Journal of Business and Entrepreneurship

[ISSN 2958-1125]
Volume: 05 Issue: 01 | November-2026

JBE

Value Added Tax Structure Reforms and Revenue Performance in Kenya: Evidence From National Monthly Time-Series Data (2016–2025)

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Cite this article in APA

Rotich, A. C., Kibati, P., & Kiprop, S. (2026). Value added tax structure reforms and revenue performance in Kenya: Evidence from national monthly time-series data (2016–2025). *Journal of business and entrepreneurship, 5*(1), 232-250. https://doi.org/10.51317/nfxryr15

OPEN ACCESS

A publication of Editon Consortium Publishing (online)

Article history

Received: 2026-09-17
Accepted: 2026-10-09
Published: 2026-11-18

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Abstract

This study examined the effects of three Value Added Tax (VAT) structure reforms, namely the 2018 introduction of an 8 per cent rate on petroleum products, the 2019 imported-services reform and the 2020 temporary reduction of the standard rate from 16 per cent to 14 per cent, on VAT revenue performance in Kenya. Despite repeated VAT amendments, revenue relative to GDP has shown limited improvement, raising questions about the revenue effects of specific reforms. Anchored on Optimal Tax and Laffer Curve theories, the study used national monthly VAT collection data from the Kenya Revenue Authority covering January 2016 to December 2025. The monthly change in logged VAT revenue was analysed using an autoregressive ordinary least squares model with differenced reform indicators and monthly dummies, applying Newey–West standard errors. The model explained 59.2 per cent of the variation in monthly revenue changes, while the reforms were jointly significant ($F(3, 100) = 8.71$, $p < 0.001$). The imported-services reform increased VAT revenue ($\beta = 0.0391$, $p = 0.020$), whereas the petroleum rate reduction ($\beta = -0.0554$, $p = 0.002$) and the temporary standard-rate reduction ($\beta = -0.0781$, $p = 0.006$) reduced collections. Alternative specifications revealed no significant sustained growth effects, supporting the interpretation that the reforms produced level shifts in revenue. The findings indicate that base-broadening measures are associated with increased VAT revenue, while rate reductions are associated with lower collections. The study recommends prioritising VAT base-broadening measures and conducting ex-ante revenue-cost assessments before implementing rate reductions.

Keywords: Dynamic regression, Kenya, revenue performance, tax structure reforms, Value Added Tax.

INTRODUCTION

Value Added Tax has become one of the most widely adopted instruments of domestic revenue mobilisation in the world. Its broad consumption base, collection at each stage of the supply chain and the crediting of input tax allow governments to raise substantial revenue with relatively limited distortion of production decisions. These same features, however, mean that the revenue a VAT actually yields depends heavily on how its structure is designed: which supplies fall within the base, which are exempt or zero-rated and what rates apply. Reduced rates, exemptions and gaps in the coverage of services erode the effective base, while measures that bring untaxed supplies into the net enlarge it. The revenue performance of VAT is therefore not fixed at its introduction but is continuously shaped by subsequent structural reforms, which is the issue this study examines in the Kenyan context.

Keen and Lockwood (2010), in an analysis of 143 countries over 25 years, established that the adoption of VAT was generally associated with improved revenue mobilisation, although the gains differed across countries and were less evident in sub-Saharan Africa. Governments nonetheless continue to adjust VAT rates, exemptions and the scope of taxable supplies. The OECD (2025) reported that five countries increased their standard VAT rates in 2024, with three further increases taking effect in 2025, while the OECD (2026), reviewing 92 jurisdictions, documented changes to VAT rates, exemptions and the taxation of digital transactions. Kenya's recent reforms belong to the same categories of rate adjustment and base change, which makes this international evidence a relevant point of reference.

Cross-country evidence shows that the revenue yield of a VAT reform depends on its design. Amaglobeli *et al.* (2022) found that VAT rate changes generally had larger revenue effects than base-broadening measures. Because their evidence comes mainly from rate increases in economies with relatively strong administration, it leaves open how rate reductions and base broadening perform in a lower-middle-income economy such as Kenya, where the VAT base is narrower and compliance gaps are wider. Gomez *et al.* (2025), analysing Brazil's VAT reform, showed that the revenue outcome of a structural reform is sensitive to exemptions, informality and the compliance gap, conditions that are also prominent in Kenya. Baer *et al.* (2025) estimated that improvements in tax administration could raise VAT revenue by about 0.6 percentage points of GDP, and the IMF (2026) emphasised that improvements in VAT design, together with effective administration, can enhance efficiency while preserving revenue. Taken together, these studies imply that the revenue effect of a given reform cannot be assumed from international averages and must be assessed with country-specific data.

In Kenya, VAT replaced the sales tax in 1990 in order to extend consumption taxation to services and to allow the deduction of eligible input tax. The regime was restructured through the VAT Act, 2013, which rationalised exemptions and zero-rated supplies, and has since been amended through successive Finance Acts affecting rates, exemptions, zero-rating and the scope of taxable supplies (The National Treasury and Economic Planning, 2023). VAT is accounted for monthly, with returns and payment due by the twentieth day of the following month, while VAT on imports is collected at the point of importation. VAT is Kenya's second-largest source of ordinary revenue after income tax.

Between 2016 and 2025, Kenya implemented several VAT structure reforms, three of which are examined in this study. The Finance Act, 2018 introduced a reduced rate of 8 per cent on petroleum products from September 2018, which remained in force until the rate was restored to 16 per cent in July 2023. The Finance Act, 2019 strengthened the taxation of imported services from November 2019, bringing cross-border services more firmly into the VAT net. In response to the COVID-19 pandemic, the standard rate was temporarily reduced from 16 per cent to 14 per cent between April and December 2020. These reforms differed in nature and direction: a reduced rate on a specific product group, an expansion of the base through imported services, and a temporary economy-wide reduction in the standard rate. The study examines their effects on national VAT revenue.

Kenya faces persistent pressure to raise domestic revenue in order to finance recurrent and development expenditure while containing borrowing.

Nominal tax revenue rose from Kshs 1,429.5 billion in FY2020/21 to Kshs 2,203.3 billion in FY2024/25, an increase of about 54.1 per cent, yet the tax-to-GDP ratio remained virtually unchanged at 12.65 per cent and 12.64 per cent, respectively. Debt-service obligations amounted to approximately 71.2 per cent of ordinary revenue in FY2024/25, constraining fiscal space. In FY2024/25, domestic and import VAT collections amounted to approximately Kshs 660.4 billion, or 27.3 per cent of ordinary revenue, compared with 28.2 per cent in FY2023/24 and 27.0 per cent in FY2022/23.

