province during 2019–2024. A two-stage quantitative approach was applied. First, Data Envelopment Analysis with an input-oriented Variable Returns to Scale model was used to measure technical efficiency across ten local governments. Second, System Generalized Method of Moments estimation was employed to analyze the determinants of efficiency while addressing endogeneity and unobserved heterogeneity. The results show substantial variation in expenditure efficiency, with scores ranging from 0.48 to 1.00, indicating that greater fiscal resources do not automatically lead to efficient public spending. Government performance accountability has a positive and significant effect on expenditure efficiency, suggesting that systematic planning, monitoring, and evaluation encourage better resource allocation. In contrast, bureaucratic reform does not show a significant direct effect, implying that structural reforms may require a longer period to influence fiscal efficiency. The findings highlight the importance of strengthening performance accountability systems to improve local government expenditure efficiency.

Keywords: Bureaucratic Reform, Data Envelopment Analysis, Local Government Efficiency, Performance Accountability, System GMM

Introduction

The decentralization policy in Indonesia has fundamentally transformed the structure of governance and fiscal management at the regional level since its implementation in 2001, granting local governments substantial autonomy to manage their own resources and deliver public services to constituents. However, the effectiveness of this decentralization depends critically on how efficiently local governments utilize their allocated resources to generate public value and stimulate local economic development (Purba et al., 2024). West Nusa Tenggara Province presents a compelling case for examining local government expenditure efficiency in the Indonesian context. As illustrated in Figure 1, Own-Source Revenue increased from IDR 2,630.45 billion in 2015 to IDR 6,663.88 billion in 2024, representing approximately 153 percent growth. Intergovernmental Transfers also rose from IDR 9,626.47 billion to IDR 17,777.84 billion during the same period. These substantial increases in available resources underscore the critical importance of efficient resource utilization to maximize development outcomes and public welfare, yet concerns persist regarding whether these resources are being utilized optimally (Ekana Nainggolan et al., 2023; Ménard & Shirley, 2022).

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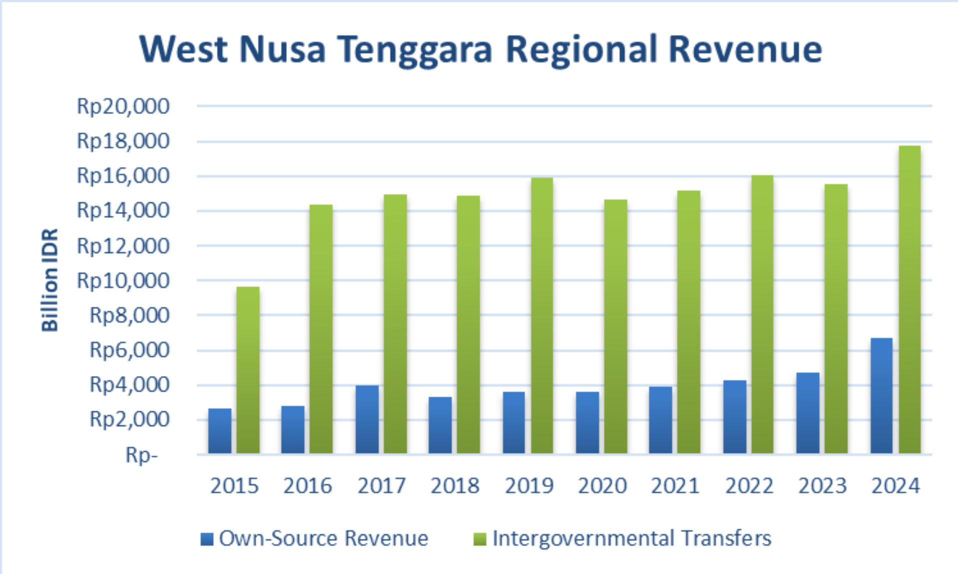

Source: Data processed from Directorate General of Fiscal Balance (DJPK), Ministry of Finance of the Republic of Indonesia (2026)

Figure 1. West Nusa Tenggara Regional Revenue

West Nusa Tenggara Province provides an important context for examining local government expenditure efficiency because the region has experienced a significant increase in fiscal resources during the decentralization era. The growth of own-source revenue and intergovernmental transfers indicates that local governments have greater financial capacity to support public services and regional development. However, the availability of larger fiscal resources does not necessarily guarantee efficient spending. Differences in institutional capacity, planning quality, accountability practices, and bureaucratic reform implementation may cause variations in how effectively local governments transform public expenditure into development outcomes. Therefore, examining expenditure efficiency in West Nusa Tenggara is urgent to understand whether increasing fiscal resources are being managed optimally by local governments.

