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Contribution of revenue enhancement plans to fiscal performance: A study of Local Government Authorities in Tanzania

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ABSTRACT

This study investigates the impact of Revenue Enhancement Plans (REPs) on fiscal performance—primarily revenue collection—within Tanzanian Local Government Authorities (LGAs), focusing on three representative councils: Mwanza City Council, Manyara Urban Council, and Mbeya City Council. Employing a mixed-methods approach, the study integrates quantitative and qualitative data collected from 400 respondents using a multistage sampling technique. Quantitative data were analyzed using a Multivariate Ordered Probit model, which enabled the assessment of four key revenue performance dimensions: effectiveness, increment, reliability, and efficiency. Findings indicate that reducing revenue leakage and improving revenue forecasting accuracy significantly enhance revenue performance. Revenue leakage exhibited a strong negative association with effectiveness (coefficient: -1.221, $p<0.01$) and increment (-1.59, $p<0.01$), while accurate forecasting had a positive impact on effectiveness (1.390, $p<0.01$) and increment (0.516, $p<0.01$). High implementation costs were negatively associated with revenue growth (-1.634, $p<0.05$). In contrast, compliance positively influenced reliability (1.533, $p<0.01$) and efficiency (1.029, $p<0.01$), reinforcing the importance of regulatory adherence. These findings reflect persistent fiscal decentralization challenges in LGAs, such as weak systems, limited institutional capacity, and inadequate planning. Policy recommendations include implementing digital revenue management systems to curb leakages, strengthening forecasting capabilities through staff training and data analytics, and promoting compliance through awareness programs and enforcement mechanisms. Addressing these areas can improve fiscal performance, enhance financial sustainability, and strengthen service delivery at the local level.

Introduction

The effectiveness of revenue enhancement plans (REPs) is crucial for the financial sustainability of Local Government Authorities (LGAs). Globally, LGAs play a pivotal role in public finance management, with revenue collection forming the backbone of their financial autonomy and service delivery capabilities (OECD, 2019). In developed countries, the implementation of innovative revenue strategies such as digital tax systems and advanced data analytics has significantly improved revenue collection by enhancing operational efficiency and reducing leakages. For instance, the adoption of electronic tax filing and payment systems in countries like Estonia and New Zealand has led to increased compliance rates and reduced administrative costs (OECD, 2018).

In Sub-Saharan Africa, LGAs face a host of challenges in revenue collection, including limited infrastructure, weak administrative capacity, and low taxpayer compliance (Fjeldstad et al., 2018). In response, several governments have introduced REPs focused on digital tools and institutional capacity-building initiatives. For example, Kenya's iTax system increased tax compliance and led to a 19% rise in revenue collection between 2016 and 2020 (KRA, 2020). Similarly, Uganda's deployment of electronic fiscal devices helped reduce tax evasion and improve transparency (Fjeldstad & Heggstad, 2016). These cases demonstrate the value of targeted interventions in overcoming long-standing revenue collection inefficiencies.

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Beyond technological barriers, developing countries often face systemic governance issues that hinder effective revenue mobilization. Challenges such as corruption, inadequate legal frameworks, and poor accountability undermine reform efforts. Scholars argue that strengthening governance structures and policy enforcement is vital for achieving meaningful improvements in revenue performance (Prichard, 2019). In many African contexts, REPs have played a vital role in promoting fiscal decentralization and public sector reform. For instance, Nigeria has recorded notable progress in some states through the integration of digital technologies in tax systems, leading to enhanced revenue collection and improved public service delivery (Ekpo & Uwatt, 2019).

In Tanzania, LGAs are integral to the country's fiscal decentralization strategy and are mandated to mobilize revenue to finance local development. However, many continue to face persistent challenges, including inefficient revenue collection mechanisms, limited technical capacity, and inconsistent taxpayer compliance (URT, 2018). In recent years, several reforms—such as the introduction of electronic revenue systems and capacity-building programs—have been introduced. Municipalities that adopted such technologies saw a 25% increase in local revenues between 2016 and 2020 (Nchimbi & Mussa, 2020). Despite this progress, broader implementation challenges such as high operational costs, continued leakages, and poor forecasting accuracy persist (Mallya & Mwakalobo, 2019), undermining the overall performance of REPs and the fiscal autonomy of LGAs.

Despite various initiatives and encouraging early outcomes, there remains limited empirical evidence on how specific components of REPs—such as revenue leakage, compliance, implementation costs, and forecasting accuracy—impact different dimensions of revenue performance in Tanzanian LGAs. Most existing studies focus on general trends without analyzing these factors in an integrated framework. This study addresses this gap by examining the effects of REPs on revenue collection performance in three Tanzanian LGAs: Mwanza City Council, Manyara Urban Council, and Mbeya City Council. The study seeks to answer the following research questions: How do REP components influence effectiveness, efficiency, and reliability of revenue collection? What is the impact of implementation costs, compliance levels, and forecasting accuracy on revenue growth? What policy recommendations can improve the design and implementation of REPs to strengthen fiscal performance at the local level?

