BEYOND DIGITIZATION: ASSESSING THE EFFECT OF ELECTRONIC TAX INVOICE MANAGEMENT SYSTEM ON REVENUE PERFORMANCE OF KENYA REVENUE AUTHORITY

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ABSTRACT

Kenya Revenue Authority (KRA) has faced challenges that have hindered performance, with reports showing declining revenue collection targets and raising stakeholder concerns. In 2022/2023, KRA under delivered its Kshs.2 Trillion target, collecting Kshs.1.8 Trillion, exposing inefficiencies in tax collection. With compliance at just 20%, revenue mobilization remains a challenge. KRA's 2023/24 goal of 2.03 trillion fell short, yielding 1.88 trillion, a 7.3% underperformance. The informal sector, constituting 80% of the economy, remains largely untaxed. This study therefore investigated effects of electronic tax invoice management system on revenue collection efficiency of KRA. Specific objectives included examining the impact of tax invoice data storage, invoice verification and authentication, VAT compliance, and electronic tax return filing, as well as the moderating role of taxpayer education. Resource-based view, technology acceptance model and systems theories rooted this examination, which embraced descriptive design focusing on KRA headquarters in Nairobi. Respondents were 3,278 employees across six cadres forming target population, with 357 as sample obtained by stratified random sampling. Structured questionnaires amassed primary data, while secondary data on revenue growth (2020-2025) was sourced from KRA. A pilot study of 37 questionnaires preceded the main survey, from which they were excluded. Data were analyzed using descriptive statistics (frequencies, percentages, means, and standard deviations) and inferential statistics (correlation, multiple regression). Findings uncovered tax invoice data storage, invoice verification and authentication, VAT compliance, and electronic tax filing all positively and significantly affect KRA revenue performance. Furthermore, taxpayer education significantly enhances (moderates) the effectiveness of ETIMS, implying that the integration of technology and taxpayer awareness programs is essential for maximizing revenue performance. KRA is accordingly recommended to adopt full integration that combines technological improvements in ETIMS with continuous taxpayer education initiatives. This integrated strategy will maximize compliance, reduce tax evasion, and significantly improve overall revenue performance.

Key words: Electronic Tax Invoice Management System, Electronic tax return filing, Revenue performance, Value added tax compliance.

INTRODUCTION

Revenue authorities are pivotal in supporting the financial system of a country through the collection of taxes and other government income. They are tasked with the responsibility of administering tax laws, levying taxes on people and organizations, and ensuring adherence to stipulated laws (Kibassa, 2022). According to Manyika (2024), such institutions are also involved in the flow of funds in the economy, which shapes fiscal policy and affects the economic growth in general. They also offer taxpayer education on rights and obligations, beyond collection, and this enhances the transparency, as well as creates trust in the system. By doing so, revenue agencies protect the financial stability of the state and make sure that the government functions are properly financed.

Global studies further illustrate this. The New Zealand Inland Revenue Department (IRD) uses a 'customer-centric' model to design services that address the demands of various segments of taxpayers, simplifying processes and making information more accessible. This has improved taxpayer experience and resulted in increased compliance rates (Abernethy, 2020). Lonti and Gregory (2022) indicate that IRD has for many years used advanced technology to streamline operations, leading to accurate and efficient revenue collection. Moreover, IRD is principal in driving nation's economy through collection of taxes, Goods and Services Tax (GST), and other alternative revenue sources.

Regionally, in Africa, we see that Rwanda Revenue Authority adopted mobile payment systems which has led to easier payment of taxes by citizens due to improved efficiency within the agency's revenue collection (Mpakaniye, 2024). According to Mukarukundo and Sibomana (2025), the Rwanda Revenue Authority builds trust and transparency among its citizens to enhance efficiency in revenue collection, while also engaging community members and conducting campaigns to educate citizens on vitality of complying with their tax obligations.

Narrowing to Kenya, the central tax agency is Kenya Revenue Authority (KRA), which is mandated to implement taxation laws, taxation, and national development (Ombati, 2021). According to Kiema (2024), KRA has enhanced its revenue management by implementing the Integrated Financial Management Information System (IFMIS). In conjunction with this, it has implemented a digital tax compliance structure that has expanded taxpayer registration and strengthened transparency. Through these programs, collections have increased, thus allowing an expansion of the national revenue in the face of existing world economic pressures.