As the second-largest tax head, VAT is central to closing the revenue gap, yet its contribution relative to GDP declined marginally from 4.2 per cent in FY2016/17 to 4.1 per cent in FY2021/22, while domestic VAT collections contracted by 7.3 per cent in FY2019/20 and by 7.9 per cent in FY2020/21 before recovering by 24.3 per cent in FY2021/22 (The National Treasury and Economic Planning, 2023). A broad-based consumption tax would be expected at least to keep pace with the economy. The failure of VAT to rise relative to GDP over a period in which Finance Acts repeatedly altered its rates and base therefore signals weak VAT productivity and raises a direct question about the effectiveness of those structural reforms: some may have broadened the effective base while others may have eroded it, with offsetting effects on aggregate collections.

The specific empirical uncertainty concerns three statutory reforms that moved the VAT structure in different directions. The 2018 reduced rate on petroleum products lowered the tax on a large consumption item, but because much fuel VAT is claimed as input tax by registered businesses, its net effect on aggregate collections is not self-evident. The 2019 imported-services reform broadened the base, but its yield depends on the registration and compliance of cross-border suppliers and the application of the reverse charge, which are difficult to enforce. The 2020 temporary reduction of the standard rate was expected to reduce revenue, but its effect coincided with the COVID-19 shock and may have been partly offset by consumption responses. Their individual effects are therefore theoretically ambiguous in magnitude and, for the petroleum measure, in sign. Their combined effect is equally uncertain because they overlapped in time, so a revenue gain from one may have masked a loss from another. Both the individual and the joint effects therefore require investigation.

Existing Kenyan studies do not resolve this uncertainty. Chilibasi (2014) and Kiara and Nekesa (2023) examined reform packages dominated by administrative and technological measures, such as online filing, VAT withholding agents and excise management systems, and their samples end before most of the reforms studied here. Wawire (2017) and Muguchu *et al.* (2020) analysed the determinants, elasticity and buoyancy of VAT revenue using annual data, without estimating the effect of individual statutory measures, while Karuga *et al.* (2025) grouped reforms into broad categories. The IMF (2024) further observed that Kenya announced 594 tax policy and administrative changes between 1988 and 2022, with base-narrowing measures more frequent than base-broadening ones. Unlike these studies, the present study isolates specific statutory rate and base reforms and estimates their individual and joint effects using monthly administrative data, which can register changes in revenue around the months in which each reform took effect. Without such evidence, policymakers lack an empirical basis for judging the revenue implications of VAT rate adjustments and base changes proposed in future Finance Bills. This study therefore sought to determine the effect of VAT structure reforms on VAT revenue performance in Kenya using national monthly data for 2016–2025.

The study was a national-level investigation. It used national monthly VAT collections recorded by the Kenya Revenue Authority, which administers VAT for the whole country, and its findings therefore relate to Kenya as a whole rather than to any county. The study covered the period January 2016 to December 2025 and was limited to three statutory VAT structure reforms: the 2018 reduced rate on petroleum products, the 2019 imported-services reform and the 2020 temporary reduction of the standard rate. Administrative reforms, such as electronic invoicing and withholding arrangements, were outside the scope of the reform variable, and their influence is acknowledged among the limitations of the study.

Conceptual Framework

The conceptual model for the relationship between VAT structure reforms and VAT revenue performance is presented in Figure 1. The independent variable comprises three statutory VAT reforms, each measured using a binary indicator coded 1 for the months in which the reform was in force and 0 otherwise. The dependent variable is VAT revenue performance, measured as the first difference of the natural logarithm of actual monthly VAT collections, $\Delta\ln(VAT_t)$, which approximates the monthly growth rate of revenue. Differencing follows from the stationarity tests, which showed logged revenue to be stationary only after first differencing. Because the dependent variable is differenced, the reform indicators enter the estimated model in differenced form, so that each coefficient measures a permanent shift in the level of revenue. Two lags of $\Delta\ln(VAT)$ control for persistence in revenue growth, and monthly dummies control for seasonality.

Independent Variable		**Dependent Variable**
VAT Structure Reforms		*VAT Revenue Performance*
• 2018 reduced VAT rate (8%) on petroleum products	→	• First difference of logged monthly VAT collections, $\Delta\ln(VAT_t)$
• 2019 imported-services reform		
• 2020 temporary standard-rate reduction (16% to 14%)		*Controls:* two lags of $\Delta\ln(VAT)$; eleven monthly seasonal dummies

Figure 1: Conceptual Model

Source: Author (2026)

The general objective of the study was to determine the effect of Value Added Tax (VAT) structure reforms on VAT revenue performance in Kenya using national monthly time-series data for the period 2016–2025. Specifically, the study sought to determine the effects of the 2018 reduced VAT rate on petroleum products, the 2019 imported-services reform and the 2020 temporary reduction of the standard VAT rate on monthly VAT revenue performance in Kenya.

The study tested one joint null hypothesis and three reform-specific null hypotheses. The joint null hypothesis (H_{01}) stated that VAT structure reforms have no statistically significant joint effect on VAT revenue performance in Kenya ($\beta_1 = \beta_2 = \beta_3 = 0$). The first reform-specific null hypothesis (H_{01a}) stated that the 2018 reduced VAT rate on petroleum products has no statistically significant effect on VAT revenue performance in Kenya ($\beta_1 = 0$). The second null hypothesis ($H_{01\beta}$) stated that the 2019 imported-services reform has no statistically significant effect on VAT revenue performance in Kenya ($\beta_2 = 0$). The third null hypothesis (H_{01}[illegible]) stated that the 2020 temporary reduction of the standard VAT rate has no statistically significant effect on VAT revenue performance in Kenya ($\beta_3 = 0$).

LITERATURE REVIEW

Theoretical Literature Review

Two theories provide the basis for the expected effects of the three reforms. Optimal Tax Theory explains how the design of rates and bases determines yield, while the Laffer Curve Theory explains how revenue responds to changes in rates. The expectations derived from them are stated before the empirical results so that the two can be compared.

Optimal Tax Theory

Optimal Tax Theory was first articulated by Ramsey (1927) and later extended by Mirrlees (1971). It holds that governments should design taxes to raise the required revenue with the least loss of economic efficiency, while having regard to equity. Ramsey argued that commodity taxes should fall more heavily on goods with relatively inelastic demand because such taxes cause minimal distortion in consumption, while Mirrlees introduced the trade-off between efficiency and equity in setting rates. In the VAT literature, the framework supports a broad base taxed at a uniform rate, since reduced rates and exemptions narrow the effective base, complicate administration and lower the yield obtained from a given standard rate (Ebrill *et al.*, 2001; Keen, 2013). Critics argue that its assumptions are often unrealistic and that it does

not fully capture the institutional and behavioural factors that shape actual collections.

