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The Effect of Tax Collection Costs on Tax Revenue Realization with Tax Revenue Budget as a Mediating Variable

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***Abstract*—**Efficient tax administration is crucial for maximizing government revenue and supporting fiscal sustainability. This study investigates the effect of tax collection costs on tax revenue realization, with the tax revenue budget as a mediating variable. The research employs Structural Equation Modeling (SEM) using SmartPLS to analyze panel secondary data from Indonesian districts and municipalities during 2018–2022, focusing on regions with complete and consistent financial data. Data analysis involves examining the relationships between variables, testing both direct and indirect effects, and assessing the mediating role of the tax revenue budget. The findings indicate that tax collection costs positively affect the tax revenue budget, which in turn significantly influences tax revenue realization. While the direct impact of tax collection costs on actual revenue is relatively small, the mediating effect of the budget strengthens this relationship. These results highlight that effective allocation of administrative resources and strategic budget planning are key to improving regional tax revenue performance. Overall, the study provides insights into tax administration efficiency and governance, emphasizing the integration of administrative expenditures with accurate budgeting to enhance fiscal outcomes.

Keywords— *Tax Collection Costs; Tax Revenue Realization; Tax Revenue Budget*

INTRODUCTION

Tax revenue serves as a fundamental pillar of a country's fiscal policy, forming the main source of funding for public services, infrastructure development, and economic growth. For governments, particularly in developing economies, the effectiveness of tax administration determines not only the volume of revenue collected but also the extent to which fiscal and developmental objectives can be achieved. However, tax collection is not without cost. Administrative expenses, enforcement mechanisms, technological systems, and human resources constitute essential components of tax collection costs, which directly influence the efficiency and net value of public revenue.

The relationship between tax collection costs and tax revenue realization is complex and multifaceted. On one hand, increased investment in tax administration—through digital modernization, audit mechanisms, and human capacity development—can improve compliance, expand the tax base, and enhance revenue performance (Mekonnen, 2020; Mansfield, 1988). On the other hand, high administrative costs may absorb a substantial portion of collected taxes, reducing fiscal efficiency and weakening the government's financial capacity (Johnson & Omodero, 2021; Dziemianowicz, 2017). Thus, achieving an optimal balance between tax collection costs and realized revenue remains a critical challenge in public finance management.

Within this framework, the tax revenue budget plays a strategic mediating role. It serves not only as a fiscal target but also as a planning and control mechanism guiding tax authorities in resource allocation and operational priorities. A well-formulated tax revenue budget can ensure that administrative expenditures and modernization efforts are aligned with revenue goals, thereby enhancing overall fiscal performance. Conversely, misaligned or unrealistic budgeting may hinder the effectiveness of tax collection efforts, leading to suboptimal revenue outcomes (Andrlík, 2015; Fatmelia, 2023).

While prior research has explored issues such as taxpayer compliance (Mishi & Tshabalala, 2023; Wulandari & Dasman, 2023), the role of information technology in tax administration (Birakera & Harelima, 2023; Okunogbe & Santoro, 2022; Scarpini et al., 2023), and the impact of tax policy reforms on revenue performance (Niyonizera & Twesigye, 2024), few studies have examined the interplay between tax collection costs, administrative modernization, and revenue realization with the tax revenue budget as a mediating factor.

This study addresses that gap by introducing the tax revenue budget as a strategic mediating mechanism linking tax administrative inputs to realized fiscal outcomes. The novelty of this research lies in its integration of fiscal management concepts into the tax administration framework, offering a more comprehensive understanding of how budgeting processes influence the effectiveness of tax collection.

Grounded in Fiscal Exchange Theory and Public Finance Management Theory, this study argues that taxpayers' compliance and administrative efficiency are shaped by the perceived exchange between public contributions and government services (Fiscal Exchange Theory), while effective budgeting, planning, and control mechanisms (Public Finance Management Theory) ensure that administrative inputs are efficiently translated into fiscal outcomes.

1. Accordingly, the objectives of this study are to:
2. Analyze the effect of tax administrative costs on tax revenue.
3. Examine the effect of tax administration system modernization on tax revenue.
4. Investigate the effect of tax administrative costs on the tax revenue budget.
5. Assess the effect of tax administration system modernization on the tax revenue budget.
6. Evaluate the mediating role of the tax revenue budget between tax administrative factors and realized tax revenue.