Revenue Performance

Revenue performance pertains to the extent to which a government successfully gathers the taxes and fees owed to finance its programs and services (Owenvbiugie & Owenvbiugie, 2020). Hanuna (2023) notes that effectiveness in revenue collection relates to the overall amount of funds accrued

by the government and the expenses associated with generating that revenue. The government endeavors to achieve a scenario in which collection costs, such as administrative expenditures and compliance expenses, are minimized in relation to the revenue produced (Aizenman & Jinjarak, 2024). This balance is thus critical in achieving optimal resource use towards the public's benefit.

Revenue performance in Kenya has shown some significant variations over the past few years. Revenue collection, according to KRA annual reports, went up to about KSh 1.67 trillion in the financial year 2020/2021 to about KSh 1.92 trillion in 2021/2022. But during 2022/2023, KRA received approximately KSh 1.8 trillion compared to a target of more than KSh 2 trillion creating a deficit of some KSh 200 billion. Equally, in 2023/2024, the authority realized KSh 1.88 trillion out of a projected 2.03 trillion, which translates to 7.3% shortfall. Tax-to-GDP ratio in Kenya has also remained at 14-16%, which is smaller than the recommended ratio of 20% that is regarded as sufficient to finance the public effectively in developing economies. These patterns are observed to reveal volatility of revenue and prolonged targets underperformance, making it subject to scholarly research on what are the underlining determinants of revenue performance.

Tax performance is largely determined by cultural views of taxpayers towards taxation, which determines their compliance levels (Kamau, 2023). According to Mande (2023), a well-developed sense of civic responsibility and participation tends to boost revenue collection process since people perceive tax payments as a personal input into the overall welfare. As such, proper engagement of community members can lead to higher rate of tax compliance which eventually enables smooth revenue collection.

Electronic Tax Invoice Management System

The proper storage of tax invoice data pertain to adherence to regulations and the improvement of efficacy in revenue collection, accessibility and precision. Effective storage improves traceability, availability and precision of tax documents. According to Okunogbe and Santoro (2023), digital record-keeping enhances compliance level with tax rules and facilitates rules enforcement by allowing easier audit and monitoring. On the same note, according to Bird (2024), invoice data stored appropriately can be accessed, analyzed and reconciled more easily electronically, which can enhance efficiency of processing and tax assessment accuracy. Yusuf (2022) goes on to add that digital storage also helps in integrating with government tax systems, which saves time and minimize human error. Storage is hence added as a variable in this review since it directly contributes to auditability, compliance monitoring, and revenue assurance but other wider technological readiness indicators were omitted due to a lack of a direct relationship with tax administration outcomes.

Invoice verification and authentication is associated with making sure that the invoice transactions are accurate and legitimate in the electronic system. According to Zhang, Xiong, Xie, Fan and Gu (2020), process of verifying invoices entails ensuring information contained in the invoices like

quantity, price, terms and supporting documents are aligned with underlying transactions. Yueyang (2024) differentiates authentication as ensuring that the invoice source is valid and guarantees legitimacy and to registered vendor. Verification and authentication together promote an invoice accuracy, avoid fraud, and facilitate prompt payments, which improve of cash flow management and revenue reliability. These measures have been chosen due to their direct treatment of invoice data integrity, an aspect fundamental to tax compliance and revenue protection, whereas those that are broader like cybersecurity architecture were excluded as they move from transactional verification to technical system design.

Value Added Tax compliance means voluntary readiness and taxpayers capacity to correctly report and pay VAT liability by way of proper invoicing, on-time filing and transparent accounting. According to Aizenman and Jinjarak (2021), VAT compliance denotes tax liabilities' declaration and remittance as prescribed by statutory requirements. As Shakkour, Almohtaseb, Matahen and Shakkour (2021) note, better VAT compliance leads to higher government revenues through improved underreporting and tax evasion. VAT compliance has been added as a measure since electronic invoicing systems are mostly implemented to enhance VAT monitoring and enforcement. Alternative wider compliance elements like income tax compliance were omitted to keep focus on the tax aspect that is most directly connected to invoicing systems.