The theory yields a separate expectation for each reform. For the *petroleum rate reduction*, halving the rate on a product with relatively inelastic demand would be expected to lower revenue, because consumption would not rise enough to offset the lower rate; the expected sign of β_1 is therefore negative. Because a large share of fuel is purchased by VAT-registered businesses that recover input tax, however, the theory also implies that the loss to net collections may be small, so the expected magnitude is modest. For the *imported-services reform*, extending VAT to services previously outside the net enlarges the base without changing the rate and is consistent with the theory's preference for broad bases, implying a positive β_2. For the *temporary standard-rate reduction*, lowering the rate on the whole base would be expected to reduce revenue roughly in proportion to the rate change, adjusted for any consumption response, implying a negative β_3. These are theoretical expectations; whether they hold in Kenya is the empirical question.

Laffer Curve Theory

The Laffer Curve Theory was popularised by Arthur Laffer in 1974 and named by Jude Wanniski in 1978, although the idea had earlier been expressed by Ibn Khaldun and John Maynard Keynes. It posits a non-linear relationship between tax rates and revenue: revenue is zero at both a zero rate and a 100 per cent rate, and between these lies a revenue-maximising rate. Below that rate, an increase raises revenue; above it, further increases reduce revenue because taxpayers reduce taxable activity, shift into informality or evade. Fullerton (1982) showed that whether a rate cut raises or lowers revenue depends on the elasticity of the tax base, and Trabandt and Uhlig (2011) found that the revenue response to rate changes differs across tax instruments. Critics note that the revenue-maximising rate is difficult to identify and that most economies operate on the rising segment of the curve, where rate reductions lower revenue.

The theory applies to the two rate reforms but not to the base reform, and the mechanisms should be distinguished. For the *rate reductions*, the theory predicts revenue gains only if Kenya's rates were above the revenue-maximising level, so that lower rates stimulated enough additional consumption or compliance to offset the lower yield per shilling of sales. With a standard rate of 16 per cent and a narrow, partly informal base, Kenya is more plausibly on the rising segment of the curve, implying that both the petroleum rate reduction and the 2020 standard-rate cut would reduce revenue (negative β_1 and β_3). The *imported-services reform* works through a different mechanism: it applies the existing rate to supplies that were previously untaxed and does not depend on a behavioural response to a rate change. Its expected effect (positive β_2) therefore rests on base coverage and enforcement rather than on the position of the economy on the Laffer curve. The theory thus helps to interpret why rate and base reforms may differ in both the sign and the size of their effects.

Table 1: Theoretical Expectations for the Reform Coefficients

Reform	Mechanism	Optimal Tax Theory	Laffer Curve Theory	Expected sign
2018 petroleum rate (8%) – β_1	Rate reduction on a specific, inelastic product; input tax largely creditable	Lower yield; small net effect	Loss if below revenue-maximizing rate	Negative (small)
2019 imported services – β_2	Base broadening at the existing rate	Higher yield from broader base	Not a rate mechanism	Positive
2020 standard rate 16%→14% – β_3	Temporary economy-wide rate reduction	Lower yield on the whole base	Loss if below revenue-maximizing rate	Negative

Source: Author (2026)

Empirical Literature Review

The empirical literature is reviewed thematically: Kenyan studies of composite reform packages, studies of VAT responsiveness and broad reform categories, and international evidence. The section closes with what this evidence implies for each of the three reforms and for the present study.

Kenyan Evidence on Composite and Administrative Reforms

Two Kenyan studies estimated the revenue effect of reform packages directly. Chilibasi (2014) examined VAT revenue at the Kenya Revenue Authority over 2009–2013, treating online filing of returns, changes in VAT rates and integrated tax-management systems together as "VAT reforms". The study found a significant overall effect and observed that rate increases did not necessarily raise revenue. Its design has three limitations for present purposes. First, by combining statutory, administrative and technological measures, it could not attribute the revenue change to any single measure. Second, a five-year window offers few observations on either side of each reform, which limits the separation of reform effects from trend and cyclical movements, and third, it predates the reforms examined here. Kiara and Nekesa (2023), using KRA and KNBS data for 2010–2019, applied difference-in-differences and regression discontinuity designs to the appointment of VAT withholding agents, the Excisable Goods Management System and changes in excise regimes, and found that withholding agents raised VAT revenue by 13.4 per cent.

Their quasi-experimental methods identify the effect of discrete administrative interventions more credibly than Chilibasi's package approach, but the reforms they studied operate through compliance and enforcement rather than through the statutory rate or base, and their sample ends in 2019. Omondi (2020), using QUAIDS, collection-efficiency and ARDL models, found that VAT reforms improved collection efficiency but widened the compliance gap and that rate increases reduced household purchasing power; the outcome variables were welfare, efficiency and the gap rather than actual collections.

Read together, these studies agree that reforms affect VAT revenue and that rate changes do not translate mechanically into revenue, but they disagree in method and in the type of reform analysed. None estimates the effect of individual statutory rate and base changes on collections over the 2018–2020 reform period, which is the focus of the present study.

Evidence on VAT Responsiveness and Broad Reform Categories

A second group of studies examined how VAT revenue responds to its base and to reforms in general. Wawire (2017), using annual data for 1963/64–2008/09, found that VAT revenue responded with substantial lags to its determinants, was sensitive to reforms and unusual circumstances, and was particularly responsive to international trade. Muguchu *et al.* (2020) found VAT revenue to be buoyant but relatively inelastic (elasticity of 0.79), implying that revenue growth depended on discretionary measures rather than on automatic growth of the base. Karuga *et al.* (2025), using an ARDL model and annual data for 1970–2022, found indirect tax reforms to be positively associated with tax potential in the long run but negatively in the short run, while tax-rate reforms had no significant effect. Otieno *et al.* (2024) observed that revenue grew with continuous reforms but that the tax-to-GDP ratio remained low.

These studies converge on two points relevant here: VAT revenue is persistent and responds to reforms with lags, and the sign of the effect differs between rate reforms and other reforms. Their reliance on annual data and broad reform categories, however, limits what they can say about specific measures. Annual observations cannot locate a reform that takes effect within a fiscal year, and grouping reforms into categories averages out opposing effects. Their finding of lagged responses also implies that a model of monthly revenue should include lags of the dependent variable, which the present study does.

International Evidence

Cross-country studies provide the broader benchmark. Keen and Lockwood (2010) found that VAT adoption generally raised revenue, but less so in sub-Saharan Africa. Amaglobeli *et al.* (2022) found that VAT rate increases produced significant and persistent revenue gains and that rate and base reforms did not have equivalent effects. Single-country studies highlight the conditions under which reforms deliver revenue: Ahmed (2024) found that VAT performance in Ethiopia

was constrained by low taxpayer awareness, weak enforcement, poor audits and limited use of electronic tax registers, and Gomez *et al.* (2025) showed for Brazil that exemptions, informality and the compliance gap shape the revenue outcome of structural reform. Nwaorgu *et al.* (2016) found a negative and significant effect of VAT on national income in Nigeria over 1971–2014, although their outcome variable was national income rather than revenue. The international evidence therefore supports the proposition that reform design matters, while indicating that administrative capacity and informality condition how far statutory changes translate into collections in African economies.