METHOD

This study employs a quantitative explanatory research design using Structural Equation Modeling (SEM) to examine the effect of tax collection costs on tax revenue realization with the tax revenue budget as a mediating variable. The dataset consists of panel secondary data covering Indonesian districts and municipalities (kabupaten/kota) during the period 2018–2022. Data were obtained from the Directorate General of Taxes (DJP), the Ministry of Finance of the Republic of Indonesia, and official regional government financial reports.

The sampling technique applied is purposive sampling, with the following criteria: (1) districts/municipalities that have complete data on tax collection costs, tax revenue budgets, and realized tax revenues for the observed period; and (2) districts/municipalities that consistently publish their financial statements. This approach ensures that only regions with reliable and comprehensive data are included in the analysis (Mekonnen, 2020; Dziemianowicz, 2017).

The research model consists of three variables: tax collection costs as the independent variable, tax revenue budget as the mediating variable, and tax revenue realization as the dependent variable. Data analysis is conducted using SEM with SmartPLS, following several stages: (Data analysis is conducted using SEM with SmartPLS, following several stages: (1) descriptive analysis to provide an overview of the data, (2) structural model testing to examine direct and indirect effects, and (3) mediation testing to assess the role of the tax revenue budget (Hair et al., 2019; Scarpini, Okunogbe, & Santoro, 2023).

This methodological framework allows for a robust evaluation of both the direct impact of tax collection costs on revenue realization and the indirect effects mediated through revenue budgeting, providing insights into the efficiency and governance of tax administration in Indonesia (Andrlík, 2015; Nose, Pierri, & Honda, 2025).

I. RESULTS AND DISCUSSION

Result

Descriptive Statistics

Before conducting Structural Equation Modeling (SEM) analysis, descriptive statistics were examined to provide an overview of the data. Table 1 presents the mean, median, minimum, maximum, and standard deviation for each research variable.

Table 1. Descriptive Statistics

Variable	Mean	Median	Min	Max	Std. Dev.
X	**20.862**	**20.798**	**13.218**	**26.849**	**1.545**
M	**24.557**	**24.506**	**16.811**	**31.427**	**1.389**
Y	**24.512**	**24.499**	**0.004**	**31.337**	**1.633**

The descriptive statistics present the basic characteristics of the research variables. Variable X (Tax Collection Costs) has a mean of 20.862 and a median of 20.798, with values ranging from 13.218 to 26.849 and a standard deviation of 1.545, indicating moderate dispersion around the mean. Variable M (Tax Revenue Budget) has a mean of 24.557 and a median of 24.506, with a minimum of 16.811 and a maximum of 31.427, and a standard deviation of 1.389, showing relatively low variability. Variable Y (Tax Revenue Realization) has a mean of 24.512 and a median of 24.499, ranging from 0.004 to 31.337, with a standard deviation of 1.633. These descriptive results provide an overview of the data distribution and variability, forming the basis for further SEM-PLS analysis.

Structural Model Testing (Inner Model)