Electronic tax return filing pertains submitting tax returns digitally on approved platforms, where a business's file tax returns directly to tax authorities, without being subjected to manual paperwork. According to Mkirima (2023), electronic filing improves administration efficiency by facilitating the submission process and minimizing delays in processing. Anaso (2025) also observes that with electronic filing, there is quicker receipt and processing of returns, which is vital in budgeting, planning, and revenues mobilization in a timely manner. Electronic filing was hence chosen since it embodies the reporting aspect of ETIMS and degree to which digital invoicing is converted to better administrative performance. Other smaller indicators like taxpayer perception or digital literacy were not included as they are not direct indicators of the invoicing system's operational output.

Kenya Revenue Authority

The main governmental body mandated to assess, collect and manage the state revenue in Kenya is KRA. Since its inception in 1995, it has formed an integral part of the country's economic structure by guaranteeing that government initiatives and schemes are financed. Its focus is on reinforcing revenue collection, and its duties involve tax revenues collection like income tax, VAT, excise duty and customs tariffs. These functions enable KRA to enforce tax legislation to maximize collections.

In addition to taxation, KRA offers services to citizens by advising them on their responsibilities, facilitating submission of returns, and promoting voluntary compliance. It also oversees entry and

exit customs operations where goods are subject to regulatory standards and collects and appraises applicable duties like customs duties. Moreover, KRA guides policy makers with input of its operational experience and economic trends, thus, influencing tax legislations and fiscal policy. Enforcement is equally an important task that entails audits, investigations and legal action against evasion or non-compliance.

These efforts can be observed in Kenya's tax-to-GDP ratio which edged up by 1.4% in 2021-2022, when it stood at 16.8%. In comparison with other 36 African countries, average percentage shifted between 16.0 and 16.5 in the same years, increasing by 0.5%. The continental average has increased by 1.1 points since 2013, with Kenya increasing its ratio by 0.5 points, 16.3% to 16.8%. In 2017, Kenya registered highest rate of 17.5% and was lowest at 12.5% in 2002 (OECD, 2024).

Statement of the Problem

KRA has suffered setbacks which have slowed down its overall performance, as witnessed in recent reports due to a decrease in its ability to meet revenue collection targets, causing concerns among stakeholders. In 2022/2023, KRA fell short of its Kshs.2 Trillion target by raising Kshs.1.8 Trillion, revealing some inefficiencies in the country's tax enforcement process (KRA Report, 2024). Compliance is also low with just 20% of taxable base paying. In 2023, KRA planned to be 2.03 trillion, however, it ended at 1.88 trillion, a 7.3% shortfall. The informal sector, which forms 80% of the economy, is mostly untaxed, and this is a huge percentage that is not in the tax net.

Empirical literature further demonstrates that numerous studies have been concerned with VAT compliance, SME environments, or international jurisdictions like Uganda, Tanzania, Rwanda, Iraq, and Sierra Leone. Though these studies offer a good understanding, it has gaps in context since they are carried out either outside Kenya or concentrate on certain sectors instead of national institutional revenue performance. Conceptually, most studies measure compliance, efficiency, or GDP impact, but few directly assess revenue performance measured by revenue growth rate at the institutional level of KRA. Methodologically, several studies adopt explanatory or cross-sectional designs, whereas limited research examines institutional revenue trends over a recent multi-year period capturing economic shocks and recovery phases. Consequently, a knowledge gap exists regarding how specific components of ETIMS influence KRA revenue performance.

Objectives of the Study

i. To determine the effect of storage of tax invoice data on revenue performance of Kenya Revenue Authority
ii. To establish the effect of invoice verification and authentication on revenue performance of Kenya Revenue Authority
iii. To examine the effect of Value added tax compliance on revenue performance of Kenya Revenue Authority

iv. To examine the effect electronic tax return filing on revenue performance of Kenya Revenue Authority

REVIEW OF LITERATURE

Theoretical Review

Resource Based View Theory

Proffered by Penrose in 1959, RBV created a model of resource management in business that allows diversification in strategies and propels production possibilities. Penrose (1959) had argued that managers are very important in identifying the opportunities of production and exploiting them. In the modern dynamic business world, managers are able to redistribute resources and to react to demand changes, but entrepreneurial competence is missing among certain managers needed to survive a fast-paced business world. Companies that have unique managerial capabilities represent the best opportunity to utilize their strong production capabilities to produce high-quality results.

