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EFFECT OF TECHNOLOGICAL REFORMS ON TAX REVENUE COLLECTION IN KENYA

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Abstract

Upgrading to digital platforms through tax technological reforms is the primary initiative aimed at replacing manual processes with automated systems, enhancing policy compliance, streamlining operations and reducing tax evasion by Kenya revenue authority. This study sought to explore whether the tax technological reforms implemented by the Kenya Revenue Authority (KRA) led to increased revenue collections in the economy. The study focused on the effect of tax invoice management system (TIMS) on revenue collection that was implemented during the period 2018/2019-2022/2023. The study was based on optimal taxation theory and Adam's canons of taxation theory. The study applied casual quantitative research design. The study relied on secondary data that was collected by the researcher for a period of five- year duration (2018/2019-2022/2023) from the Kenya revenue authority and Kenya National Bureau of Statistics. The data was analyzed using time series analysis and percentages. The study findings established that annually revenue collection remain stable for the period before the implementation of TIMS (year 2018/2019 and 2019/20). Thereafter, the revenue collection increases significantly during and after the implementation of TIMS (year 2021/22 and 2022/23). This implies that TIMS's implementation led to an increase in revenue collection for the periods during, and after the implementation. The study concluded that for a country to enhance revenue collection tax technological reforms are inevitable, and that there is need to digitalize its system. Based on the findings, it is recommended that more training and marketing of the electronic system should be done by Kenya revenue authority to ensure that taxpayers embraces the system. The government should also improve connectivity to enhance compliance among small taxpayers. Further research should be conducted by future researchers on other tax reforms that influence revenue collection in Kenya and how different sectors, like agriculture, services, and manufacturing respond to tax technological reforms.

Key Words: Technological Reforms, Tax invoice management system, Revenue Collection, Kenya Revenue Authority.

Introduction

Revenue collection serves as the lifeblood of government operations, allowing for the provision of essential services and infrastructure. By adhering to principles of equity, efficiency, and certainty, governments can ensure that tax systems remain fair and effective in meeting financial needs while considering the welfare of all citizens (Wambui, 2020). Tax revenue is indeed a significant source of income for the Kenyan government, contributing to the majority of its ordinary revenue. The collection of various taxes, including income tax, value-added tax (VAT), customs duties, and excise taxes, constitutes a fundamental source of revenue for the government, enabling the financing of public administration and the provision of essential services (KRA, 2021). Revenue collection refers to the systematic process through which a government agency, such as the Kenya Revenue Authority (KRA) mobilizes public funds primarily through compulsory taxation. This function employs both traditional (manual) and modern (electronic) mechanisms to ensure efficient and accountable tax administration (Wambui, 2020).

Tax technological reforms involve leveraging advancements in technology by replacing manual operations with computerized or digital platforms to enhance policy compliance, streamline operations and reduce tax evasion from tax payers (Njeri, 2022; Muceke, 2021). Numerous scholars argue that technology and automation play a pivotal role in addressing compliance and collection tax gaps by enhancing efficiency, transparency, and compliance within tax administration systems. For instance, Omosa (2020) argued that current trends in public taxation highlight the importance of establishing a tax assessment and collection system that integrates internet services. Government entities are increasingly required to generate more revenue through taxes to address rising financial commitments outlined in the national budget.

Over the past two decades, the Kenya Revenue Authority (KRA) has implemented a series of technological reforms aimed at enhancing tax administration and compliance. These initiatives include the introduction of the Electronic Tax Register (ETR) in 2005, the Integrated Tax Management System (ITMS) in 2007, the iTax system in 2011, the Tax Invoice Management System (TIMS) in 2022, and most recently, the Electronic Tax Invoice Management System (eTIMS), launched in September 2023 (KRA 2023).

