Available online at www.rajournals.in

RA JOURNAL OF APPLIED RESEARCH
ISSN: 2394-6709
DOI:10.47191/rajar/v11i4.05
Volume: 11 Issue: 04 April-2025

International Open Access

Impact Factor- 8.553

Page no.- 278-282

The Role of Electronic Tax Stamps in Collection of Excise Duty in Tanzania

Pascal Gomba
Department of Academic, Research and Consultancy, Institute of Tax Administration, Tanzania

ARTICLE INFO

Published Online:
15 April 2025

ABSTRACT

This study investigates the role of Electronic Tax Stamps (ETS) in enhancing the collection of excise duty in Tanzania. Introduced in 2018, ETS was designed as a transformative tax administration reform aimed at improving the traceability, monitoring, and authentication of excisable goods such as alcohol, tobacco, and soft drinks. The Tanzanian government implemented this digital system to address challenges associated with underreporting, counterfeit production, and tax evasion that had long undermined the efficiency of excise duty collection.

Drawing inspiration from global best practices, where countries like Mexico, the United States, and South Africa have used similar technologies to improve tax compliance and revenue performance, Tanzania adopted ETS as part of its broader strategy to strengthen public finance management. The system allows real-time tracking of excisable goods throughout the supply chain, promoting transparency, accountability, and improved reporting accuracy. Early results from the Tanzania Revenue Authority (TRA) indicate that excise revenue has significantly increased since ETS implementation, confirming its potential to enhance domestic resource mobilization.

This study employs a time-series quantitative approach, using excise duty data from 2011/12 to 2023/24 to assess the impact of ETS. Regression analysis was conducted to compare pre- and post-implementation revenue trends, with findings showing a statistically significant increase of approximately TZS 435.72 billion in annual excise collections after ETS adoption. These results affirm the system's effectiveness in supporting compliance and addressing inefficiencies in traditional tax collection methods.

The study concludes that ETS plays a critical role in modernizing Tanzania's tax administration, improving excise revenue performance, and fostering a more transparent and efficient fiscal system. It recommends further expansion of the ETS system, increased stakeholder engagement, and investment in digital infrastructure to sustain and amplify its long-term benefits.

Corresponding Author:
Pascal Gomba

KEYWORDS: Electronic Tax Stamp (ETS); Excise Duty; Tax Compliance; Revenue Collection; Tax Administration; Fiscal Policy; Tax Evasion; Time-Series Analysis; Tanzania

1.0 INTRODUCTION

The Government of Tanzania has made considerable progress in modernizing its tax administration systems, particularly through the implementation of the Electronic Tax Stamps (ETS) in 2018. ETS was introduced as a strategic tool to digitize and monitor the movement of excisable goods—including alcohol, tobacco, and beverages—across the supply chain, enabling real-time authentication and verification of tax compliance. According to Sulanda, Mayala, and Komba (2024), the ETS system has significantly enhanced accuracy in tax return filings by enabling better control and transparency over taxable goods. This innovation replaces traditional manual monitoring methods, which had been prone to underreporting and counterfeit production, with a technology-driven system designed to minimize leakage and ensure full accountability.

The adoption of ETS aligns with international efforts to improve excise duty collection through digital reforms. In their evaluation of global excise tax practices, Chaloupka, Powell, and Warner (2019) highlight those countries such as Mexico, the United States, and South Africa have successfully implemented similar mechanisms to reduce evasion and increase public revenue. Likewise, Colchero et al. (2015) report that Mexico's digitized excise tax on sugar-sweetened beverages led to more effective revenue collection and a decline in illicit trade. These experiences mirror

Tanzania's vision of leveraging ETS to strengthen public finance systems, a vision supported by Kim and Kim (2018), who emphasize that tax digitalization is essential for efficient state-building and compliance enhancement in Sub-Saharan Africa.

Digital tax stamps serve not only to secure revenue but also to create a fair and competitive market by applying uniform compliance standards. As observed by Boesen (2021), ETS tools promote equity by reducing opportunities for tax avoidance and leveling the playing field for legitimate businesses. In Tanzania, this has led to more consistent reporting and streamlined oversight by the Tanzania Revenue Authority (TRA). Rwechungura (2016) and Kipilimba (2018) both underscore that well-designed tax administration reforms are central to revenue growth and that the integration of technology enhances efficiency in monitoring and enforcement. ETS has enabled the TRA to access timely and accurate data on excisable products, making tax evasion increasingly difficult and improving audit effectiveness.