Synthesis and Implications for the Present Study

The literature provides differentiated expectations for the three reforms. For *rate reductions*, Chilibasi (2014) and Karuga *et al.* (2025) found that rate changes were not reliably associated with revenue changes in Kenya, while Amaglobeli *et al.* (2022) found strong rate effects internationally; the Kenyan evidence thus suggests that the petroleum and standard-rate reductions may have smaller or less precisely estimated effects than theory alone implies.

For *base broadening*, Kiara and Nekesa (2023) showed that measures bringing more transactions into the collection net raised VAT revenue substantially, and Muguchu *et al.* (2020) showed that revenue growth depends on discretionary measures, supporting a positive expectation for the imported-services reform, conditional on enforcement (Ahmed, 2024; Gomez *et al.*, 2025). Methodologically, the studies range from package-based regressions and annual ARDL models to quasi-experimental designs focused on administrative interventions.

The present study builds on this work by estimating the separate and joint effects of three statutory reforms with monthly administrative data and a dynamic specification that allows for the persistence and lagged responses documented by Wawire (2017).

METHODOLOGY

The study was guided by the positivist research philosophy, which emphasises objective measurement of observable phenomena and statistical testing of hypotheses derived from theory (Creswell & Creswell, 2018). An explanatory research design was adopted because the study sought to establish how changes in VAT structure were associated with changes in VAT revenue (Saunders *et al.*, 2009). The design was consistent with the use of secondary time-series data and dynamic regression, which permit estimation of both the immediate and the cumulative effects of reforms.

The study used secondary monthly administrative data on actual national VAT collections obtained from the Kenya Revenue Authority (KRA), the institution legally mandated to assess and collect national taxes. The series records total VAT collected each month in Kenyan shillings, as reported in KRA's revenue performance records, and therefore reflects revenue actually received rather than amounts assessed or budgeted. The monthly number of registered VAT taxpayers was obtained from the same source as a descriptive indicator of the administrative base. A structured data capture sheet was used to record, for each month from January 2016 to December 2025, the month and year, actual VAT collections and the number of registered VAT taxpayers, yielding 120 monthly observations. The extracted series was checked for completeness, with no missing months. The effective dates of the reforms were obtained from the Finance Act, 2018, the Finance Act, 2019, the Tax Laws (Amendment) Act, 2020 and the Finance Act, 2023, and were used to code the reform indicators. The period captured several changes in rates, thresholds, exemptions, zero-rating provisions and bases, as well as important developments in VAT administration.

Table 2 summarises the operationalisation of the study variables.

Table 2: Operationalisation of Variables

Variable	Indicator	Measurement
VAT revenue performance (DV)	d_lnvat	First difference of the natural logarithm of actual monthly VAT collections, $\Delta\ln(VAT_t) = \ln(VAT_t) - \ln(VAT_{t-1})$
2018 petroleum VAT rate (IV)	d_r18	Δ of r18_petrol (1 from September 2018 to June 2023): +1 in September 2018, −1 in July 2023, 0 otherwise
2019 imported-services reform (IV)	d_r19	Δ of r19_impserv (1 from November 2019 onwards): +1 in November 2019, 0 otherwise
2020 temporary rate reduction (IV)	d_r20	Δ of r20_rate (1 from April to December 2020): +1 in April 2020, −1 in January 2021, 0 otherwise
Persistence (control)	L1–L2.d_lnvat	First and second lags of Δln(VAT)
Seasonality (control)	Month dummies	Eleven monthly dummies; January is the base month

Source: Author (2026)

Each reform was first recorded as a step indicator coded 1 for every month in which it was in force and 0 otherwise (r18_petrol, r19_impserv and r20_rate). A statutory reform changes the VAT rate or base for as long as it remains in law, so its expected effect is a one-off shift in the *level* of revenue that persists while the reform is in force. It is not expected to change the *growth rate* of revenue month after month. The petroleum rate, for example, was halved in September 2018: this should lower the level of collections from that month onwards, but there is no reason why it should make revenue grow more slowly in every one of the following 58 months.

Because the dependent variable is the first difference of logged revenue, how the step indicators enter the model determines what their coefficients mean. If a step indicator were entered unchanged in the differenced equation, its coefficient would measure a change in average monthly revenue growth sustained throughout the reform period. Over the 74 months in which the imported-services reform was in force, for example, a coefficient of 0.10 would imply that the log level of revenue rose by a further 0.10 every month, an implausible cumulative effect that no statutory change of this kind could produce. Entering step indicators unchanged would therefore misrepresent a level shift as a continuing change in growth.

The study therefore applied the same transformation to the reform indicators as to the dependent variable. Differencing both sides of a model in which a reform shifts the level of ln(VAT) yields a model in which the *first difference* of the step indicator appears (Box & Tiao, 1975). The differenced indicator (d_r18, d_r19, d_r20) equals +1 in the month a reform took effect, −1 in the month it was withdrawn, and 0 in all other months. For the petroleum rate, it takes +1 in September 2018 and −1 in July 2023; for the imported-services reform, +1 in November 2019; and for the temporary rate reduction, +1 in April 2020 and −1 in January 2021. The step indicators are retained in the dataset and in the descriptive statistics, where their means show the share of months in which each reform was in force.

With this specification, each reform coefficient (β_j) measures the *immediate level shift*: the percentage change in VAT revenue in the month the reform took effect, approximately $(e^{\beta_j} - 1) \times 100$ (Halvorsen & Palmquist, 1980), holding past revenue growth and seasonality constant. Because the shift enters the growth equation only once, it raises or lowers the level of revenue permanently but leaves the subsequent growth rate unchanged; the −1 entry reverses the shift when a reform is withdrawn. The lagged growth terms then carry part of the initial shift into the following months, so the cumulative long-run level effect of a reform is $\beta_j/(1 - \varphi_1 - \varphi_2)$, where φ_1 and φ_2 are the coefficients on the lagged growth terms. If these coefficients are negative, part of the initial shift is reversed in the following months, and the long-run effect is smaller than the immediate effect. The coefficients therefore capture level shifts and not

continuing changes in revenue growth, which directly matches the expected effect of a statutory change. As a robustness check, the model was also estimated with the undifferenced step indicators; their coefficients are interpreted as changes in average monthly revenue growth while each reform was in force.

This approach has one cost that should be noted. Each differenced indicator is non-zero in only one or two months, so the estimate of each reform effect rests on the revenue change in those months relative to the seasonal norm. Effects that build up gradually after implementation are captured through the lagged growth terms rather than the reform coefficient itself, and estimates may be less precise than those from a step specification.