Bureaucratic reform initiatives represent deliberate efforts to strengthen formal institutional structures by improving organizational systems, enhancing human resource capacity, promoting transparency, and fostering accountability in public sector management (Maulana et al., 2022). Studies examining the correlation between bureaucratic reform and performance achievement have also been conducted (Lumenta et al., 2023). Furthermore, the transformation of bureaucratic systems toward expertise-based public service has been highlighted (Setiawan & Rosari, 2025). Complementary to bureaucratic reform, government performance accountability represents another critical institutional mechanism for enhancing public sector efficiency. The Government Agency Performance Accountability System (AKIP) was established to strengthen accountability frameworks by requiring government agencies to systematically plan, implement, report, and evaluate their performance against predetermined targets. The effect of accountability on local government expenditure efficiency has been empirically examined (Rahayu & Khoirunurrofik, 2022). The role of risk management implementation in increasing accountability was also demonstrated (Yudiyanto & Ningsih, 2023). Furthermore, the roles of the Balanced Scorecard in improving performance accountability systems were explored (Erawan et al., 2022). Robust accountability systems create incentives for efficient resource utilization by making performance transparent and enabling citizen oversight. The trust-efficiency relationship exhibits important feedback dynamics: efficient government performance builds citizen trust, which in turn facilitates efficiency by reducing monitoring costs (Afonso et al., 2024). Examination of local government governance capacity, audit supervision, and the equalization level of basic public services provides insights into how governance mechanisms influence efficiency and equity in public service provision (Chen et al., 2025).

Although previous studies have discussed public expenditure efficiency and local government performance, empirical evidence that specifically links bureaucratic reform and government performance accountability to expenditure efficiency at the local government level remains limited. In particular, studies focusing on West Nusa Tenggara Province are still relatively scarce, despite the province's growing fiscal capacity and variation in local government performance. This study addresses this gap by analyzing how the Bureaucratic Reform Index and the Government Agency Performance Accountability System influence expenditure efficiency in ten regencies and municipalities in West Nusa Tenggara during 2019–2024. By applying a two-stage approach using Data Envelopment Analysis and System GMM, this study provides empirical evidence on which institutional factors are more relevant for improving local government expenditure efficiency.

Method

This study employed a quantitative approach using panel data from ten regencies and municipalities in West Nusa Tenggara Province during 2019–2024, resulting in 60 observations. Financial data, including personnel expenditure, goods and services expenditure, capital expenditure, and own-source revenue, were obtained from the Directorate General of Fiscal Balance. Data on the Bureaucratic Reform Index and the Government Agency Performance Accountability System were obtained from the West Nusa Tenggara Provincial Government.

The analysis was conducted in two stages. In the first stage, Data Envelopment Analysis was used to measure local government expenditure efficiency. This study applied an input-oriented Variable Returns to Scale model because local governments have greater control over expenditure allocation than revenue generation. Personnel expenditure, goods and services expenditure, and capital expenditure were used as input variables, while own-source revenue was used as the output variable. The efficiency score ranges from 0 to 1, where a score of 1 indicates full efficiency. The DEA analysis was conducted using MaxDEA Lite 12.

In the second stage, System Generalized Method of Moments was applied to examine the effects of bureaucratic reform and government performance accountability on expenditure efficiency. The DEA efficiency score was used as the dependent variable, while the Bureaucratic Reform Index and Government Agency Performance Accountability System scores were used as explanatory variables. System GMM was selected to address potential endogeneity, dynamic effects, and unobserved heterogeneity in panel data. The validity of instruments was assessed using the Hansen test, while model consistency was examined using the Arellano-Bond AR(2) test. The estimation was conducted using STATA 17.

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Results and Discussion

Stage 1: Efficiency Measurement Using DEA

The technical efficiency of the ten regencies and municipalities in West Nusa Tenggara from 2019 to 2024 was measured using an input-oriented Data Envelopment Analysis (DEA) model under the Variable Returns to Scale (VRS) assumption. The DEA results are presented in Table 1.

Table 1. DEA Efficiency Score

No	Regency/City	Efficiency					
		2019	2020	2021	2022	2023	2024
1	West Lombok Regency	0.803603	0.793139	0.878151	0.777724	0.859822	1
2	Central Lombok Regency	0.751088	0.803217	0.546309	0.555398	0.641743	0.715698
3	East Lombok Regency	0.635278	0.635065	0.603957	0.482708	0.632771	0.614463
4	Sumbawa Regency	0.688392	0.748796	0.708557	0.665657	0.57174	0.744268
5	Dompu Regency	0.814561	0.935371	0.93208	0.72668	0.788822	1
6	Bima Regency	0.794111	0.973013	0.614381	0.544473	0.592906	0.650737
7	West Sumbawa Regency	0.90405	1	0.920881	0.815845	0.697832	0.617211
8	North Lombok Regency	1	1	0.960901	1	1	1
9	Mataram City	0.980899	1	1	1	0.95492	1
10	Bima City	0.961902	1	1	0.945605	0.928433	1