Moreover, empirical evidence supports the early success of ETS in Tanzania. Sulanda et al. (2024) report that excise duty collections improved by over 20% within two years of the system's implementation, attributing this performance to the enhanced tracking and transparency offered by the digital platform. These results are consistent with findings from other settings. For instance, Falbe et al. (2015) documented significant improvements in compliance and pricing accuracy within just three months of Berkeley, California implementing a digitized excise tax system on beverages. Similarly, Linegar and Van Walbeek (2018) observed that increased excise taxes, when combined with technological enforcement mechanisms, produced substantial revenue gains in South Africa's tobacco sector. In the Tanzanian context, the ETS has also supported the government's broader commitment to fiscal discipline and improved governance in revenue administration (Epaphra & Kaaya, 2020).

The positive momentum generated by ETS reflects the government's commitment to innovation in public financial management. The system has not only boosted tax performance but has also contributed to improving trust and accountability in the tax system. According to Golden et al. (2016), such digital tools are increasingly recognized for their role in reinforcing compliance behaviour and minimizing enforcement gaps. Furthermore, Epaphra (2015) argues that addressing evasion through systemic reforms is a vital pathway to securing sustainable revenue growth in developing economies like Tanzania.

The aim of this study is to assess the role of Electronic Tax Stamps (ETS) in enhancing the collection of excise duty in Tanzania. Specifically, it seeks to examine the impact of ETS on revenue generation, tax compliance, and the overall efficiency of excise duty administration. The study further aims to provide empirical insights and policy recommendations that can guide future improvements in Tanzania's tax infrastructure and contribute to the broader goal of strengthening domestic resource mobilization.

2.0 MATERIALS AND METHODS

2.1 Research Design

A time-series quantitative research design was adopted to examine the effect of the ETS on excise tax revenue in Tanzania. The study analyzed macro-level excise duty collections from the 2011/12 to 2023/24 financial years, comparing revenue trends before and after the implementation of ETS as shown in Figure 1. Regression and trend analyses were conducted to estimate the causal impact of ETS on excise tax revenue.

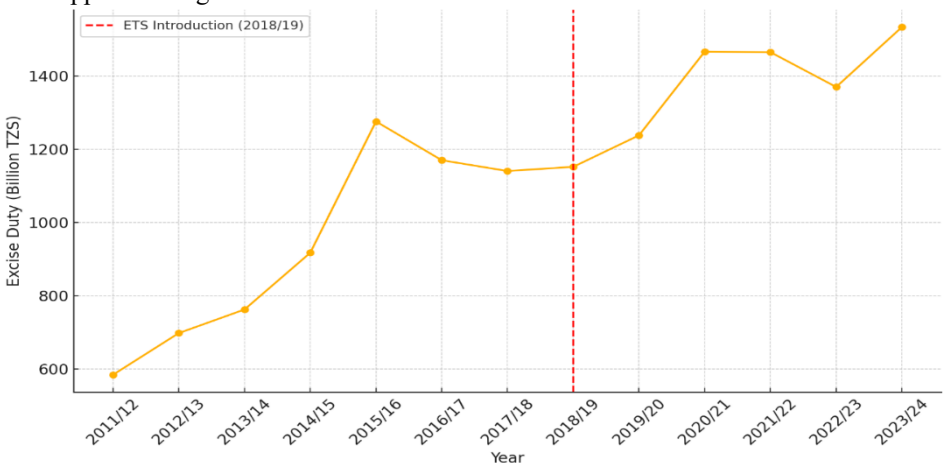

Figure 1: The description of ETS establishment

2.2 Sampling and Data Collection Method

The study utilized secondary data extracted from the TRA archives on annual excise duty collections for the period-commenced financial year 2011/2012 up to financial year 2023/2024 and National Bureau of Statistics (NBS) report of year 2023/2024.