Stationarity was assessed using the Augmented Dickey–Fuller (ADF) test (Dickey & Fuller, 1981). The test regression included a constant but no deterministic trend, and twelve lagged differences were used for the level series so as to absorb monthly seasonal dependence over a full year. Test statistics were compared with MacKinnon (1996) critical values, and approximate p-values are reported. Where the series was non-stationary in levels, the test was repeated on the first difference. The reform indicators are deterministic and were not tested. Because unit root tests have low power when a series contains structural breaks (Perron, 1989), and the reforms are potential breaks in the revenue series, this limitation is acknowledged in interpreting the results. Since logged VAT revenue was found to be integrated of order one, the regression was estimated in first differences, which avoids the risk of spurious regression associated with non-stationary dependent variables.

The optimal number of lags of the differenced dependent variable, Δln(VAT), was determined by comparing specifications with one, two and three lags using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). Every specification compared included a constant, the three differenced reform indicators and the eleven monthly dummies, and all were estimated over a common sample (May 2016 to December 2025) so that the criteria were computed on identical observations. The specification with the lowest criteria was preferred, subject to parsimony. Two lags were selected (Table 6).

Following the stationarity tests, the model was specified in first differences of logged VAT revenue. The dependent variable is the monthly change in logged revenue; two lags of the same variable capture persistence in revenue growth; the differenced reform indicators capture the level shift produced by each reform; and eleven monthly dummies capture seasonality, with January as the reference month. The model was estimated by ordinary least squares with Newey–West heteroskedasticity and autocorrelation consistent (HAC) standard errors (maximum lag = 3) (Newey & West, 1987):

$$\Delta \ln VAT_t = \alpha + \Sigma_{i=1}^{2} \varphi_i \Delta \ln VAT_{t-i} + \beta_1 \Delta PET_t + \beta_2 \Delta IMP_t + \beta_3 \Delta VRATE_t + \Sigma_{m=2}^{12} \delta_m S_{m,t} + \varepsilon_t$$

where VAT_t is actual national VAT collections in month t; $\Delta \ln VAT_t = \ln VAT_t - \ln VAT_{t-1}$; $\Delta \ln VAT_{t-i}$ are its first and second lags; ΔPET_t, ΔIMP_t and $\Delta VRATE_t$ are the first differences of the 2018 petroleum rate, 2019 imported-services and 2020 temporary rate-reduction step indicators; $S_{m,t}$ are monthly seasonal dummies; α is the constant; φ_i, β_j and δ_m are coefficients; and ε_t is the error term. Each β_j measures the immediate percentage shift in the level of VAT revenue produced by reform j, and $\beta_j/(1 - \Sigma\varphi_i)$ is its cumulative long-run level effect.

The joint hypothesis H_{01} was tested using a Wald test of $\beta_1 = \beta_2 = \beta_3 = 0$, and the reform-specific hypotheses H_{01a} to H_{01} were tested using the HAC t-statistics of the individual coefficients. Each null hypothesis was rejected where the p-value was below 0.05; results significant only at the 10% level are reported as such and are not treated as grounds for rejection. Post-estimation diagnostics comprised the Variance Inflation Factor for multicollinearity, the Breusch–Godfrey LM test for serial correlation at lags 1, 4 and 12 (Breusch, 1978; Godfrey, 1978), the Breusch–Pagan test for heteroskedasticity (Breusch & Pagan, 1979), the Jarque–Bera test for residual normality (Jarque & Bera, 1980), the Ramsey RESET test for functional form (Ramsey, 1969) and the CUSUM test for parameter stability (Brown *et al.*, 1975).

VAT collections were analysed in nominal terms because the reforms altered nominal tax liabilities and KRA reports collections in nominal shillings. Inflation and other macroeconomic variables, such as output and imports, were not included as regressors for three reasons. First, Differencing removes the stochastic trend identified in logged revenue, although inflation and other macroeconomic influences may still affect monthly revenue growth.

Second, with 117 usable observations, adding further regressors would reduce the precision of the reform estimates. Third, variables such as the number of registered VAT taxpayers are themselves partly outcomes of the reforms, and controlling for them would absorb part of the reform effects being estimated. The omission of explicit macroeconomic controls is nevertheless acknowledged as a limitation.

FINDINGS AND DISCUSSION

This section presents the findings and discussion of the study. It describes the data, examines the correlations among the study variables, presents the pre-estimation tests, including unit root and lag selection tests, and reports the regression results covering model fit, overall significance, coefficient estimates and the implied level effects of the reforms. It also presents the diagnostic tests and robustness checks, evaluates the research hypotheses and discusses the findings in relation to the underlying theories and previous empirical studies.

Descriptive Statistics

The descriptive statistics, based on monthly observations from January 2016 to December 2025, are presented in Table 3.

Table 3: Descriptive Statistics, January 2016–December 2025

Variable	Obs	Mean	Std. dev.	Min	Max
VAT revenue (Kshs billion)	120	15.569	4.873	8.359	27.055
ln(VAT)	120	23.420	0.314	22.847	24.021
Δln(VAT)	119	0.0051	0.1033	−0.3094	0.3210
YoY VAT revenue growth (%)	108	9.459	13.280	−20.991	52.288
Registered VAT taxpayers	120	323,759	72,120	193,006	439,626
Inflation, year-on-year (%)	120	5.959	1.787	2.720	11.700
r18_petrol (step)	120	0.483	0.502	0.000	1.000
r19_impserv (step)	120	0.617	0.488	0.000	1.000
r20_rate (step)	120	0.075	0.264	0.000	1.000

Note: Registered taxpayers and inflation are reported as context and are not regressors. The differenced indicators d_r18, d_r19 and d_r20 are zero in all but five months (Table 2).
Source: Research Data (2026)

Monthly VAT collections averaged Kshs 15.569 billion (SD = 4.873) and ranged from Kshs 8.359 billion to Kshs 27.055 billion. Logged revenue had a mean of 23.420 and a standard deviation of 0.314.

The monthly change in logged revenue, the dependent variable, averaged 0.0051, equivalent to average monthly growth of about 0.5 per cent, but was volatile (SD = 0.1033), ranging from a fall of about 31 log points to a rise of about 32 log points.

This volatility reflects the strong seasonal pattern of monthly collections, which the model controls for with monthly dummies. Year-on-year growth averaged (9.459%) and ranged from (−20.991%) to (52.288%), a period that included the COVID-19 disruption, the temporary rate reduction and the rollout of electronic invoicing.

The registered VAT population rose from 193,006 to 439,626, and year-on-year inflation averaged 5.959% (range 2.72% to 11.70%), providing context for nominal revenue growth.

The means of the step indicators show the share of months in which each reform was in force: (48.3%) for the petroleum rate, (61.7%) for the imported-services

reform and (7.5%) for the temporary rate reduction, reflecting its nine-month duration.