Literature Review

Theoretical Framework

This study is anchored in the theory of fiscal decentralization, developed by Wallace E. Oates in Fiscal Federalism (1972). The theory advocates for transferring fiscal authority from central to local governments to promote efficiency, accountability, and responsiveness in public financial management. By aligning public spending with local priorities, fiscal decentralization improves resource allocation and fosters greater citizen participation (Oates, 2019). A key advantage is the ability of local governments to reduce revenue leakages, as they are closer to revenue sources and better positioned to oversee collection processes (Faguet, 2021). This proximity enhances transparency and reduces corruption risks, thereby strengthening local revenue mobilization (Bird & Vaillancourt, 2019).

The theory directly relates to the operational elements of Revenue Enhancement Plans (REPs), including implementation costs, compliance, leakage control, and revenue forecasting. LGAs can use local knowledge to tailor strategies that reduce administrative costs, such as investing in digital systems or capacity-building programs (Bahl & Martinez-Vazquez, 2022). Fiscal decentralization also fosters stronger relationships between taxpayers and local authorities, which encourages voluntary compliance when citizens observe service delivery improvements (Anyango & Musau, 2020; Fatoumata & Kone, 2018). Moreover, access to localized data allows LGAs to develop more accurate revenue forecasts, enhancing budget realism and financial planning (Macharia & Otieno, 2023). These linkages demonstrate how fiscal decentralization provides a practical framework for evaluating the effectiveness of REPs in strengthening LGA revenue performance.

Empirical Reviews

Studies on local revenue collection across various regions reveal recurring challenges and diverse strategies aimed at improving revenue generation for Local Government Authorities (LGAs). Macharia (2018) explored strategies for enhancing revenue collection in East African LGAs, highlighting issues such as inadequate infrastructure, limited human resources, and low taxpayer compliance. The study rightly emphasized the adoption of digital tools—such as electronic billing systems and mobile payments—as a way to improve transparency and operational efficiency. However, Macharia's study lacked empirical validation of the long-term impact of these tools, and it did not consider the challenges of sustaining digital infrastructure in rural areas with limited connectivity. Recent research by Otieno and Kirimi (2022) expanded on this by employing a mixed-methods approach to assess how predictive analytics and real-time reporting have improved local revenue forecasting in Kenya. Their findings indicate that digital tools are only effective when supported by institutional readiness and ongoing training—an area that Macharia underexplored.

Fatoumata (2020) focused on the context of Mali and emphasized improved financial management capacity and local accountability mechanisms as essential for successful revenue mobilization. While the study offered useful recommendations on community engagement and capacity development, it did not fully address the structural barriers, such as political interference or fragmented policies, which can hinder the sustainability of reforms. In contrast, Ndlovu and Moyo (2023) examined a multi-country dataset in Southern Africa and found that while capacity-building efforts significantly enhance compliance rates, their success is contingent upon coordinated legal and institutional frameworks. This suggests that technical training alone is insufficient without policy alignment—an important nuance missing in Fatoumata's analysis.

Anyango (2019) examined factors affecting revenue collection in Nairobi, Kenya, and identified governance quality, the structure of local economic activities, and taxpayer awareness as significant determinants of revenue performance. The study advocated for governance reforms and public awareness campaigns as ways to boost compliance and collection efficiency. Although insightful, Anyango's work relied heavily on qualitative interviews without linking the governance variables to measurable revenue outcomes. Recent research by Mwinuka and Sanga (2023) complements Anyango's findings with empirical data from Tanzanian municipalities, showing that perceived fairness and transparency in revenue usage positively influence compliance behavior, particularly among informal sector operators—adding quantitative backing to Anyango's governance-oriented claims.

Sunday (2020) analyzed revenue generation in Lagos State, Nigeria, and pointed out a heavy reliance on state government grants and the lack of a structured revenue enhancement plan at the local level. The study highlighted the need for greater collaboration between local and state governments, efficient tax collection systems, and improved taxpayer education. While these recommendations are important, the study's scope was limited to a single state and did not explore variations across urban and peri-urban settings. Additionally, the study did not account for fiscal decentralization constraints that may limit local government autonomy. A more recent comparative study by Olanrewaju and Okeke (2022) identified that LGAs in Nigeria struggle to implement REPs effectively without clearly defined intergovernmental fiscal relationships, adding a broader policy perspective to Sunday's localized findings.