The RBV theory is internalized and instead of following the traditional methods of looking at outside factors, it centers on an organization's internal competencies. It gives much priority to internal resources as key to market edge and organizational outcomes (Kraaijenbrink, Spender & Groen, 2020). The RBV framework defines the resources as the ones that the firm controls, spanning assets, processes, competencies, organizational attributes, knowledge and data (Connor, 2022). These tools are exploited to know and implement strategies which will enhance productivity and effectiveness. RBV fundamentally presupposes that organizations have diverse and immobile resources. When such resources meet the VRIN criteria, valuable, rare, inimitable, and non-substitutable, they generate lasting differences in performance.

Nonetheless, Michael Porter (1980) warned that putting too much emphasis on the internal resources would underestimate the dynamics of the industry since other external forces like market structure, competition and the economic conditions are equally very important. As a result, the RBV theory is an incomplete perspective as it does not take into consideration external forces, like regulatory changes or societal opinion, which impact internal resources. Mahoney and Pandian (2022) also stated that organisations have to adapt and change over time, implying that stable resource endowments might not provide success in the long term. This criticism draws the issue that RBV could be so fixed and undervalues institutional shifts that shape organizational outcomes.

Considering present research, RBV supports the aim of studying ETIMS and revenue collection efficiency, where internal technological, human, and institutional capabilities of KRA are emphasized. Proper invoice data storage, effective verification/authentication, responsible monitoring of VAT compliance, and sound electronic filling infrastructure are internal strategic assets that dictate the efficiency of the Authority. The efficient use of these digital and human

resources will allow KRA to increase the revenue performance and administrative efficiency, so RBV can explain how internal technological competences (ETIMS components) generate revenue collection efficiency.

Technology Acceptance Model (TAM)

This was created by Davis (1980) to analyze user acceptance and new technology adoption. TAM relies on two main components: perceived usefulness (the ease of utilizing new technology) and ease of use (new system's ability to enhance organizational productivity), both of which significantly shape technology adoption intent. Davis (1980) stated that there are a number of instrumental factors which steer technology acceptation as it shifts to attitudes, beliefs and finally to intended behaviour. This implies that before a technology can be accepted and it can be used, then people have to consider its usefulness, learn how to use it effectively, and form a favorable attitude regarding its adoption.

According to Davis, Bagozzi and Warshaw (2019), TAM can provide organisations with information about the effective process of introducing new technology to the employees or customers. Thus, understanding obstacles to acceptance would enable an organisation to make significant changes, including better training, more user-friendly interfaces, or better explanation of the technology's benefits. Lee, Kozar and Larsen (2023) interpret TAM through the prism of social influence, focusing on how the views of other people can influence the way an individual adopts the technology and creates an environment that will help a user use the technology effectively.

The basic premise of TAM is that technology adoption depends greatly on the rational cognition process of simplicity and usefulness. Nevertheless, King and He (2021), criticized TAM because it simplifies technology adoption process by not taking into account emotional, cultural, and contextual elements, suggesting that human behaviour is much more complex. Legris, Ingham & Collerette (2023) noted TAM primarily concentrates on individual users, rather than considering the wider context in which technologies are implemented. A technology's success can be significantly shaped by organizational culture, the specific job requirements, or even geographic variations. Consequently, the predictive abilities of TAM are constrained. This limitation suggests that TAM alone may not fully explain adoption in complex public sector settings where compliance may be mandatory rather than voluntary.

In this study, TAM assists in achieving the goal of studying ETIMS implementation because effectiveness of its elements depends on readiness of taxpayers to correct use of the system. In the event that taxpayers feel that ETIMS can help them make the process of complying easier and user-friendly, they will embrace it, thus increasing revenue efficiency. If system seems complex, on the flip side, resistance possibly interferes with the results of compliance. Consequently, TAM explains the behavioural component of ETIMS efficacy.

System Theory

Bertalanffy (1951) introduced system theory by suggesting that organizations are seen as open systems with loosely linked structures and a specific hierarchy. Within the open systems framework, organizations are seen as dynamic structures where subsystems depend on inputs from others and generate outputs that feed back into the system. These subsystems might support the organization's goals even if they are not consistently represented by the sales divisions. The interdependent relationships and dependencies of each subsystem operate more closely than those of the subsystems themselves (Mele, Pels & Polese, 2020; Kast & Rosenzweig, 2022).