2.3 Data Analysis

Data was cleaned using Microsoft Excel 2019, and regression analysis was performed using STATA version 17 to estimate the significance of the ETS introduction on excise duty revenue. Microsoft Excel 2019 also used to visualize trends over time using line graphs for clearer interpretation. A dummy variable D_t was created to represent the pre-ETS (0

= before 2018) and post-ETS (1 = after 2018) years. The dependent variable was ED_t: Excise Duty Revenue in year t .The regression model estimated was as shown in equation (1)

$$ED_t = \beta_0 + \beta_1 D_t + \epsilon_t \qquad (1)$$

Whereby β_1 represents the marginal effect of ETS on excise revenue and ϵ_t is the error term

3.0 RESULTS

3.1 Excise tax Trend Analysis (2011/12–2023/24)

Table 1 shows the excise duty collections from financial year 2011/2012 up to financial year 2023/2024 as shown in Figure 2 revealed a general upward trend, though marked by notable fluctuations in some years. Between 2011/12 and 2015/16, excise revenue rose steadily from TZS 583.61 billion to TZS 1,275.78 billion, driven by economic growth, inflation adjustments, and enforcement efforts. However, collections declined slightly in 2016/17 and 2017/18 to TZS 1,169.87 billion and TZS 1,140.31 billion respectively, suggesting inefficiencies or leakages in tax administration.

Table 1: Trend of Total excise duty Collections (in Biillion TZS)

Financial Year	Total Excise Duty
2011/12	583.61
2012/13	697.39
2013/14	761.88
2014/15	916.95
2015/16	1275.78
2016/17	1169.87
2017/18	1140.31
2018/19	1151.74
2019/20	1237.78
2020/21	1466.61
2021/22	1465.15
2022/23	1370.01
2023/24	1533.70

Source: *NBS Tax report and TRA report 2023/2024*

In 2018/19, the Electronic Tax Stamp (ETS) system was introduced to improve excise tax compliance and reduce underreporting. Post-implementation figures show a recovery and sustained increase in revenue collections. From TZS 1,151.74 billion in 2018/19, collections rose to TZS 1,533.70 billion by 2023/24. The largest gains were observed in 2020/21 and 2023/24, indicating a likely positive effect of ETS in strengthening revenue collection systems. The trend line (Figure 2) visually confirms this shift, as excise tax revenues showed a steeper incline after the ETS rollout compared to the pre-ETS period with a positive 73.8 coefficient of change , meaning on average every year had an incremental change of rising by 73.8 Billion.

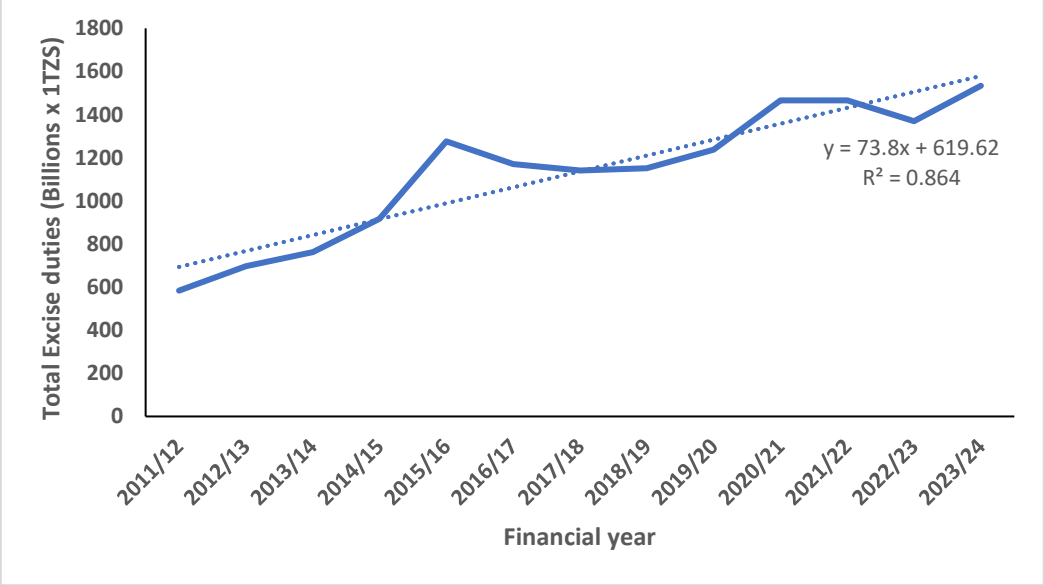

Figure 2: Trend of total excise duty (in Billions TZS)

3.3 Model estimation

3.3.1 Impact of ETS policy on Excise duty

The Ordinary Least Squares (OLS) regression analysis was used to quantify the impact of the ETS policy on excise duty revenue. The regression model included a dummy variable representing the period after ETS implementation (2018/19 onward), with 0 for years before and 1 for years after. Results from the regression (Table 3) indicate that the introduction of ETS has a statistically significant and positive effect on excise duty collections. The coefficient for the year dummy variable is 435.72, implying that, on average, annual excise revenue increased by TZS 435.72 billion after the implementation of ETS. This effect is statistically significant at the 1% level ($p = 0.005$), indicating strong evidence that the observed revenue gains are not due to random chance.