Statement of the Problem

In recent years, Kenya has embarked on a series of technological reforms designed to enhance tax revenue collection and improve financial management. Key initiatives include the introduction of digital tax systems, electronic filing platforms, and advanced data analytics tools (World Bank, 2023). Despite these efforts, the effect of these technological interventions on tax revenue remains unclear.]Several studies indicate that technological reforms can potentially improve tax collection efficiency and reduce tax evasion (Chitom & Iyidiobi, 2019; Olaoye et al., 2019; Iddrisu, 2023; Mapesa et al., 2020; Kiptala, 2023). However, evidence specific to Kenya's context is still limited. Therefore, there is still lack of comprehensive analysis on the actual outcomes of these technological reforms on Kenya's tax revenue collection. Without clear insights into the impact and effectiveness of these technologies, it is difficult to gauge their success and identify areas for improvement. Therefore, this study aims to evaluate the effects of technological reforms on tax revenue collection in Kenya by majorly focusing on tax invoice management system (TIMS) which was introduced recently.

Objectives of the Study

General Objective

To evaluate the effect of technological reforms on tax revenue collection in Kenya.

Specific Objective

To evaluate the effect of tax invoice management system (TIMS) on revenue collection in Kenya

Hypothesis

Tax invoice management system (TIMS) has no effect on tax revenue collection in Kenya

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Conceptual Framework

Tax Technological Reform

- Tax Invoice Management System (TIMS)

→ Tax Revenue Collection

Scope of the Study

The study focused on the effect of tax invoice management system (TIMS) on revenue collection for a period of 5 years, commencing from the financial year 2018/2019 and ending 2022/2023. In order to assess the trends as well as tax revenue yield.

Theoretical Review

This study was anchored by the optimal tax theory which states that tax reforms should ensure the highest social welfare function of its citizen while raising maximum revenue (Ramsey, 1927 & Mirrlees, 1971). Which is supported by Adams (1776) canons of taxation that purports that a good tax system should be clear, economical, convenient and productive and one that strikes a balance between the interest of the tax payer and that of the tax Authorities hence improving tax compliance and revenue collections.

Review of Related Literature

Tax Technological Reforms

Electronic filing of taxes is an application designed to make it easier for taxpayers to fill out tax returns electronically (Rokhman et al., 2023). There are several studies that have been carried out regarding the application of e-filling. Cumhur et al., (2019) stated that the application of e-filing has a positive and significant effect on taxpayer compliance. Furthermore (Prakoso et al., 2020) The results of the study indicate that the implementation of e-filing has been quite successful in increasing compliance and revenue collection through increasing the number of annual tax returns for individual taxpayers. Then many taxpayers find it more practical, easy, fast and efficient by using e-filing. In addition, taxpayers are aware of their obligations as taxpayers. However, there are several obstacles in the implementation of e-filing both the lack of knowledge by taxpayers and the difficulty of convincing taxpayers to use e-filing more easily and efficiently. Allahverdi et al., (2017) surveyed the effect of electronic taxation system on tax revenue collection and cost in Turkey, the study employed secondary data and were obtained from Turkish revenue authority, the data were studied in two groups which are pre e-tax system with a tax period of 1993-2004 and post e-tax system with tax period of 2005-2016. The study used the Mann-Whitney U Test to analyze the data. The findings indicated that e-tax system positively affected the tax revenues and reduced the cost per tax. However the study did not show whether the effect was statistically significant or not and how the idea of introduction of the e-tax system has been propagated. Also, the study had focused on large taxpayers which may not be the same for small tax payers.

Yusuf (2022) conducted a study that assessed the relationship between digitalization of Tax Administration and Performance of Kwara State Internal Revenue Service in Indonesia. With cross-sectional research design, this study employed a quantitative research approach to obtain survey data from randomly selected 292 of both demand and supply side in Kwara State respectively. The usable questionnaire were received from 70 senior management staff of KW IRS and 222 of active registered taxpayers, and the quantitative data obtained was subjected to Partial Least Squares-Structural Equation Model (PLS-SEM) analysis. The findings revealed improvement in performance of Kwara State Internal Revenue Service (KW-IRS) which was attributed to tax digital tools. The study concluded that, all variables under study, electronic tax registration, and electronic tax identification number, electronic filing of tax return and electronic tax payment and administrative reforms had statistical positive significant relationship with revenue performance. This implies that digitalization has a positive and a statistically significant influence on revenue performance.