Alter (2021) indicate that the idea of systems theory suggests that every department operates uniquely depending on its surrounding environment and needs to be organized to fulfill environmental needs. Per open system principle, Cunningham (2023) indicate that multiple subsystems exist, each obtaining input from other subsystems and converting it into outputs that can be utilized by the different subsystems. However, these divisions within an organization might not consistently reflect these subsystems; rather, they may exhibit similar behaviors.

System theory assumes a company's outcomes hinges on its sub-systems' interaction and not efficiency of its individual parts in isolation. However, Weltman (2018) highlights the significance of accepting individual mechanisms in a system rather than just their interconnections by arguing that that the reduction of complex phenomena to simple connections can oversee the importance of individual actions and choices. Further, Pieterse (2021) indicate that system theory lean towards simplifying multifaceted certainties which poses a major question regarding the way we model reality and whether we are risking to lose direction on unpredictability and quest for systematic understanding.

Revenue-collection efficiency is a complex interaction of variables that are related to one another such as technology, human resource, policy frameworks, and compliance of taxpayers. These variables at KRA include tax laws, online portals like iTax, and human resources that execute laws and services and their seamless operation is key to maximizing revenue collection. System theory explains how interaction of these elements and optimization of any of them can boost sytems' performance. On the other hand, failure of one subsystem (through downtime or lack of training of staff) may compromise the whole revenue collection chain. In line with this, system theory offers a guideline to understanding that an integrated interaction of ETIMS parts increases revenue efficiency.

Empirical Review

Anaso (2025) studied how electronic fiscal receipting and invoicing systems (EFRIS) can influence VAT compliance and Uganda's revenue performance. Using a difference-in-differences design using Uganda Revenue Authority's data between 2018 and 2023 on VAT firms: EFRIS

adopters vs. non-adopters, the study compared the two groups but excluded pre-COVID period to ensure that the study only isolated system effects rather than the pandemic's impacts. Results established that, despite an initial decline in VAT remittances with implementation, compliance level has increased significantly with percentage of compliant firms increasing to 55.8%, as opposed to 46.7%. The analysis was however limited to Uganda and only focused on compliance and revenue generation thereby being limited in generalizability.

Menin, Olweny, and Kapkiyai (2024) examined ETIMS impacts on VAT adherence of Kenya's Eldoret SMEs. Their design was explanatory, comprising 3,872 enterprises where 362 owners and managers form the sample. Information collected was in form of questionnaires and subjected to descriptive and inferential analysis. Outcomes validated positive statistical significance between the system and VAT compliance. However, the examination was also specific to Eldoret town's SMEs and thus not applicable to other sectors.

Alshawi, Al-Tamimi, and Anssari (2023) examined how e- invoices implementation and compliance with tax laws can influence revenue generation in Iraq. Tax collectors efficiency mediates these connections. Questionnaires were administered to the employees of the tax departments of several companies working in the private sector and correlations between variables were examined using Smart-PLS. Findings have shown that tax income, compliance, e-invoicing uptake are positively correlated, which highlights the fact that effective tax collection increases such interrelationships. However, the research gave more emphasis to the role of regulation adherence in the determination of revenue and the diversified determinants of compliance have not been investigated extensively.

Mabula (2023) has carried out an evaluative research to ascertain how electronic revenue collection systems impact improvement of Tanzanian revenue collection. It used cross-sectional, descriptive design, which incorporated mixed-method research, comprised of a qualitative and a quantitative part. Participants were recruited through purposive sampling strategy with 44 people. Analysis combined descriptive statistics with thematic review, carried out using Microsoft Excel. Outcomes uncovered adoption of electronic revenue collection systems led to revenue growth by increasing income and furthermore, system's adoption seemed to improve trust relationship between government and people whilst augmenting openness and revenue collection traceability. It is necessary to note, though, that examination was limited to Tanzanian context and research method was once again described as cross-sectional and descriptive study.