The model's adjusted R^2 value of 0.533 suggests that over 53% of the variation in excise tax revenue over the study period can be explained by the introduction of ETS. The constant term, valued at TZS 935.11 billion, represents the average excise revenue before the policy was implemented.

Table 3: Regression Results – Total Tax Revenue

Variable	Coefficient	Std. Error	t-value	p-value
Constant	935.11	83.28	11.23	0.000
Year Dummy	435.72	122.58	3.56	0.005
Adjusted R^2	0.533			

Source: *Stata version 17*

4.0 DISCUSSION

The analysis of excise tax trends from 2011/12 to 2023/24 reveals two distinct phases: the pre-ETS period (2011/12–2017/18) and the post-ETS period (2018/19–2023/24). During the first phase, excise revenue grew inconsistently, reaching a peak of TZS 1,275.78 billion in 2015/16 before dropping to TZS 1,140.31 billion in 2017/18. This fluctuation may reflect weaknesses in tax enforcement and persistent tax evasion, as emphasized by Epaphra (2015), who attributed low revenue performance to underreporting, especially in the trade of excisable goods like alcohol and tobacco. The lack of digital tracking tools likely contributed to these inefficiencies. However, after the Electronic Tax Stamp (ETS) system was implemented in 2018/19, excise revenue showed a strong upward trajectory, rising to TZS 1,533.70 billion by 2023/24. This transition underscores the importance of digital tax tools in plugging revenue leakages.

Comparing these two periods using regression analysis reinforces the impact of ETS policy. The estimated model revealed that ETS implementation significantly increased annual excise revenue by approximately TZS 435.72 billion ($p = 0.005$), with over 53% of revenue variation explained by the policy shift. This finding aligns with global experiences. In Mexico and Berkeley, California, excise tax reforms whether through electronic enforcement or direct price adjustments were linked to improved compliance and higher revenue collection (Colchero et al., 2015; Falbe et al., 2015). Moreover, Sulanda et al. (2024) found that ETS greatly enhanced the accuracy of excise tax returns in Tanzania, echoing the empirical evidence that modernizing tax administration yields measurable gains in fiscal outcomes.

From a policy standpoint, the positive impact of ETS reflects a broader lesson on tax compliance reform. Kim and Kim (2018) stressed that building an effective tax state in Tanzania requires not only legal reforms but also administrative innovations that enhance trust and enforcement capacity. ETS serves as a model of how investing in digital infrastructure can reduce information asymmetry between taxpayers and authorities, thereby improving voluntary compliance. This also supports Rwechungura (2016), who found that robust tax systems and administrative efficiency are key determinants of revenue growth in Tanzania.

In the long term, sustaining and scaling up ETS could yield broader macroeconomic benefits. According to Chaloupka, Powell, and Warner (2019), excise taxes not only raise public revenue but also have regulatory impacts especially in sectors like tobacco and sugary drinks by discouraging harmful consumption. Similarly, Kidane et al. (2015) argued that effective tobacco taxation in Tanzania can reduce demand while raising funds for health interventions. The ETS can thus be a catalyst not only for revenue generation but also for public policy alignment in health, trade, and governance. By minimizing evasion, building public trust, and expanding the tax base, ETS offers a long-term fiscal tool for strengthening domestic resource mobilization critical for funding Tanzania's development priorities.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This study concludes that the implementation of the Electronic Tax Stamp (ETS) system in Tanzania has had a significant positive impact on excise duty collections. The trend analysis demonstrated a substantial increase in excise revenue following the 2018/19 introduction of ETS, while regression results confirmed that ETS contributed an average increase of TZS 435.72 billion annually. These findings affirm the effectiveness of digital tax enforcement mechanisms in improving compliance and reducing revenue leakages.