Iddrisu (2023) examined the impact of digitalization in sub-Saharan Africa, aiming to present tangible evidence of recent patterns in using ICT to aid tax administration, where tax compliance and efforts to grow the tax base are very low compared to wealthy countries. Analyzing panel data from 42 African countries spanning from 2002 to 2021, the study employed various econometric tests and estimations. Using a two-step system generalized method of moments, it tested the hypothesis that digitalization affects tax revenue mobilization. The findings revealed a notable positive association between digitization and tax revenue mobilization in sub-Saharan African countries, indicating the importance of governmental investment in digitalization to enhance tax income.

The study by OLaoye and Atilola (2018) in Nigeria on the effects of e-taxation on revenue improvement where the study made use of secondary data gathered from 2012 to 2018. The data was analyzed using trend analysis where descriptive statistics on mean and standard deviation, paired sample t-test were used to compare the significances between the period before and after electronic taxation. The results attested that there were no significant difference between the period before the inception of e-taxation and the period after e-taxation. Hence it was concluded that e-taxation has not improved tax revenue in the selected areas.

Ofurum et al., (2018) conducted a study on impact of e-taxation on Nigeria's revenue and economic growth. The study aimed at assessing how the implementation of e-taxation has affected tax revenue generation to GDP ratio in Nigeria. The study made use of secondary data and was grouped into two parts that are pre e-tax period, and post e-tax period, the two data were compared using paired sample t-test. In this study, data were sourced from quarterly economic reports, Central Bank of Nigeria and Federal Inland Revenue Service. The findings of the study revealed that tax revenue collected to GDP ratio significantly decreased after e-taxation implementation. Another study by Olaoye et al., (2019) examined the effects of e-taxation on tax productivity was conducted in Nigeria. Data were analyzed using analysis of variance (ANOVA), the results revealed that the e-tax system has improved tax productivity in Nigeria. The contracting results from the previous empirical findings motivates the researcher to develop the underneath propositions. Wawira and Makokha (2017) investigated the effects of the e-tax system on tax collection proficiency in Domestic Tax Revenue Department in Kenya with sample sizes of 130 respondents. The study employed taxpayers' knowledge, electronic tax filing, employees' competence and electronic tax payment as explanatory latent variables. The analysis used both descriptive and inferential statistics. The results revealed that both electronic filing and electronic payment shown significant influence on tax collection efficiency.

Akinyi, (2021) conducted a study on the impact of itax on revenue collection in Nairobi county, the findings reveals that the implementation of iTax has had a positive impact on revenue collection in Nairobi City County, both before and after its introduction. Additionally, the anticipated integration of Electronic Tax Registers (ETR) into the iTax system may lead to a potential decrease in revenue collected by the county's existing revenue collection systems. Notably, only the adoption of iTax demonstrated a statistically significant influence on revenue collection after its implementation, unlike the period before iTax was introduced. Nevertheless, revenue collected by the Kenya Revenue Authority (KRA) remained consistently positive throughout the financial years, regardless of the adoption of iTax.

Barako (2015) did a research on efficacy of itax system on tax administration in Kenya. The research employed secondary data. Data was analyzed using descriptive statistics. The study established that KRA's variability of the revenue return after itax implementation was 14.876 billion, while the variability of the revenue return during and before itax implementation was 7.907 billion and 13.4415 billion respectively. The study concluded that itax implementation led to an increase in the variability of the revenue return for the periods under study. This clearly indicates that itax implementation increases revenue collection.

Research Gap

From the above literature review there is mixed reactions on whether technological tax reforms has effect on revenue collection (Prakoso et al., 2020; Allahverdi et al., 2017 and Akinyi, (2021) indicated there was a positive impact on revenue collection while (OLaoye and Atilola 2018 and Ofurum et al., 2018) indicated there was no significant effect. Therefore , there is need for further study.

While there are subjective accounts of digital tax tools improving compliance, there is a lack of rigorous quantitative studies that measure the actual increase in tax revenue attributable to specific technological interventions, such as tax invoice management system (TIMS).