Collectively, these studies highlight the importance of digital solutions, capacity building, governance reforms, and strategic partnerships in improving local revenue collection. However, much of the existing literature remains context-specific and lacks comprehensive analysis of how key components of Revenue Enhancement Plans such as compliance, forecasting accuracy, revenue leakage, and implementation costs interact to influence fiscal performance. There is limited application of multivariate models that integrate both qualitative and quantitative data. This study addresses these gaps by employing a multivariate ordered probit model to assess REPs in three Tanzanian LGAs. The findings aim to offer a more holistic and data-driven understanding of effective local revenue mobilization.

Research and Methodology

This study employed a cross-sectional research design, chosen for its ability to provide a snapshot of the current state of revenue collection performance across different Local Government Authorities (LGAs) at a single point in time. Moreover, given that data were collected from three distinct LGAs, the cross-sectional design allowed for the examination of relationships between variables, making it possible to compare and assess revenue collection performance across these LGAs effectively.

This study focused on Mwanza City, Mbeya City, and Manyara Municipal Council due to differences in revenue collection performance as reported by the CAG (NAOT, 2020). The councils were categorized as best (88–101%), medium (77–87%), and least performers (64–76%). Despite implementing Revenue Enhancement Plans (REPs), disparities persist. Mbeya City performs best (91%), Mwanza averages 79% (medium), and Manyara scores 76% (least performer). The study investigates how REPs affect revenue collection across these LGAs.

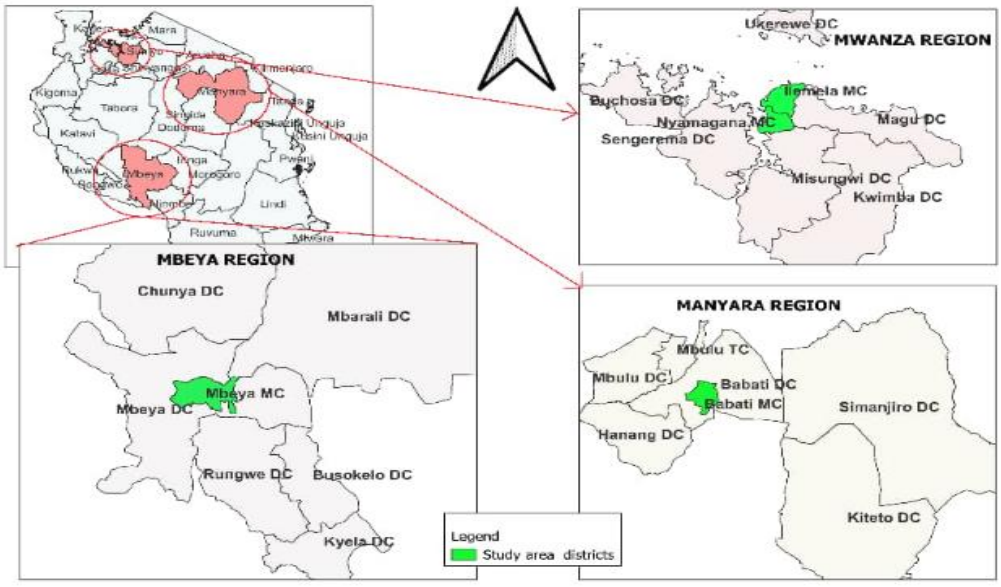

Figure 1: Geographical Location of the study area

This study utilized probability and purposive sampling methods for sample selection and data collection. A multistage sampling approach was implemented to identify study participants, specifically 1,023 officers responsible for revenue collection across three selected Local Government Authorities. Hence, the sample size for this study was determined using the Yamane formula (1967) in the following manner: n=N/1+N (e)2

Where: n, is the sample size, and N is estimated number of officers from two selected LGAs and e= Level of estimation (0.05) ². Therefore, n=N/1+N (e) 2 = 1023/1+1023 (0.05)2 = 400

To ensure that the proportionality of sampled LGAs officers to the total number of LGAs found in a particular LGAs, a proportionate random sampling was applied (Hansen et al., 1953). The formula is as follows: a=n/N*b where: a is sample size for each LGA, n is a total number of sampled LGAs officers, N is the target LGAs population and b is target organic sample size from each LGA.

Table 1: Number of sampled respondents from each LGAs

Council	Total Officers (N)	Sampled LGAs Officers	% of total sample
Mwanza CC	372	372/1023*400= 145	36
Manyara UC	311	311/1023*400= 122	31
Mbeya CC	340	340/1023*400 =133	33
Total	1023	400	100

Table 1 presents a target population of 1,023 officers responsible for revenue collection in the selected LGAs. Using the Yamane formula (1976) with a 5% margin of error, the sample size was determined to be 400 officers, proportionally distributed: 133 from Mbeya City, 145 from Mwanza, and 122 from Manyara Councils. Random sampling ensured equal selection chances, minimizing bias. Structured questionnaires were used to collect data on factors influencing revenue collection, and were administered directly to respondents for clarification.