Kamara (2024) evaluated VAT effects on Sierra Leone's National Revenue Authority revenue outcomes. With exceptions of Ebola and COVID-19 pandemic periods, examination results indicated VAT's beneficial association with higher revenue collection in Sierra Leone. Additionally, it showed a negative correlation between pandemics emergence and revenue generation. VAT is expected to continue being key to many nations' tax systems because of its

ability to generate revenue; nonetheless, it must be modified and enhanced to satisfy the evolving needs and requests of society. However, the study context was National Revenue Authority in Sierra Leone.

Nguvava and Bandile (2025) also assessed VAT revenues impacts on Tanzania's GDP. The examination assumed an ontological philosophical position as well as quantitative, descriptive design. Secondary data were the only ones utilized and that was related to financial stability reports that Bank of Tanzania and Tanzania Revenue Authority (TRA) have published between 2015 and 2022. Statistics were analyzed quantitatively (descriptive and linear regression), which provided evidence that VAT collections by the TRA are consequential in terms GDP growth. This study, was limited to an analysis of GDP in Tanzania.

Mchwampika and Bingireki (2024) tested E-fiscal device systems' effect on Ilala Municipal Council revenue. A convergent research design was embraced and a cohort of 387 sample size was sampled under simple random and purposive methods. Primary data came from interviews and self-administered questionnaires. Quantitative data were subjected to descriptive and inferential statistics in SPSS version 26, although, qualitative responses underwent content analysis. Findings indicated fiscal device management systems significantly positively correlating to revenue collection with 0.650 correlation coefficient. The research was only applicable to revenue collection in Ilala Municipal Council.

Achibo and Wanjohi (2024) analyzed the connection between i-tax system capabilities and KRA's revenue collection. Out of intended population of six million taxpayers, 400 were chosen via simple random sampling. Primary and supplementary data were collected. Descriptive statistics measured variable central tendencies, and inferential results were displayed in tables, graphics, and charts. Findings uncovered tax registration, efficiency, compliance, and knowledge greatly affected revenue collection. It employed simple random sampling was applied in choosing respondents.

RESEARCH METHODOLOGY

The study embraced descriptive research. According to Lans and Voordt (2022), descriptive research design is a scientific approach where a behavior of a subject is observed and described without manipulations. The target population included 3278 staff who work with domestic tax, Intelligence and Strategic Operations, besides Investigation and Enforcement departments at KRA. Proportionate stratified random sampling picked KRA employees, while Krejcie and Morgan (1970) formula computed the sample size of 357. Primary data was collected using a structured questionnaire while secondary data concerning the KRA' revenue growth rate from the year 2020 to 2025 was collected from the company's financial statements of these years using a secondary

data collection sheet. Data was analyzed using the regression model below adopted from Widodo, 2022.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby Y= Revenue collection efficiency at time t
X_1 = Storage of tax invoice data at time t
X_2 = Invoice verification and authentication at time t
X_3 = Value added tax compliance at time t
X_4 = Electronic tax filing at time t
β_1, β_2, β_3 and β_4= Coefficients
ε = Error term

RESEARCH FINDINGS AND DISCUSSION

Response Rate

The study had a sample size of 357 respondents drawn from KRA staff who were given the questionnaires. Table 4.1 indicates 297 were eventually completed and returned, an 83% response rate. The remaining 60 were never submitted back, accounting for 17% of the total questionnaires issued.

Table 4.1 Study Response Rate

Response Rate	Frequency	Percent (%)
Completed and Returned Questionnaires	297	83%
Unreturned Questionnaires	60	17%
Total	**357**	**100%**

An 83% response rate is deemed highly acceptable for data analysis and generalizing study conclusions. This elevated rate further indicates that respondents were forthcoming and cooperative. Further, data collected was sufficient to provide reliable and credible results regarding ETIMS' effects on revenue performance

Descriptive Statistical Analysis

Descriptive analysis on respondent scores on variable-measuring statements in terms of percentages, frequencies, mean scores and standard deviations.

Digital tax systems

Table 4.2 Descriptive Statistics

Descriptive Statistics	Mean	Std Dev
Storage of Tax Invoice Data	4.270	0.856
Invoice Verification and Authentication	**4.26**	**0.89**
Value Added Tax Compliance	**4.27**	**0.88**
Electronic tax filling	**4.27**	**0.86**

Overall, as per table 4.2, findings demonstrate uniformly strong endorsement across all statements. Specifically, a large proportion of respondents agreed that the current system for storing tax invoice data is secure with an aggregate mean of 4.270 (SD = 0.856) suggesting confidence in the integrity and reliability of the data storage infrastructure. Similarly, respondents agreed that improved data storage systems have reduced the likelihood of tax evasion indicating that enhanced storage mechanisms are perceived to strengthen compliance and minimize revenue leakage.