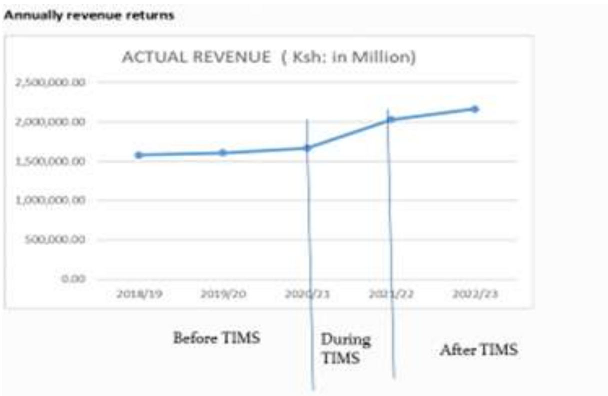
The reviewed literature above acknowledges that tax system in Kenya has undergone perpetual reform over time. These studies cannot be used to evaluate the present day effect of the tax policy reforms on revenue collections since other reforms have been undertaken over the years and tax collection mechanisms in Kenya has also changed and thus there is need for a study to be conducted on recent years.

Methodology

The study applied casual quantitative research design. The study relied on secondary data that was collected for a period of five- year duration (2018/2019-2022/2023) from Kenya National Bureau of Statistics and Kenya revenue authority.

The data was analyzed using time series analysis and percentages.

Findings of the Study



The findings suggest that annual revenue collection remain stable for the period before the implementation of TIMS (year 2018/2019 and 2019/20). Thereafter, the revenue collection increases significantly during and after the implementation of TIMS (year 2021/22 and 2022/23). This implies that tax invoice management system (TIMS) implementation led to the increase in revenue collection for the periods during, and after the implementation.

Discussion of the Findings

Further analysis indicated that KRA has maintained an upward trajectory in revenue collection, after recording a 6.7% growth in the financial year 2022/2023 from 4.8% 2020/2021. Revenue collection has progressively increased in the last 5 years from KShs. 1.58 Trillion in FY2018/2019 to KShs. 2.166 Trillion in FY2022/23, representing a growth of 37% (KShs 586.259 billion) in the last five years. The growth is attributed to the implementation of the Tax Invoice Management System (TIMS), which has enhanced compliance among VAT registered taxpayers.

Conclusion and Recommendation

The study concluded that technological reforms have played a key role in boosting revenue collection during the period under review. However, the implementation of these reforms faces several challenges, notably the limited digital literacy among taxpayers and the inadequate internet accessibility, particularly among small-scale taxpayers. These barriers hinder the full realization of the potential benefits associated with technology-driven tax administration.

Few longitudinal studies have tracked compliance trends before and after the introduction of tax technology reforms, which complicates the ability to establish clear causal relationships in terms of revenue collection. For instance, research on e-filing systems in countries like India and South Africa could provide insights into how compliance rates and revenue collection changed over time after reform implementation. The role of various stakeholders, such as tax consultants, accountants, and business associations in the implementation of tax technology reforms remains underexplored. This oversight may limit the effectiveness and sustainability of such reforms, as stakeholder engagement is critical to fostering compliance and addressing practical challenges on the ground.

Therefore, the study recommends the implementation of comprehensive training programs for both taxpayers and tax officials to enhance awareness and understanding of tax obligations. Additionally, the promotion and adoption of electronic tax systems, coupled with improvements in internet connectivity, are essential for increasing compliance among small taxpayers. The Kenya Revenue Authority (KRA) should also strengthen its collaboration with key stakeholders—including tax consultants, professional accountants, business associations, and relevant government agencies such as e-Citizen and IFMIS. Moreover, continuous technological upgrades are necessary to effectively counter emerging tax evasion strategies and ensure the sustainability of tax administration reforms.

References

Akinyi, P. (2021). *The impact of itax on revenue collection: a case study of Nairobi City County*. *November*.

Allahverdi, M., Alagöz, A., & Ortakarpuz, M. (2017). The effect of e-taxation system on tax revenues and costs: Turkey case. *International Conference on Accounting Studies (ICAS)18-20 September 2017, Putrajaya, Malaysia*, *November*, 1–6. www.icas.my

Barako, G. (2015). *Efficacy of i-tax system on tax administration in Kenya.*

Chitom, J. C., & Iyidiobi, F. (2019). *Effect of e-taxation on revenue generation in Anambra State*. *2007*, 1624–1633.