Data Source

Data collection was carried out using structured questionnaires administered to officers involved in revenue collection within selected Local Government Authorities (LGAs), complemented by semi-structured interviews with heads of departments in Planning, Revenue, Internal Audit, and Economics. The questionnaire was developed based on existing literature and was pre-tested with 20 respondents to refine clarity and relevance. Reliability analysis using Cronbach's Alpha produced a score of 0.82, indicating high internal consistency. Key performance indicators effectiveness, efficiency, reliability, and increment were measured on a 5-point Likert scale and later recoded into three ordinal categories: low (1–2), moderate (3), and high (4–5), to facilitate multivariate ordered probit analysis. The qualitative interviews were guided by a structured protocol, transcribed, and analyzed thematically, enabling the identification of patterns and insights that triangulated and contextualized the quantitative findings, thereby enriching the study's overall validity.

Analytical Modeling

This study employed the multivariate ordered probit model to analyze multiple correlated ordinal outcomes related to fiscal performance, specifically revenue collection performance. To support and triangulate the quantitative results, qualitative insights from interviews with key departmental heads were thematically analyzed. These insights offered contextual explanations for observed statistical patterns and clarified unexpected findings. The mixed-method approach strengthened the study's validity and provided a more comprehensive understanding of Revenue Enhancement Plan (REP) implementation across LGAs.

In a multivariate ordered probit model, we assume that there are K-correlated ordinal outcomes. For each outcome y_{ik} for individual i and outcome k, the model is specified as:

$$y_{ik}^{*} = X_i \beta_k + \epsilon_{ik}$$

Whereas y_{ik}^{*} is a latent variable representing the unobserved propensity for the kth outcome, X_i is the vector of independent variables for individual i, β_k is the vector of coefficients for the kth outcome, ϵ_{ik} is the error term, assumed to follow a multivariate normal distribution with mean zero and a correlation matrix Σ.

The observed ordinal outcome y_{ik}^{*} is determined by the following thresholds:

$$y_{ik}^{*} = \begin{cases} 1, & if\ y_{ik}^{*} \leq \tau_1 \\ 2, & if\ \tau_1 < y_{ik}^{*} \leq \tau_2 \\ 3, & if\ y_{ik}^{*} > \tau_{J-1} \end{cases}$$

Where $\tau_1, \tau_2, \ldots, \tau_{J-1}$ are the thresholds that define the ordinal categories. Moreover, the estimation of the multivariate ordered probit model involves calculating the likelihood function, which is based on the joint probability of observing the vector of ordinal outcomes for each individual, given their covariates and the correlation structure among the error terms. The estimation is typically carried out using maximum likelihood estimation (MLE), and the computation requires integration over the multivariate normal distribution.

The likelihood function for N individuals is:

$L = \prod_{i=1}^{N} P(y_{i1}, y_{i2}, \ldots\ldots\ldots\ldots, y_{ik} | \mathrm{X_i}, \beta \sum)$

The probabilities are computed using the cumulative distribution function (CDF) of the multivariate normal distribution, reflecting the correlated nature of the outcomes. Moreover, different variables used in the model have been presented in Table 2.

Table 2: Description and measurement of variables

Variables		Description	Measurement scale
Fiscal (Revenue collection) performance	Increment	Measures the growth in revenue collection over a specified period, categorized as High, Moderate, or Low.	High Increment, Moderate Increment, Low Increment
	Effectiveness	Assesses the ability of the system to meet revenue targets and goals, categorized as Highly Effective, Moderately Effective, or Low Effective.	Highly Effective, Moderately Effective, Low Effective
	Reliability	Evaluates the consistency and dependability of the revenue collection process, categorized as Highly Reliable, Moderately Reliable, or Low Reliable.	Highly Reliable, Moderately Reliable, Low Reliable
	Efficiency	Assesses the cost-effectiveness and resource utilization in revenue collection, categorized as Highly Efficient, Moderately Efficient, or Low Efficient.	Highly Efficient, Moderately Efficient, Low Efficient
Implementation costs		Cost incurred in implementing the revenue enhancement plan in relation to the additional revenue generated	1 if incurred costs; 0 for otherwise
Compliance		Level of compliance among taxpayers or customers in adhering to the new revenue policies or structures established by the enhancement plan.	1 if comply with revenue policies; 0 otherwise
Revenue Leakage		Effectiveness of the plan in reducing revenue leakages, such as through improved monitoring, enforcement, and control mechanisms.	1 for reduced revenue leakage; 0 for otherwise
Revenue Forecast		Level of compliance among taxpayers or customers in adhering to the new revenue policies or structures established by the enhancement plan	1 if adhered revenue policies; 0 otherwise

Measuring Fiscal (Revenue Collection) Performance

Fiscal performance was assessed using four metrics: increment, effectiveness, reliability, and efficiency, each with ordered categories to quantify performance. Increment was classified as High, Moderate, or Low, indicating growth, while effectiveness was measured by how well revenue targets were met. Reliability and efficiency were similarly categorized, focusing on consistency and cost-effectiveness. These categories provided a structured approach to comparing performance across Local Government Authorities. To enhance the robustness of the results, triangulation was employed, cross-verifying regression analysis findings with qualitative insights from interviews.