The investigation endeavored to establish invoice verification and authentication effects on KRA's revenue performance the findings indicate a generally strong level of agreement across all items, with individual mean scores 4.26 aggregate mean (SD = 0.89). This suggests wide perception on invoice verification and authentication as having a positive influence on revenue performance.

Specifically, respondents agreed that the invoice verification process improves the efficiency of revenue collection indicating that verification mechanisms are seen as effective in streamlining revenue operations. A similarly high level of agreement was recorded for the view that verification and authentication processes enhance taxpayer confidence in the Authority

There was consistently high agreement on every statement, with mean scores overall aggregate mean of 4.27 (SD = 0.88). Thus, VAT compliance factors are strongly seen as influencing revenue collection outcomes. Specifically, respondents agreed that a strong legal reputation among businesses encourages compliance with VAT regulations, indicating that institutional trust and credibility play a key role in enhancing voluntary compliance. Similarly, respondents agreed that a firm's legal reputation influences its decision to comply with tax obligations showing that reputational considerations significantly shape taxpayer behavior.

The results show a consistently high level of agreement across all items, with an overall aggregate mean of 4.27 (SD = 0.86). This indicates that electronic tax filing is strongly perceived to positively influence efficiency and compliance in tax administration. Specifically, respondents agreed that the availability of online support or assistance enhances the experience of electronic tax filing suggesting that user support systems play a key role in improving system usability. In addition, the statement that electronic filing takes less time compared to manual filing yielded a high degree

pointing to strong agreement on digital filing improving time efficiency in tax compliance processes.

Revenue Performance

The revenue performance of KRA over the five-year period from 2020/21 to 2024/25 shows a consistent upward trend in revenue collection, indicating progressive improvement in tax administration effectiveness. The trend indicates a steady positive growth trajectory in revenue collection over the five-year period.

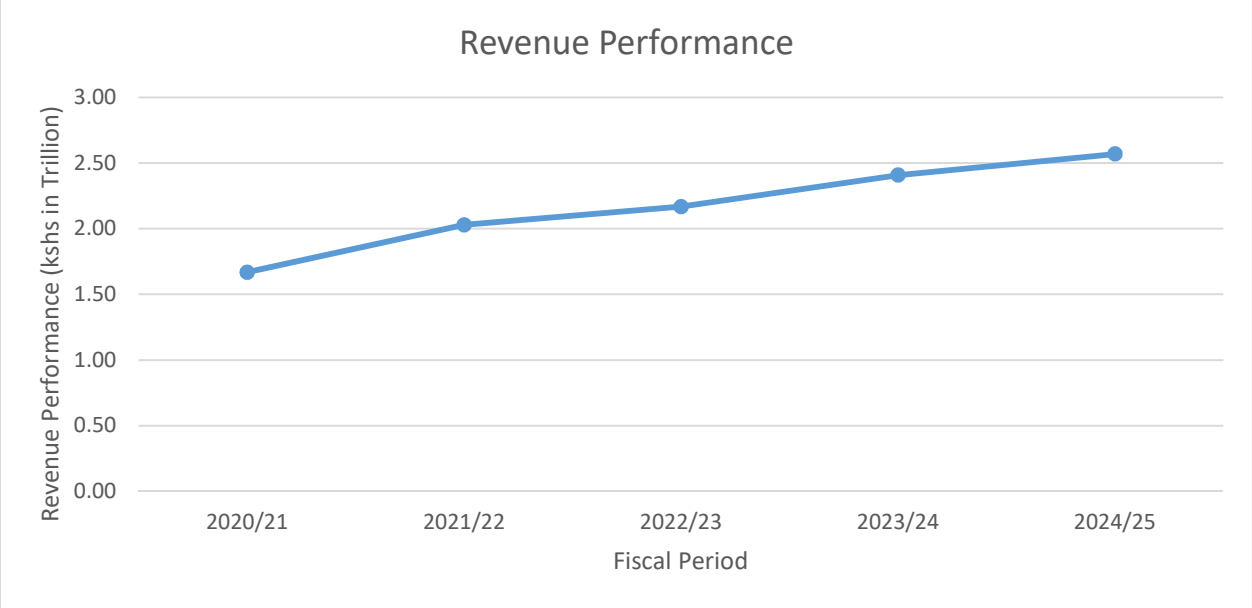


Figure 4.1 Trends Analysis for Revenue Performance between FY 2020/21 and 2024/25