Source: Data Processed, MaxDEA Lite 12 (2026)

The DEA results show that local government expenditure efficiency in West Nusa Tenggara Province varied considerably across regencies and municipalities during 2019–2024. Efficiency scores ranged from 0.48 to 1.00, indicating that some local governments were able to manage expenditure efficiently, while others still faced difficulties in converting fiscal inputs into optimal public value. Several regions, such as North Lombok Regency, Mataram City, and Bima City, frequently achieved full efficiency, suggesting stronger capacity in budget management and resource allocation.

In contrast, some regions recorded relatively low and fluctuating efficiency scores. This finding indicates that higher expenditure does not automatically result in better fiscal performance. The variation in efficiency reflects differences in institutional capacity, planning quality, budget execution, and accountability mechanisms across local governments. Therefore, expenditure efficiency should not only be understood as a matter of fiscal capacity, but also as the ability of local institutions to allocate and utilize resources effectively.

Overall, the DEA findings emphasize that improving expenditure efficiency requires more than increasing financial resources. Local governments with lower efficiency scores need to strengthen budget planning, improve spending discipline, and learn from more efficient regions as benchmarks for better resource management.

Stage 2: Determinant Analysis Using System GMM

Before proceeding with the regression analysis, descriptive statistics and correlation tests were conducted to understand the data characteristics and preliminary relationships.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Efficiency	60	0.8152193	0.1626084	0.482708	1
Bureaucratic Reform Index (IRB)	60	63.09717	4.088034	52.13	72.11
Government Agency Performance Accountability System (AKIP)	54	59.37519	9.46075	40.32	80.11

Source: Data Processed, STATA 17 (2026)

The descriptive statistics show that the average efficiency score is 0.815, indicating room for improvement across the province. The Bureaucratic Reform Index (IRB) has a higher average (63.09) and lower variation compared to the Government Agency Performance Accountability System (AKIP) scores (avg. 59.37), suggesting more consistent progress in bureaucratic reform than in performance accountability. The correlation matrix indicates positive, though not excessively high, relationships between the variables, with IRB showing a stronger initial correlation with efficiency than AKIP.

Table 3. Correlation Test

	Efficiency	Bureaucratic Reform Indeks (IRB)	Government Agency Performance Accountability System (AKIP)
Efficiency	1.0000		
Bureaucratic Reform Index (IRB)	0.3361	1.0000	
Government Agency Performance Accountability System (AKIP)	0.1914	0.4024	1.0000

Source: Data Processed, STATA 17 (2026)

The correlation matrix indicates positive, though not excessively high, relationships between the variables, with IRB showing a stronger initial correlation with efficiency ($r = 0.336$) than AKIP ($r = 0.191$). These preliminary correlations, while suggestive, cannot establish causal relationships due to potential endogeneity, omitted variable bias, and reverse causality concerns. The relatively modest correlation between AKIP and efficiency in the bivariate analysis may seem to contradict the significant effect found in the multivariate regression, but this apparent inconsistency likely reflects the operation of confounding factors that are controlled for in the regression but not in the simple correlation. The moderate positive correlation between IRB and AKIP (r = 0.402) suggests these institutional development initiatives are related but distinct dimensions of governance improvement, justifying their separate inclusion in the analysis.

To address potential endogeneity and dynamic effects, the System Generalized Method of Moments (GMM) estimator was employed. The validity and consistency of the model were confirmed through diagnostic tests.

Table 4. Validity Test

Hansen test of overidentifying restrictions
chi2(13) = 22.47357
Prob > chi2 = 0.0484

Source: Data Processed, STATA 17 (2026)

Table 5. Consistency Test

Arellano-Bond test for zero autocorrelation in first-differenced errors		
Order	z	Prob > z
1	-2.6644	0.0077
2	-0.7555	0.4499

Source: Data Processed, STATA 17 (2026)

The Hansen test p-value (0.0484) is marginally above the 0.05 threshold, generally indicating that the instruments are valid. More importantly, the Arellano-Bond test for AR(2) in first-differenced errors is not significant (p-value = 0.4499). This confirms the absence of second-order serial correlation, which is a critical assumption for the consistency of the GMM estimator. The significant AR(1) test is expected and does not imply inconsistency.

A critical step in dynamic panel analysis is to verify that the System GMM estimator is the appropriate choice by comparing it with other estimators that have known bias issues in the presence of a lagged dependent variable. The results of this comparison are shown in Table 6.