Correlation Analysis

Table 4: Correlation Matrix for Δln(VAT) and the Differenced Reform Indicators

Variable	Δln(VAT)	d_r18	d_r19	d_r20
Δln(VAT)	1.0000			
d_r18	−0.1350 (0.1432)	1.0000		
d_r19	0.0903 (0.3286)	0.0000 (1.0000)	1.0000	
d_r20	−0.2002 (0.0290)	0.0000 (1.0000)	0.0000 (1.0000)	1.0000

Note: N = 119 (February 2016–December 2025); p-values in parentheses.
Source: Research Data (2026)

The temporary rate reduction indicator was negatively and significantly correlated with monthly revenue change (r = −0.2002, p = 0.029). The petroleum indicator was negatively (r = −0.1350, p = 0.1432) and the imported-services indicator positively (r = 0.0903, p = 0.3286) correlated with revenue change, but neither correlation was significant. These simple correlations ignore the strong seasonality of monthly collections and are therefore only indicative; the regression below controls for seasonality and past revenue growth. The differenced indicators were uncorrelated with one another (r = 0.0000), because the months in which the reforms started and ended did not coincide, so multicollinearity among the reform variables is not a concern.

Pre-Estimation Tests

Table 5: Augmented Dickey–Fuller (ADF) Unit Root Test Results

Series	Deterministic terms	Lags	ADF statistic	5% critical value	p-value	Decision
ln(VAT), level	Constant, no trend	12	−0.012	−2.889	0.9575	Non-stationary
Δln(VAT), first difference	Constant, no trend	11	−3.503	−2.889	0.0079	Stationary

Note: 107 effective observations in each test. MacKinnon (1996) critical values: (1% −3.493; 5% −2.889; 10%) −2.581. p-values are MacKinnon approximate p-values. Twelve lagged differences were used for the level series; one fewer lag (11) was used for the differenced series, so that both tests cover the same twelve-month span of the original data.
Source: Research Data (2026)

Under the ADF specification with a constant and no trend, logged VAT revenue was non-stationary in levels (ADF = −0.012, p = 0.9575), as the statistic lay well above the (5%) critical value of −2.889. The first difference was stationary (ADF = −3.503, p = 0.0079), as the statistic lay below the (1%) critical value of −3.493. On the basis of this specification, logged VAT revenue was treated as integrated of order one, I(1). The regression was therefore estimated in first differences, with the reform indicators differenced in the same way.

Table 6: Optimal Lag Selection Results

Lags of Δln(VAT)	AIC	BIC	Decision
1	−260.855	−216.798	Not selected
2	−267.151	−220.340	Selected
3	−265.425	−215.860	Not selected

Note: Dependent variable Δln(VAT). Each specification includes a constant, the three differenced reform indicators (d_r18, d_r19, d_r20) and eleven monthly dummies; common sample May 2016–December 2025 (N = 116).
Source: Research Data (2026)

Both the AIC and the BIC attained their lowest values at two lags of Δln(VAT). Adding a third lag increased both criteria, so two lags of Δln(VAT) were retained in the regression model. With two lags, the estimation sample begins in April 2016, giving 117 observations.

Regression Results

The monthly change in logged VAT revenue was regressed on two of its own lags, the three differenced reform indicators and eleven monthly dummies, using 117 observations from April 2016 to December 2025. Tables 7, 8 and 9 present the model summary, the analysis of variance and the coefficient estimates, and Table 10 converts the reform coefficients into level effects.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Root MSE
1	0.7694	0.5920	0.5267	0.0712

Note: Dependent variable: Δln(VAT revenue).
Source: Research Data (2026)

The model explained 59.20 per cent of the variation in monthly changes in logged VAT revenue (R^2 = 0.5920; adjusted R^2 = 0.5267). This statistic refers to the variation in Δln(VAT), that is, in month-to-month revenue changes, and not to the variation in the level of revenue. A large part of it reflects the seasonal pattern of collections captured by the monthly dummies. The contribution of the reforms is therefore assessed through the joint and individual tests below rather than through R^2.

Table 8: Analysis of Variance (ANOVA)

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.7357	16	0.0460	9.068	0.0000
Residual	0.5071	100	0.0051		
Total	1.2428	116	0.0107		

Note: Dependent variable: Δln(VAT revenue). Newey–West model test: F(16, 100) = 72.71, p = 0.0000.
Source: Research Data (2026)

The overall regression was statistically significant, F(16, 100) = 9.068, p < 0.001, and the Newey–West adjusted test confirmed this result (F = 72.71, p < 0.001). The explanatory variables therefore jointly explained a significant share of the variation in monthly revenue changes.

Table 9: Regression Results (Newey–West Standard Errors)

Variable	β	Std. Error	t	Sig.	95% CI
L1.Δln(VAT)	−0.3756	0.1096	−3.43	0.001	[−0.5929, −0.1582]
L2.Δln(VAT)	−0.2592	0.0817	−3.17	0.002	[−0.4212, −0.0971]
d_r18 (petroleum rate)	−0.0554	0.0174	−3.18	0.002	[−0.0899, −0.0208]
d_r19 (imported services)	0.0391	0.0165	2.37	0.020	[0.0064, 0.0719]
d_r20 (temporary rate cut)	−0.0781	0.0279	−2.79	0.006	[−0.1335, −0.0226]
Monthly dummies (Feb–Dec)	−0.1319 to −0.2265			all < 0.001	
(Constant)	0.1795	0.0250	7.17	0.000	[0.1298, 0.2292]

Note: Dependent variable: Δln(VAT revenue). N = 117 (April 2016–December 2025); maximum Newey–West lag = 3. Joint Wald test of reform coefficients ($\beta_1 = \beta_2 = \beta_3 = 0$): F(3, 100) = 8.7128, p = 0.0000. Joint test of monthly dummies: F(11, 100) = 9.99, p = 0.0000.
Source: Research Data (2026)

Both lagged growth terms were negative and significant (β = −0.3756, p = 0.001; β = −0.2592, p = 0.002). A month of unusually high revenue growth therefore tends to be followed by lower growth in the next two months, a pattern consistent with the timing of payments shifting between months.

The monthly dummies were negative and jointly significant (F(11, 100) = 9.99, p < 0.001), indicating that revenue growth in every other month was lower than in January, the reference month, once past growth is held constant. These results underline the need to control for dynamics and seasonality when estimating reform effects.

All three reform coefficients were statistically significant at the (5%) level. The imported-services coefficient was positive (β = 0.0391, p = 0.020), the petroleum rate coefficient was negative (β = −0.0554, p = 0.002), and the temporary standard-rate reduction coefficient was negative (β = −0.0781, p = 0.006). Each coefficient measures an immediate shift in the level of VAT revenue in the month the reform took effect, not a continuing change in revenue growth. Table 10 converts the coefficients into percentage level effects.