Cumhur, Y. E., Esra, Z. E. N., Doktora, K., Ve, U. M., Hastaliklari, K., Dani, D., Do, M. A. N., (2019). Effect of e-filling system implementation and taxpayer knowledge in using e-filling on individual taxpayer compliance. *Journal Of Wind Engineering And Industrial Aerodynamics*, *26*(1), 1–4. https://doi.org/10.1007/s11273-020-09706-3%0A.

Iddrisu, L. J. (2023). The effects of digitalization on tax revenue mobilization in Sub-saharan Africa. *International Journal Of Economics, Commerce And Management*, *11*(2), 242–258.

Kiptala, I. K. (2023). *International journals of academics & research (Ijarke Business & Management Journal)*. *4*(2), 9–18. https://doi.org/10.32898/ibmj.01/5.2article02

KRA. (2023). *The tax procedures (electronic tax invoice) regulations, 2023*. 1–6.

Mapesa, H. J., Nyalle, M. A., & Masunga, F. J. (2020). Influence of e-tax system on tax revenue collection in Tanzania Large Taxpayers: A Prior and Posterior Analysis. *Journal of Accounting Finance and Auditing Studies (JAFAS)*, *6*(4), 44–63. https://doi.org/10.32602/jafas.2020.027

Muceke, M. (2021). Technological tax reforms and tax compliance among small and medium enterprises in Nyeri County. *International Academic Journal of Economics and Finance*, *3*(7), 198–220. https://iajournals.org/articles/iajef_v3_i7_198_220.pdf

Njeri, M. H. (2022). *Effect of technological tax reforms on financial performance of small and medium enterprises in Kenya*.

Ofurum, C. N., Oyibo, P. C., & Ahuche, Q. E. (2018). Impact of treasury single account on government revenue and economic growth in Nigeria: A Pre – Post Design. *International Journal of Academic Research in Business and Social Sciences*, *8*(5), 19–26. https://doi.org/10.6007/ijarbss/v8-i5/4101

Olaoye, C. O., Akinleye, G. T., & Adekanmbi, J. A. (2019). Effects of electronic taxation on tax productivity in Nigeria (2008-2018). *International Journal of Contemporary Applied Researches*, *6*(12), 1–16.

OLaoye, C. O., & Atilola, O. O. (2018). Effect of e-tax payment on revenue generation in Nigeria. *Journal of Accounting, Business and Finance Research*, *4*(2), 56–65. https://doi.org/10.20448/2002.42.56.65

Omosa, M. (2020). Effect of systems automation on customs revenue performance in Kenya. In *Journal of the European Academy of Dermatology and Venereology* (Vol. 34, Issue 8). http://dx.doi.org/10.1016/j.jaad.2013.01.032

Prakoso, A., Wicaksono, G., Puspita, Y., & Kusumaningrum, N. (2020). *The Effect Of Implementation of e-filing systems on personal tax compliance*. *000*(2018). https://doi.org/10.4108/eai.5-8-2020.2301125

Rokhman, A., Handoko, W., Tobirin, T., Antono, A., Kurniasih, D., & Sulaiman, A. I. (2023). The effects of e-government, e-billing and e-filing on taxpayer compliance: A case of taxpayers in Indonesia. *International Journal of Data and Network Science*, *7*(1), 49–56. https://doi.org/10.5267/j.ijdns.2022.12.007

Wambui, L. (2020). *Effects of adoption of electronic tax systems on tax revenue collection by Kenya Revenue Authority in Nairobi Region, Kenya*.

Wawira, M. F., & Makokha, E. N. (2017). Effects of electronic tax system on tax collection efficiency in domestic taxes department of Kenya. *European Journal of Business and Management*, *9*(17), 51–58.

World Bank. (2023). A new era in development. In *Optics & Photonics News* (Issue March).

Zhou, Z., Li, H., & Jia, Y. (2019). *Effect of itax platform on Kenya Revenue Authority's revenue collection target among large Taxpayers* (Vol. 11, Issue 1). http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017