Results and Discussion

Description Of Respondents' Characteristics

The results presented in Figure 2 represents both the gender distribution and educational attainment of the respondents. The blue bar for Male (72.75%) and the red bar for Female (27.25%) show the gender breakdown, while the other bars illustrate the educational categories, including Postgraduate (33%), Secondary (31%), Diploma (22.25%), Primary (10.25%), and First Degree (3.5%).

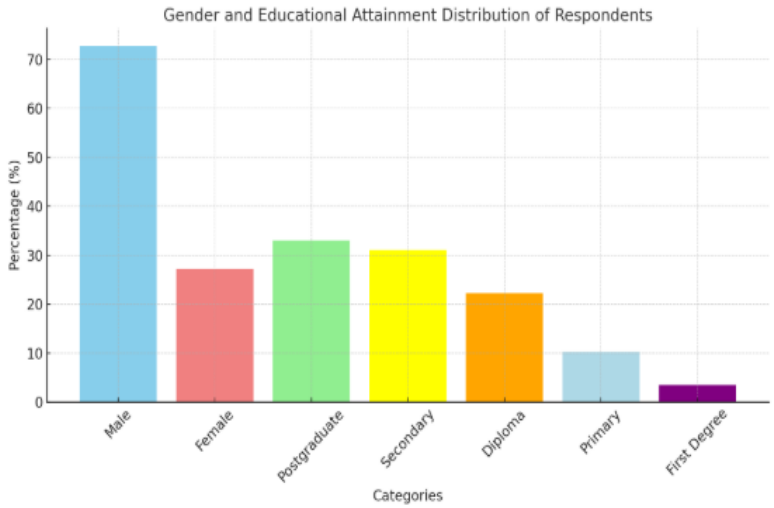

Figure 2: Sex of the respondents

The study sample is predominantly male, comprising 72.75% of the respondents, indicating a higher male participation likely influenced by societal, cultural, or occupational factors. In comparison, female respondents make up 27.25% of the sample, offering valuable insights into the perspectives and experiences of women (Smith, 2018). Regarding educational attainment, 33% of the participants hold a postgraduate degree, suggesting a high level of specialized knowledge among them. Secondary education follows closely with 31%, highlighting a significant proportion with foundational literacy and numeracy skills. Individuals with a diploma make up 22.25%, indicating a notable segment with practical skills but no full undergraduate degree (World Bank, 2019). The smallest group consists of 10.25% with primary education, pointing to limited formal qualifications. Only 3.5% of the sample have a first degree, suggesting fewer respondents have completed undergraduate programs, with many opting for diplomas or advanced postgraduate education (UNDP, 2020).

General characteristics of factors affecting revenue collection performance

The results in Table 3 present the influence of various organizational factors on different measures of revenue collection performance, namely Increment Scores, Effectiveness Scores, Reliability Scores, and Efficiency Scores. Each coefficient represents the impact of a one-unit increase in the respective factor on the revenue collection performance measure, with standard errors in parentheses and t-values indicating the statistical significance. The variables represent different aspects related to revenue collection performance. Implementation Cost has a mean of 0.365, suggesting that 36.5% of the observations experienced significant implementation costs, indicating a notable impact on performance. Compliance shows a mean of 0.352, reflecting that compliance measures were adhered to in 35.2% of the cases. Both Revenue Leakage and Revenues Forecast have identical means of 0.333, indicating that issues with leakage and forecasting accuracy were present in about a third of the observations, pointing to areas needing attention. The analysis of increment Scores reveals an average score of 0.325 with a standard deviation of 0.229. This indicates that there is moderate variation in the incremental improvements observed across the sample, with scores ranging from a minimum of 0.2 to a maximum of 1. The relatively low mean score suggests that, on average, the revenue collection performance saw modest improvements. Moreover, effectiveness scores demonstrate a notably higher mean of 0.917, coupled with a standard deviation of 0.188. This suggests a generally high level of effectiveness in revenue collection processes, with most observations clustering around the upper end of the scale. The range of scores from 0.24 to 1 indicates that while there are instances of less effective performance, the overall tendency is towards high effectiveness.

Table 3: Descriptive statistics for study variables

	Obs	Mean	Std. Dev.	Min	Max
Implementation Cost	400	0.365	0.482	0	1
Compliance	400	0.352	0.478	0	1
Revenue Leakage	400	0.333	0.472	0	1
Revenues Forecast	400	0.333	0.472	0	1
Increment scores	400	0.325	0.229	0.2	1
Effectiveness Scores	400	0.917	0.188	0.24	1
Reliability Scores	400	0.276	0.164	0.2	1
Efficiency scores	400	0.301	0.189	0.2	1

Empirical Results

The results presented in Table 4 summarize the effects of various factors related to revenue enhancement plans (REP) on different aspects of revenue collection performance, measured by effectiveness, increment, reliability, and efficiency. Each outcome variable was measured using an ordered scale, and the coefficients and t-values from the multivariate ordered probit regression model provide insights into these relationships.