Table 10: Immediate and Long-Run Level Effects of the Reforms

Reform	Immediate effect β (% change)	Long-run effect $\beta/(1-\varphi_1-\varphi_2)$	Std. Error	Sig.	Long-run % change
2018 petroleum rate (d_r18)	−0.0554 (−5.38%)	−0.0339	0.0107	0.002	−3.33%
2019 imported services (d_r19)	0.0391 (+3.99%)	0.0239	0.0114	0.039	+2.42%
2020 temporary rate cut (d_r20)	−0.0781 (−7.51%)	−0.0478	0.0186	0.012	−4.66%

Note: Percentage changes computed as (e^β − 1) × 100 (Halvorsen & Palmquist, 1980). $\varphi_1 + \varphi_2 = -0.6347$. Standard errors of the long-run effects computed by the delta method from the Newey–West covariance matrix.
Source: Research Data (2026)

In the month it took effect, the imported-services reform raised the level of VAT revenue by about 3.99%. The petroleum rate reduction lowered it by about 5.38%, and the temporary rate reduction lowered it by about 7.51% while the reduced rate applied. Because the lagged growth coefficients are negative ($\varphi_1 + \varphi_2 = -0.6347$), part of each initial shift was reversed in the following two months, so the long-run level effects are smaller than the immediate effects. They are a permanent increase of about (2.42%) for the imported-

services reform, a reduction of about (3.33%) for the petroleum rate while it applied, and a reduction of about (4.66%) for the temporary rate cut while it applied, all significant at the (5%) level. The petroleum and standard-rate effects were reversed when the (16%) rate was restored, because their indicators take the value −1 in the months of restoration (July 2023 and January 2021).

Two features of this specification should be borne in mind when interpreting these estimates. First, the imported-services indicator is non-zero only in November 2019, so its coefficient is identified from that single month. It equals the amount by which revenue growth in November 2019 (10.6%) exceeded what the model predicts from seasonality and past growth. Second, the petroleum and standard-rate indicators are each identified from two months, the month of introduction and the month of restoration, and the specification requires the restoration effect to equal the introduction effect in size with the opposite sign. This restriction strengthens identification of the 2020 rate cut, whose introduction in April 2020 coincided with the onset of COVID-19 restrictions: the estimate also draws on the revenue rebound in January 2021, when the (16%) rate was restored.

Post-Estimation Diagnostic Tests and Robustness

Table 11: Diagnostic Test Results

Test	Statistic	p-value	Decision (5%)
VIF (reform indicators)	1.113 – 1.126	—	No multicollinearity
VIF (all regressors, maximum)	2.881	—	No multicollinearity
Breusch–Godfrey LM, lag 1	$\chi^2(1) = 2.935$	0.0867	No serial correlation
Breusch–Godfrey LM, lag 4	$\chi^2(4) = 9.818$	0.0436	Serial correlation detected; Newey–West SEs used for inference
Breusch–Godfrey LM, lag 12	$\chi^2(12) = 16.650$	0.1633	No serial correlation
Breusch–Pagan	$\chi^2(16) = 15.594$	0.4816	Homoscedastic
Jarque–Bera	$\chi^2(2) = 60.602$	0.0000	Non-normal residuals
Ramsey RESET	$F(1, 99) = 2.392$	0.1251	Correct functional form
CUSUM (OLS residuals)	0.670	0.7603	Stable parameters

Source: Research Data (2026)

The VIF values for the reform indicators ranged from 1.113 to 1.126, and no regressor exceeded 2.881, so multicollinearity was not a concern. The Breusch–Godfrey test showed no serial correlation at lags 1 and 12 but detected some serial correlation at lag 4 ($p = 0.0436$). This does not bias the coefficient estimates, but it would make conventional standard errors unreliable. Inference was therefore based on Newey–West standard errors, which remain valid in the presence of serial correlation and heteroskedasticity of this kind. The Breusch–Pagan test indicated no heteroskedasticity ($p = 0.4816$), the RESET test showed no functional-form misspecification ($p = 0.1251$), and the CUSUM test supported parameter stability over the sample ($p = 0.7603$). The Jarque–Bera test rejected residual normality ($p < 0.001$), reflecting a small number of large monthly shocks, such as those of the COVID-19 period. With 117 observations, inference relied on the asymptotic properties of the estimator.

To check that the reforms changed the level and not the growth rate of revenue, the model was re-estimated with the undifferenced step indicators in place of the differenced ones (Table 12). In this specification, each coefficient measures a change in average monthly revenue growth sustained for as long as the reform was in force.

Table 12: Robustness Check – Step Indicators (Sustained Growth Effects)

Variable	β	Std. Error	Sig.
r18_petrol (step)	0.0146	0.0098	0.138
r19_impserv (step)	0.0140	0.0101	0.170
r20_rate (step)	−0.0382	0.0461	0.409
Joint Wald test	F(3, 100) = 1.35		0.263

Note: Dependent variable Δln(VAT revenue); same lags, monthly dummies, sample and Newey–West settings as Table 9.
Source: Research Data (2026)

None of the step indicators was significant individually or jointly ($F(3, 100) = 1.35$, $p = 0.263$). The alternative specification did not provide statistically significant evidence of sustained changes in monthly VAT revenue growth. Their effects took the form of level shifts concentrated in the months of implementation, which is what the differenced indicators measure. The robustness check supports the specification.

Hypothesis Testing

The joint Wald test rejected the null hypothesis that all three reform coefficients are simultaneously equal to zero ($\beta_1 = \beta_2 = \beta_3 = 0$), $F(3, 100) = 8.7128$, $p < 0.001$. H_{01} was therefore rejected at the (5%) level: taken together, the three VAT structure reforms had a statistically significant effect on VAT revenue performance in Kenya. The individual tests, summarised in Table 13, show that each reform was also individually significant at the (5%) level.

Table 13: Summary of Hypothesis Tests

Hypothesis	Test	Statistic	p-value	Decision at 5%
H_{01}: $\beta_1 = \beta_2 = \beta_3 = 0$ (joint)	Wald	$F(3, 100) = 8.7128$	0.0000	Rejected
H_{01a}: Petroleum rate, $\beta_1 = 0$	HAC t-test	$t = -3.18$	0.002	Rejected
$H_{01\beta}$: Imported services, $\beta_2 = 0$	HAC t-test	$t = 2.37$	0.020	Rejected
H_{01}□: Temporary rate cut, $\beta_3 = 0$	HAC t-test	$t = -2.79$	0.006	Rejected

Source: Research Data (2026)

H_{01a} was rejected ($\beta = -0.0554$, $p = 0.002$): the 2018 reduced rate on petroleum products lowered VAT revenue. $H_{01\beta}$ was rejected ($\beta = 0.0391$, $p = 0.020$): the 2019 imported-services reform raised VAT revenue. H_{01}□ was rejected ($\beta = -0.0781$, $p = 0.006$): the 2020 temporary reduction of the standard rate lowered VAT revenue. The joint rejection of H_{01} therefore reflects effects of opposite sign: a revenue gain from the base-broadening reform and revenue losses from the two rate reductions.