Based on these findings, the study recommends that the Tanzania Revenue Authority (TRA) continue to expand and strengthen the ETS system across all relevant sectors. Efforts should also be made to enhance public awareness and

stakeholder engagement to improve compliance and transparency. Furthermore, the government should explore opportunities to integrate ETS with other digital tax platforms to create a more robust and coordinated revenue collection framework. Investing in capacity building for tax officers and regular evaluation of ETS performance will also be essential to ensure long-term sustainability and efficiency of the system.

DECLARATIONS

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request or can be retrieved directly from TRA website and NBS website.

ACKNOWLEDGEMENTS

The author extends sincere gratitude to Tanzania Revenue Authority and National Bureau of Statistics for preparing and publishing collections statistics which lead to professional insights that greatly enriched this study.

FUNDING

This study was carried out without the receipt of external financial support or sponsorship from any funding agency.

REFERENCES

1. Boesen, U. (2021). Excise tax application and trends. Tax Foundation, 753.
2. Chaloupka, F. J., Powell, L. M., & Warner, K. E. (2019). The use of excise taxes to reduce tobacco, alcohol, and sugary beverage consumption. Annual Review of Public Health, 40(1), 187–201. https://doi.org/10.1146/annurev-publhealth-040218-043816
3. Colchero, M. A., Salgado, J. C., Unar-Munguía, M., Molina, M., Ng, S., & Rivera-Dommarco, J. A. (2015). Changes in prices after an excise tax to sweetened sugar beverages was implemented in Mexico: Evidence from urban areas. PLOS ONE, 10(12), e0144408. https://doi.org/10.1371/journal.pone.0144408
4. Epaphra, M. (2015). Tax rates and tax evasion: Evidence from missing imports in Tanzania. Journal of Economics and Sustainable Development, 6(3), 17–29.
5. Epaphra, M., & Kaaya, L. E. (2020). Tax revenue effect of sectoral growth and public expenditure in Tanzania: An application of autoregressive distributed lag model. Romanian Economic Business Review, 15(3), 81–120.
6. Falbe, J., Rojas, N., Grummon, A. H., & Madsen, K. A. (2015). Higher retail prices of sugar-sweetened beverages three months after implementation of an excise tax in Berkeley, California. American Journal of Public Health, 105(11), 2194–2201. https://doi.org/10.2105/AJPH.2015.302881
7. Golden, S. D., Smith, M. H., Feighery, E. C., Roeseler, A., Rogers, T., & Ribisl, K. M. (2016). Beyond excise taxes: A systematic review of literature on non-tax policy approaches to raising tobacco product prices. Tobacco Control, 25(4), 377–385. https://doi.org/10.1136/tobaccocontrol-2015-052626
8. Kim, S., & Kim, T. (2018). Tax reform, tax compliance and state-building in Tanzania and Uganda. Africa Development, 43(2), 35–64.
9. Kidane, A., Mduma, J., Naho, A., Ngeh, E. T., & Hu, T. (2015). The demand for cigarettes in Tanzania and implications for tobacco taxation policy. Advances in Economics and Business, 3(10), 428–435. https://doi.org/10.13189/aeb.2015.031004
10. Kipilimba, T. F. (2018). Impact of tax administration towards government revenue in Tanzania: Case of Dar es Salaam Region. Social Sciences, 7(1), 13–21.
11. Linegar, D. J., & Van Walbeek, C. (2018). The effect of excise tax increases on cigarette prices in South Africa. Tobacco Control, 27(1), 65–71. https://doi.org/10.1136/tobaccocontrol-2016-053428
12. Long, M. W., Gortmaker, S. L., Ward, Z. J., Resch, S. C., Moodie, M. L., Sacks, G., Swinburn, B. A., Carter, R. C., & Wang, Y. C. (2015). Cost effectiveness of a sugar-sweetened beverage excise tax in the US. American Journal of Preventive Medicine, 49(1), 112–123. https://doi.org/10.1016/j.amepre.2015.03.004
13. Rwechungura, K. (2016). Determinant of tax revenue in Tanzania (1997–2014). Open University of Tanzania Dissertation. https://repository.out.ac.tz/1292/
14. Sulanda, S. J., Mayala, N., & Komba, L. (2024). Contribution of Electronic Tax Stamps on accurate filing of excise tax returns in Kilimanjaro Region, Tanzania. Indian Journal of Economics and Finance (IJEF), 4(2), 61–67.
15. TRA (Tanzania Revenue Authority). (2020). Annual performance report 2019/2020. [Unpublished internal document cited through Sulanda et al., 2024]