Table 6. Bias Test

Variable	**FEM**	**Sys-GMM Two Step**	**PLS**
Efficiency L1.	0.29047168	0.5105825	0.81850762
Constant	1.2778044	0.54220727	-0.16963231

Source: Data Processed, STATA 17 (2026)

Table 6 presents the coefficient for the lagged dependent variable (Efficiency L1.) and the constant term from three different estimators: Fixed Effects Model (FEM), System GMM Two-Step, and Pooled Least Squares (PLS). As widely documented in econometric literature, both FEM and PLS estimators are known to be biased in dynamic panel settings FEM due to the Nickell bias and PLS due to unobserved heterogeneity. The results clearly demonstrate this bias: the FEM severely underestimates the persistence of efficiency (coefficient = 0.29), while the PLS overestimates it (coefficient = 0.82). The System GMM estimator, designed specifically to handle this problem, produces a coefficient (0.51) that lies between these two biased extremes. This stark contrast provides strong justification for relying on the System GMM results, as it is the only model that adequately controls for dynamic panel bias and unobserved individual effects.

Table 7. System-GMM Two Step Regression

Efficiency	Coefficient	Std. err.	z	P-Value
Efficiency L1.	0.5105825	0.1382168	3.69	0.000
Bureaucratic Reform Index (IRB)	-0.0059595	0.0103655	-0.57	0.565
Government Agency Performance Accountability System (AKIP)	0.0039595	0.0018647	2.12	0.034
Constant	0.5422073	0.6334547	0.86	0.392

Source: Data Processed, STATA 17 (2026)

$$Efficiency_{it} = 0.5422073 + 0.5105825\,Efficiency_{it-1} - 0.0059595\,IRB_{it} + 0.0039595\,AKIP_{it} + \varepsilon_{it}$$

The System GMM results indicate that expenditure efficiency has a dynamic and persistent pattern. The significant positive coefficient of the lagged efficiency variable shows that past efficiency strongly influences current efficiency. This means that local governments with good expenditure management tend to maintain better performance over time, while inefficient governments may continue to face similar challenges if no institutional improvement is made.

Government performance accountability, measured by AKIP, has a positive and significant effect on expenditure efficiency. This finding suggests that stronger accountability systems encourage local governments to plan, monitor, and evaluate their programs more effectively. Through clearer performance targets and evaluation mechanisms, accountability helps reduce inefficient spending and improves the alignment between budget allocation and development outcomes.

Meanwhile, the Bureaucratic Reform Index does not show a significant direct effect on expenditure efficiency. This result implies that bureaucratic reform may require a longer period before producing measurable impacts on fiscal efficiency. It may also indicate that broader administrative reforms do not directly influence expenditure efficiency unless they are accompanied by stronger implementation, performance monitoring, and accountability practices.

These findings highlight that performance accountability plays a more immediate role in improving local government expenditure efficiency than general bureaucratic reform. Therefore, strengthening AKIP implementation, improving target-setting, and ensuring meaningful performance evaluation should become key priorities for local governments in West Nusa Tenggara Province. At the same time, bureaucratic reform should continue to be implemented consistently as a long-term strategy for improving governance quality and institutional capacity.

Table 8. F-Statistic Test

F-Test
Wald chi2(3) = 15.42
Prob > chi2 = 0.0015

Source: Data Processed, STATA 17 (2026)

The highly significant Wald chi-square statistic (p-value = 0.0015) indicates that the model's explanatory variables are jointly significant in explaining the variation in local government expenditure efficiency.

In summary, the discussion reveals a nuanced picture. The analysis confirms that the System GMM is the correct and unbiased estimator for this research context. The results show that while the establishment of a performance accountability system (AKIP) directly and positively influences how efficiently local governments spend their money, the broader bureaucratic reform agenda (IRB) has not yet shown a direct statistical link to expenditure efficiency. The strong persistence of efficiency scores highlights the path-dependent nature of institutional performance, suggesting that improving efficiency is a continuous process that requires sustained effort.

Conclusion

This study examines the impact of bureaucratic reform and government performance accountability on local government expenditure efficiency in West Nusa Tenggara Province during 2019–2024. Using a two-stage approach combining Data Envelopment Analysis and System GMM, the findings show that expenditure efficiency varies across local governments, indicating that greater fiscal resources do not automatically result in efficient public spending. The results further reveal that government performance accountability, measured by AKIP, has a positive and significant effect on expenditure efficiency, while the Bureaucratic Reform Index does not show a significant direct effect. These findings suggest that accountability mechanisms play a more immediate role in improving fiscal efficiency than broader bureaucratic reform. Therefore, local governments should strengthen performance planning, monitoring, evaluation, and accountability practices to ensure more effective resource allocation. Bureaucratic reform should continue to be implemented consistently as a long-term strategy to improve governance quality and institutional capacity.

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