Table 4: Multivariate Ordered Probit regression model on effects of revenue enhancement plans (REP) on revenue collection performance

Variable	Effectiveness		Increment		Reliability		Efficiency	
	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t
Implementation costs for REP	-0.120 (0.456)	-0.75	-1.634** (0.000)	-9.00	-0.327 (0.209)	- 1.10	-0.402* (0.133)	-2.34
Compliance to REP	0.241* (0.062)	-1.90	0.091 (0.611)	-0.51	1.533*** (0.040)	8.66	1.029*** (0.000)	8.59
Revenue Leakage	-1.221*** (0.000)	7.41	-1.59*** (0.000)	8.27	-0.217 (0.207)	-1.26	-0.338* (0.061)	-1.88
Revenue Forecast	1.390*** (0.000)	8.05	0.516*** (0.005)	7.79	-0.378* (0.034)	-2.11	1.51 (0.000)	8.04
Constant	0.811*** (0.039)	6.88	0.76*** (0.078)	6.36	0.801*** (0.000)	5.81	0.66*** (0.000)	5.74

***p<0.01 (1%), **p<0.05 (5%), *p<0.1 (10%)

Results show that, the coefficient for implementation costs is negative across all outcome variables, indicating that higher costs associated with implementing REP generally have a detrimental effect on revenue collection performance. Specifically, the negative coefficient for increment (-1.634) is significant at the 5% level ($p<0.05$), with a t-value of -9.00, suggesting that increased implementation costs significantly reduce the growth in revenue collection. Similarly, a negative and significant impact is observed on efficiency (-0.402) with a t-value of -2.34, significant at the 10% level ($p<0.1$). However, the effects on effectiveness (-0.120) and reliability (-0.327) are not statistically significant, indicating that the impact of implementation costs on these dimensions is not as pronounced.

Moreover, results on the compliance to REP has a generally positive impact on revenue collection performance. For effectiveness, the coefficient is 0.241, with a t-value of -1.90, which is significant at the 10% level, indicating that higher compliance is associated with greater effectiveness in meeting revenue targets. Compliance also has a strong positive effect on reliability (1.533) and efficiency (1.029), both of which are highly significant ($p<0.01$), suggesting that higher compliance greatly enhances the consistency and efficiency of revenue collection. However, the impact on increment is not significant, indicating that compliance does not significantly influence the growth in revenue collection.

Additionally, revenue leakage has a consistently negative effect on revenue collection performance. It significantly reduces both effectiveness (-1.221) and increment (-1.59), with t-values of 7.41 and 8.27 respectively, both significant at the 1% level ($p<0.01$). This implies that higher revenue leakage severely undermines the ability to meet revenue targets and hampers the growth in revenue collection. The effects on reliability and efficiency, while negative, are less pronounced and not statistically significant, except for efficiency, where the impact is borderline significant at the 10% level with a coefficient of -0.338.

Also, results show that revenue forecasting has a positive and significant impact on most aspects of revenue collection performance. It greatly enhances effectiveness (1.390) and increment (0.516), with both coefficients being highly significant ($p<0.01$), indicating that accurate revenue forecasting is crucial for achieving revenue targets and promoting growth. However, the impact on reliability is negative (-0.378) and significant at the 5% level, suggesting that while forecasting might improve some aspects of performance, it could potentially introduce inconsistencies in the revenue collection process. The effect on efficiency is also positive and significant (1.51, $p<0.01$), indicating that better forecasting leads to more cost-effective and timely revenue collection.

Overall, the results indicate that while factors like compliance and accurate revenue forecasting positively influence revenue collection performance, high implementation costs and revenue leakage can significantly undermine these outcomes. The findings underscore the importance of managing costs, ensuring compliance, and improving forecasting accuracy to enhance the overall effectiveness, growth, reliability, and efficiency of revenue collection.

Testing Model Assumptions

Table 5: Brant Test Results

	Chi^2	df	$P > Chi^2$	ASL	[95% MC CI]
Brant	124.9	9	0.125	0.001	0.000 0.004

The Brant test results indicate that the proportional odds assumption is likely to hold for this multivariate ordered probit model. With a chi-squared statistic of 124.9, 9 degrees of freedom, and a p-value of 0.125, the test suggests no significant violation of the assumption. The ASL of 0.001 and the narrow 95% Monte Carlo confidence interval further support this conclusion, implying that the relationship between predictors and the outcome is consistent across different thresholds, making the model appropriate for the data.