Discussion

Imported-services reform. The positive and significant effect of the imported-services reform agrees with the theoretical expectation of a positive β_2 (Table 1) and with Kenyan evidence that measures bringing more transactions into the collection net raise VAT revenue. Kiara and Nekesa (2023) found that the appointment of VAT withholding agents raised VAT revenue by 13.4%. The permanent gain of about (2.4%) estimated here is considerably smaller, and the difference reflects the nature of the two reforms. Withholding is an administrative measure that captures tax already legally due across the whole domestic base. The imported-services reform is a statutory change confined to cross-border services, a relatively small part of total consumption whose foreign suppliers are difficult to register and monitor.

The finding also agrees with Muguchu *et al.* (2020), whose evidence that VAT revenue growth depends on discretionary measures is consistent with a single base-broadening measure having a measurable effect. Because the effect is identified from revenue in November 2019 alone, it should be read as evidence of an immediate gain rather than a precise estimate of the reform's full yield.

Temporary standard-rate reduction. The negative and significant effect of the 2020 rate reduction is in the direction predicted by both Optimal Tax Theory and the Laffer Curve Theory. A rate cut on the whole base lowered revenue by about 4.7% in the long run while it applied, and there is no evidence that the cut was self-financing through higher consumption or compliance. This indicates that Kenya's standard rate lies on the rising segment of the Laffer curve. The finding differs from Karuga *et al.* (2025), who found no significant effect of tax-rate reforms, and from Chilibasi (2014), who found that rate changes did not translate reliably into revenue changes. The difference arises largely from method. Those studies used annual data and grouped rate changes into broad categories, so the effects of increases and reductions, and of measures introduced in different months of a year, could offset one another. The present study identifies the rate cut from the specific months in which it was introduced and withdrawn. Because the estimate draws on both the fall in April 2020 and the rebound in January 2021, it is less likely to reflect the COVID-19 shock alone, although that possibility cannot be ruled out entirely.

Petroleum rate reduction. The petroleum rate reduction lowered VAT revenue, consistent with the expected negative sign, and the long-run loss of about (3.3%) while the (8%) rate applied is modest relative to the halving of the rate. This supports the expectation that the net loss would be small: much fuel is purchased by registered businesses that recover input tax, so a lower rate reduces both output tax and creditable input tax, and only the portion borne by final consumers and unregistered users is lost to the Treasury. The magnitude is smaller than the strong rate effects reported by Amaglobeli *et al.* (2022). Their evidence concerns mainly increases in the standard rate, which apply to the whole base, whereas the Kenyan measure was a reduced rate on one product group, much of which is an intermediate input.

Statutory versus broader reforms. Previous Kenyan studies that found significant reform effects examined administrative or composite packages (Chilibasi, 2014; Kiara & Nekesa, 2023) or broad reform categories (Karuga *et al.*, 2025). The present results show that, when statutory reforms are separated, their effects differ in sign: the base-broadening reform raised revenue while both rate reductions lowered it. Studies that pool reforms can therefore report a significant overall effect, or no effect, while masking offsetting effects of individual measures. The results agree with Wawire (2017) that VAT revenue responds to reforms with lags: the significant lagged growth terms show that part of each initial shift was reversed in the following months, so the long-run effects differ from the immediate ones. Overall, the findings support the conclusion of Amaglobeli *et al.* (2022) that rate and base reforms produce different revenue responses, and show that in Kenya, over 2016–2025 base broadening raised revenue while rate concessions reduced it.

CONCLUSION AND RECOMMENDATIONS

Conclusion: The study determined the effect of VAT structure reforms on VAT revenue performance in Kenya using national monthly data for 2016–2025. The three differenced reform indicators were jointly significant in explaining monthly changes in logged VAT revenue, so the reforms taken together affected revenue performance. Each reform was also individually significant at the (5%) level. The imported-services reform raised the level of VAT revenue by about (4%) on impact and about (2.4%) permanently. The 2018 reduced rate on petroleum products lowered revenue by about (3.3%) in the long run while it applied, and the 2020 temporary reduction of the standard rate lowered it by about (4.7%). The findings are consistent with level-shift effects rather than sustained changes in monthly revenue growth. The study concludes that the effect of VAT structure reforms depends on their design: base-broadening measures raise VAT revenue, while rate reductions, whether on specific products or on the standard rate, reduce it.

These conclusions are subject to several limitations. First, the differenced reform indicators identify each effect from the revenue change in the one or two months in which a reform started or ended. Other events in those months, notably the onset of COVID-19 in April 2020, may affect the estimates, and the imported-services effect rests on a single month. Effects that built up gradually after implementation are captured only through the lagged growth terms. Second, the model does not include explicit macroeconomic controls such as output, inflation or imports, or concurrent administrative reforms such as

electronic invoicing, so omitted influences may affect the estimates. Third, the dynamic regression establishes conditional associations between the timing of reforms and revenue; it is not a quasi-experimental design and does not, on its own, identify causal effects. The results should therefore be interpreted as evidence of conditional associations between reform implementation and VAT revenue changes, rather than precise causal estimates.

Recommendations: The imported-services reform was the only measure that raised VAT revenue, producing a permanent gain of about 2.4%, while both rate reductions significantly lowered revenue. On this evidence, the National Treasury should give priority in its annual Finance Bill proposals to base-broadening VAT measures of the type represented by the imported-services reform, particularly VAT on cross-border and digitally supplied services, over reductions in VAT rates as a means of revenue mobilisation.

To secure the revenue from such measures, the Kenya Revenue Authority should take specific administrative steps: maintain and publish a register of non-resident suppliers registered under the simplified VAT registration framework; match foreign-currency payment data from banks and payment service providers against that register to identify unregistered suppliers; audit the self-assessment of reverse-charge VAT on imported services by registered businesses; and report annually on VAT collected from imported and digital services so that the yield of the measure can be monitored.

Given that the reduced rate on petroleum products and the temporary standard-rate reduction each lowered VAT revenue significantly, the National Treasury should require an ex-ante estimate of the revenue cost and a defined expiry date for any future reduced VAT rate or temporary rate relief, and should report the revenue cost of reduced VAT rates in its annual tax expenditure report.

Future research could apply synthetic control or interrupted time-series designs with explicit macroeconomic controls to isolate individual reform effects more precisely, examine the effect of administrative reforms such as electronic invoicing alongside statutory reforms, and extend the analysis to VAT on digital marketplace supplies once a sufficiently long series is available.

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