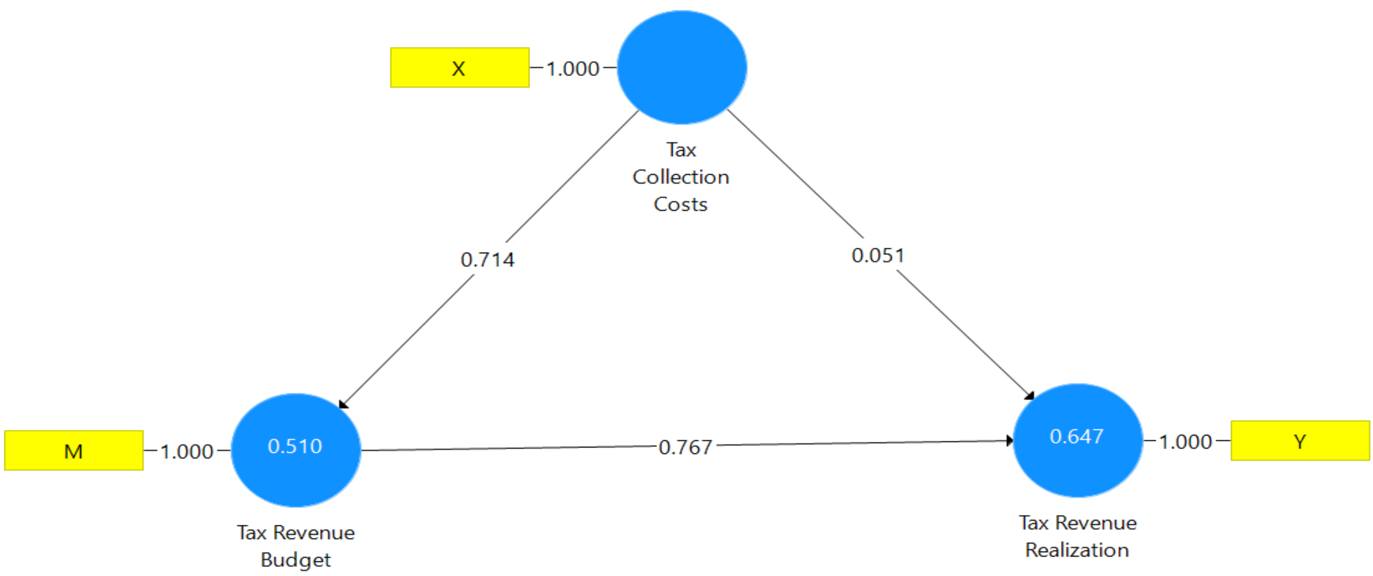

Figure 1 illustrates the structural (inner) model that explains the causal relationships among the latent variables, namely Tax Collection Costs (X), Tax Revenue Budget (M), and Tax Revenue Realization (Y). The model shows that the Tax Collection Costs have a positive and substantial effect on the Tax Revenue Budget with a path coefficient of 0.714. However, the direct influence of Tax Collection Costs on Tax Revenue Realization is very weak, with a path coefficient of only 0.051. In contrast, the Tax Revenue Budget exerts a strong and significant influence on Tax Revenue Realization, indicated by a path coefficient of 0.767. The coefficient of determination (R^2) for the Tax Revenue Budget is 0.510, meaning that 51.0% of its variance is explained by Tax Collection Costs. Meanwhile, the R^2 for Tax Revenue Realization is 0.647, indicating that 64.7% of its variance is explained jointly by Tax Collection Costs and the Tax Revenue Budget. These findings suggest that the effect of Tax Collection Costs on Tax Revenue Realization occurs primarily through the mediating role of the Tax Revenue Budget rather than through a direct pathway.

R-Square (Goodness of Fit Test)

The R-Square value indicates the proportion of variance in the endogenous variable that can be explained by the exogenous variables. The results are presented in Table 2.

Table 2. R-Square Results

Endogenous Variable	R^2	Adjusted R^2	Interpretation
Tax Revenue Budget	0.510	0.510	Moderate
Tax Revenue Realization	0.647	0.646	Strong

These values demonstrate that 51.0% of the variance in the Tax Revenue Budget can be explained by the model, while 64.7% of the variance in the Tax Revenue Realization is explained, which indicates a strong explanatory power.

Path Coefficients and Hypothesis Testing

The evaluation of the inner model was conducted by analyzing the path coefficients, which represent the strength of the relationship among variables, and by testing the hypotheses formulated in this study. The results are presented in Table 2.

Table 2. Path Coefficients, Direct and Indirect Effects, and Hypothesis Testing

Hypothesis	Relationship	Path Coefficient	Direct/Indirect	Decision
H1	Tax Collection Costs to Tax Revenue Budget	0.714	Direct	Accepted
H2	Tax Collection Costs to Tax Revenue Realization	0.051	Direct	Rejected
H3	Tax Revenue Budget to Tax Revenue Realization	0.767	Direct	Accepted
H4	Tax Collection Costs to Tax Revenue Realization through Tax Revenue Budget	0.548	Indirect	Accepted

Explanation of Results:

- The findings show that Tax Collection Costs have a strong positive influence on the Tax Revenue Budget (H1 accepted).
- The direct effect of Tax Collection Costs on Tax Revenue Realization is very weak (0.051), leading to H2 being rejected.
- In contrast, the Tax Revenue Budget exerts a strong influence on Tax Revenue Realization (0.767), supporting H3.
- Furthermore, Tax Collection Costs significantly influence Tax Revenue Realization indirectly through the Tax Revenue Budget (0.548), which is greater than the direct effect. Therefore, H4 is accepted, confirming full mediation.

Discussion

The Effect of Tax Collection Costs on the Tax Revenue Budget (H1)

The results of this study indicate that tax collection costs have a positive and significant effect on the tax revenue budget. This means that the greater the resources allocated to the tax collection process, the more capable the government becomes in formulating realistic revenue targets. Theoretically, this finding supports Agency Theory, which emphasizes that tax authorities, as agents, require adequate support from the government (principal) to set and achieve fiscal targets more effectively.

This result is consistent with Tanzi and Zee (2000), who emphasize that a country's fiscal capacity is closely linked to the adequacy of tax administration expenditures. Similarly, Slemrod and Yitzhaki (2002) confirm that investment in tax administration enhances the quality of revenue projections and improves budget targets. In other words, tax collection costs serve as a foundation for the government to develop fiscal policy.