Table 6: Tests of the Parallel Regression Assumption (Oparallel Test)

	Chi^2	df	$P > Chi^2$
Wolfe Gould	119.45	9	0.216
Brant	144.95	9	0.125
Score	218.34	9	0.184
Likelihood ratio	291.95	9	0.108
Wald	196.85	9	0.215

The results presented in Table 6 assess the parallel regression assumption, which is a key requirement for the validity of the multivariate ordered probit model. This assumption posits that the relationship between the predictors and the outcome variables is consistent across different thresholds of the outcome categories.

The Wolfe-Gould test yields a chi-squared value of 119.45 with 9 degrees of freedom and a p-value of 0.216. This result suggests no significant evidence against the parallel regression assumption, indicating that the model's proportional odds are likely valid for the data. Similarly, the Brant test reports a chi-squared value of 144.95 with 9 degrees of freedom and a p-value of 0.125. The non-significant p-value further supports the assumption that the relationship between the predictors and outcomes remains consistent across different thresholds.

The Score test results, with a chi-squared value of 218.34 and a p-value of 0.184, also indicate no significant violation of the parallel regression assumption, reinforcing the conclusion drawn from the Wolfe-Gould and Brant tests. Moreover, the Likelihood Ratio test, which provides a chi-squared value of 291.95 with a p-value of 0.108, similarly suggests that the assumption is not violated, as the p-value does not indicate a significant departure from the expected proportional odds.

Finally, the Wald test produces a chi-squared value of 196.85 with a p-value of 0.215. This result aligns with the other tests, indicating no significant evidence against the parallel regression assumption. Therefore, across all five tests—Wolfe-Gould, Brant, Score, Likelihood Ratio, and Wald—the p-values do not indicate any significant violations of the parallel regression assumption. These consistent results suggest that the multivariate ordered probit model is appropriate for the data, with the proportional odds assumption being reasonably well met across the different outcome categories.

Discussion

The significant negative impact of revenue leakage on effectiveness highlights the critical need to address this issue to improve revenue collection outcomes. This finding is supported by Macharia (2018), who emphasized the adoption of digital tools like electronic billing systems to minimize leakages and enhance collection efficiency in East African LGAs. By reducing leakages, local governments can ensure that more of the collected funds are retained and utilized effectively. Accurate revenue forecasting, which shows a positive impact on effectiveness, aligns with the recommendations of Fatoumata (2020) for improving financial management capacity in Mali. Precise forecasting allows for better planning and allocation of resources, leading to enhanced effectiveness in revenue collection efforts. In alignment with the findings, a key informant from our interviews remarked:

We have identified revenue leakage as a significant barrier to effective revenue collection. The leakage has not only hindered our ability to achieve our financial targets but has also eroded public trust. Addressing these leakages is our top priority, and we have implemented stringent measures, such as enhancing our audit processes and leveraging technology to monitor transactions more effectively. (Respondent AB)

Another key informant emphasized in the interview:

Revenue leakage is a critical issue that affects our performance in Mwanza City Council. We have invested in training our staff to identify and mitigate these leakages, which has started to show positive results. The training has equipped our team with the skills needed to detect anomalies early and implement corrective actions, ultimately improving the effectiveness of our revenue collection efforts (Respondent BC)

The analysis shows that high implementation costs and revenue leakage reduce revenue increments, reflecting inefficiencies in spending. This aligns with Anyango's (2019) findings in Nairobi, where poor governance hindered revenue growth. Similarly, Sunday (2020) emphasized investing in technology to curb leakages in Lagos State. Accurate forecasting also improves revenue performance by aligning expectations with actual collections. Thus, strategic planning must prioritize cost control and forecasting accuracy.

Consistent with the findings, one key informant shared their perspective:

At Manyara Urban Council, the high implementation costs and revenue leakage have been major obstacles to our revenue growth. Excessive costs often arise from outdated processes and lack of oversight, while leakages diminish our potential gains. By implementing robust training programs, we have empowered our staff to address these challenges head-on, resulting in more efficient operations and greater revenue increments (Respondent DC)

Another key informant emphasized in the interview:

The impact of high implementation costs and revenue leakage on our revenue growth in Mwanza City Council cannot be overstated. By focusing on cost-reduction strategies and improving our ability to detect and prevent leakages, we have managed to create more room for revenue growth. Training has been instrumental in providing our team with the skills needed to tackle these issues effectively (Respondent EA)

The results reveal that compliance significantly enhances revenue reliability, emphasizing the need for adherence to regulations for consistent outcomes. This supports Fatoumata's (2020) findings in Mali, advocating for accountability and capacity building. Conversely, high implementation costs negatively affect reliability, indicating the risks of resource misallocation. Macharia (2018) similarly stressed the role of digital investments and staff training in improving reliability in East African LGAs. These insights highlight the balance between compliance and cost control for stable revenue systems.

In agreement with the findings, one key informant commented:

At Mwanza City Council, we have found that strict compliance with regulations is essential for maintaining the reliability of our revenue collection. By ensuring that all our processes align with established standards, we have minimized the risk of errors and enhanced our credibility. Training programs focused on compliance have been pivotal in achieving this reliability, as they empower our staff to execute their duties with precision and integrity (Respondent AF)

In the interview, a key informant articulated:

Compliance plays a vital role in ensuring the reliability of revenue collection in Manyara Urban Council. Our adherence to standards and regulations has helped us maintain consistency in our processes and outcomes. Training initiatives have reinforced the importance of compliance among our staff, leading to more reliable and predictable revenue collection (Respondent AG)

During the interview, another informant expressed:

The reliability of our revenue collection processes at Mbeya City Council is heavily dependent on compliance with regulations. By fostering a culture of adherence to standards, we have reduced discrepancies and enhanced the predictability of our revenue outcomes. Training programs have been instrumental in instilling a strong compliance mindset among our staff, contributing to our overall success (Respondent BF).

The model reveals that high implementation costs and revenue leakage reduce efficiency, while accurate forecasts enhance it. Anyango and Musau (2020) emphasize taxpayer awareness and compliance as key to lowering enforcement costs and improving predictability. Addressing leakages and optimizing resources boosts operational efficiency. Macharia and Otieno (2023) underscore accurate forecasting as vital for effective financial planning.

Similar with the findings, a key informant revealed:

In Manyara Urban Council, the challenge of high implementation costs and revenue leakage has prompted us to improve our forecasting techniques. Accurate forecasts enable us to anticipate potential issues and allocate resources more effectively, ultimately enhancing our efficiency. Training has been key in developing our team's skills in this area, helping us to mitigate the negative impacts of leakages and costs on our operations (Respondent GC)

One informant observed during the interview:

Efficient revenue collection in Mwanza City Council is hindered by implementation costs and leakages, but we have found that accurate forecasting can mitigate these challenges. By training our staff to generate precise forecasts, we have improved our ability to plan and execute our strategies effectively. This proactive approach has reduced inefficiencies and enhanced our revenue collection processes (Respondent DD)

The study findings reveal that revenue leakage and high implementation costs negatively affect revenue effectiveness, increment, and efficiency, while accurate forecasting and compliance significantly enhance fiscal performance. These results emphasize the

need for LGAs to invest in digital systems, staff training, and forecasting tools. Qualitative insights from key informants reinforced these outcomes, highlighting the benefits of proactive strategies like audit strengthening and compliance-focused training. Respondents from Mwanza and Manyara Urban Councils noted that reducing leakages and improving forecasting had already shown positive results. These aligned perspectives support the validity of the model's outcomes and offer practical pathways for improving local revenue systems.

However, alternative explanations and model limitations must be considered. Some negative outcomes may be linked to broader structural issues like political interference or informal revenue practices, which were not directly measured. Additionally, implementation costs might reflect initial infrastructure investments with delayed benefits something a cross-sectional model cannot capture. Self-reported data may also introduce bias, and the model assumes consistent relationships across ordinal categories. Despite these limitations, combining qualitative and quantitative data strengthened the study's credibility and provided a holistic understanding of Revenue Enhancement Plans in Tanzanian LGAs, with valuable implications for policy and future research.

Conclusion

The multivariate ordered probit model results provide valuable insights into the factors influencing various aspects of revenue collection performance. The findings highlight the importance of addressing revenue leakage and improving revenue forecasting to enhance effectiveness, while compliance and forecasting accuracy contribute to greater efficiency and reliability. Although high implementation costs negatively affect efficiency, they do not significantly impact effectiveness. These insights emphasize the need for strategic investments in cost management, compliance, and forecasting tools. However, the study has limitations, including its cross-sectional design, which restricts causal inference, and reliance on self-reported data, which may introduce bias. Additionally, the findings may not be fully generalizable beyond the selected LGAs, suggesting the need for further research in diverse contexts.

Based on the results of this study, several policy recommendations are proposed to enhance revenue collection performance:

The study's findings suggest that policymakers should address revenue leakage by implementing robust monitoring systems, such as digital revenue tracking platforms, and conducting regular audits to enhance transparency and accountability. To strengthen compliance, local governments should launch targeted taxpayer education campaigns, simplify tax procedures, and invest in staff training to build enforcement capacity. Managing high implementation costs requires adopting cost-effective technologies, streamlining revenue collection processes, and prioritizing investments that offer long-term savings. For forecasting, LGAs should adopt data-driven forecasting tools, improve access to real-time local revenue data, and provide training on analytical methods to enhance forecast accuracy. By tackling these specific challenges with tailored interventions, local governments can improve revenue performance, strengthen fiscal sustainability, and deliver better public services.

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