However, this result contrasts with Bird (2008), who argues that higher collection costs do not necessarily improve budget target quality, particularly in countries with weak fiscal governance. This discrepancy suggests that the effectiveness of collection costs is highly influenced by transparency, accountability, and the robustness of fiscal control systems.

The Effect of Tax Collection Costs on Tax Revenue Realization (H2)

The direct effect of tax collection costs on tax revenue realization is relatively small. This finding suggests that higher administrative expenditures do not automatically lead to significant increases in actual revenue; rather, they require support from other factors such as taxpayer compliance and economic stability. In line with Cost-Effectiveness Theory, administrative expenditures are only effective if they generate greater benefits in terms of improved compliance and increased revenues.

This result is consistent with Mekonnen (2020), who finds that the effectiveness of tax collection costs depends heavily on macroeconomic conditions and taxpayer behavior. High expenditures without strong enforcement and compliance strategies fail to significantly raise revenues. Therefore, administrative costs must be complemented by compliance management strategies.

By contrast, Mikesell (2011) finds that increased administrative expenditures are consistently associated with higher revenues, especially in developed countries. This suggests a gap between developing and developed nations in terms of the effectiveness of tax collection costs, largely due to differences in tax infrastructure and compliance levels.

The Effect of the Tax Revenue Budget on Tax Revenue Realization (H3)

This study finds a positive and significant relationship between the tax revenue budget and tax revenue realization. This supports Budgeting Theory, which highlights the role of budgets as instruments of control, planning, and motivation for tax authorities. Realistic and data-driven targets encourage tax officials to perform more effectively in achieving revenue goals.

This result is consistent with Johnson and Omodero (2021), who find that accurate tax targets are strong predictors of revenue realization. A well-prepared budget functions not only as a technical tool but also as a managerial instrument that strengthens fiscal accountability. Thus, precise budget formulation is essential for successful revenue mobilization.

However, Abiola and Asiweh (2012) argue that overly ambitious targets may have a negative effect, as they create unrealistic pressure on tax authorities. This finding reinforces the importance of accuracy in budgeting, with governments needing to avoid overestimation that can undermine motivation and effectiveness.

The Mediating Role of the Tax Revenue Budget (H4)

This study demonstrates that the tax revenue budget mediates the relationship between tax collection costs and tax revenue realization. High administrative expenditures do not directly increase actual revenues, but through the establishment of accurate budget targets, they can exert a significant impact. This aligns with Public Finance Theory, which underscores the integration of administrative spending and fiscal planning.

This finding is consistent with Mansfield (1988), who argues that administrative spending adds value when used to support systematic fiscal planning. In other words, the effectiveness of administrative costs is realized only when managed through a budget that reflects the country's fiscal capacity. Therefore, the mediating role of the budget is both technical and strategic within the broader framework of fiscal policy.

However, Gupta (2007) highlights that in many developing countries, increased collection costs do not significantly impact revenue realization, even when budget targets are raised. This is largely due to low taxpayer compliance and the dominance of the informal sector. These findings suggest that the effectiveness of budget mediation depends heavily on institutional context and the structure of the economy.

II. CONCLUSIONS

This study examines the effect of tax collection costs on tax revenue realization with the tax revenue budget as a mediating variable. Based on the analysis, the following conclusions can be drawn:

1. Tax collection costs positively and significantly affect the tax revenue budget. This indicates that allocating sufficient resources for tax administration enables the government to formulate realistic and achievable revenue targets, supporting Agency Theory.
2. The direct effect of tax collection costs on tax revenue realization is relatively small. Administrative expenditures alone do not automatically increase actual revenue; their effectiveness depends on other factors such as taxpayer compliance and economic stability, in line with Cost-Effectiveness Theory.
3. The tax revenue budget has a positive and significant impact on tax revenue realization. Realistic and well-planned budgets serve as a tool for control, planning, and motivation, consistent with Budgeting Theory. Accurate budget targets enhance the ability of tax authorities to achieve revenue goals.
4. The tax revenue budget mediates the relationship between tax collection costs and tax revenue realization. High administrative costs can influence actual revenue only when managed through appropriate budget targets, highlighting the strategic and technical role of budgeting in fiscal policy, as suggested by Public Finance Theory.

Overall, the study emphasizes that effective fiscal outcomes require not only sufficient spending on tax administration but also careful budget planning and enforcement mechanisms. In developing countries, low compliance and informal economic activity may reduce the effectiveness of both administrative expenditures and budget planning.

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