Regression Results

Table 4.3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.783[a]	.613	.606	.38491

a. Predictors: (Constant), Tax Payer Education, Storage of Tax Invoice Data, Electronic Tax Filing, Invoice Verification and Authentication, Value Added Tax Compliance

Table 4.3 shows that 61.3% of the variation in KRA revenue performance is explained by ETIMS (R^2=0.613), which includes taxpayer education, invoice data storage, E-filing, verification/authentication and VAT compliance. Thus, the system significantly predicts revenue performance at KRA.

Table 4.4 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.318	5	13.664	92.227	.000[b]
	Residual	43.113	291	.148		
	Total	111.431	296			

a. Dependent Variable: Revenue Performance

b. Predictors: (Constant), Tax Payer Education, Storage of Tax Invoice Data, Electronic Tax Filing, Invoice Verification and Authentication, Value Added Tax Compliance

Table 4.4 displays ANOVA findings for the multiple regression model exploring how ETIMS variables and taxpayer education affect KRA's revenue performance. The model was statistically significant ($F = 92.227$, $p = 0.000 < 0.05$), demonstrating that it adequately explains relationship between the predictors and revenue performance.

Table 4.5 Coefficients

	B	Std. Error	Beta	Sig.
(Constant)	0.534	0.189		0.005
Storage of Tax Invoice Data	0.137	0.065	0.129	0.036
Invoice Verification and Authentication	0.226	0.065	0.222	0.001
Value Added Tax Compliance	0.369	0.07	0.358	0.000
Electronic Tax Filing	0.15	0.069	0.14	0.030

Table 4.5 displays the regression coefficients for each independent variable's effect on KRA's revenue performance. All independent variables had positive and statistically significant effect since their significance values were less than 0.05. The findings show that storage of tax invoice data positively and significantly affected revenue performance ($\beta = 0.129$, $p = 0.036$). Therefore, improvements in the storage of tax invoice data lead to increased revenue performance. The implication of this finding is that secure, reliable, and integrated data storage systems enhance record management, reduce revenue leakages, and improve monitoring of taxable transactions. Therefore, strengthening data storage infrastructure can contribute to more efficient tax administration and improved revenue collection.

Invoice verification and authentication positively and significantly affected revenue performance ($\beta = 0.222$, $p = 0.001$). The implication is effective verification and authentication systems help reduce fraudulent transactions, detect fake invoices, and improve taxpayer accountability. This enhances compliance and minimizes tax evasion, thereby increasing revenue collection efficiency. The examination outcomes corroborate Alshawi, Al-Tamimi, and Anssari (2023) who examined how implementation of electronic invoices and compliance with tax laws can influence revenue generation in Iraq and the Findings showed that taxes, compliance, and e-invoicing systems are

positively correlated, which highlights the fact that effective tax collection increases such interrelationships.

Findings indicate that Value Added Tax compliance had a strongest positive and significant effect on revenue performance ($\beta = 0.358$, $p = 0.000$). Consequently, improved VAT compliance significantly increases revenue performance. The implication of this finding is that strengthening VAT compliance mechanisms is critical for enhancing government revenue. Improved compliance reduces tax evasion and broadens the tax base, thereby increasing revenue mobilization by the Authority. Likewise, Febrianti and Andhaniwati (2025) ascertained that ETIMS improves revenue collection efficiency by reducing occurrence of human errors (real-time data validation), ensuring that invoices meet tax requirements prior to submission, low administrative expenses, and less carbon footprint. This is an indication that ETIMS is not only a technological device, but also an assurance of compliance and revenue. Yusuf (2022) also posited that digital storage also helps in integrating with government tax systems, which saves time and minimize human error.

Electronic tax filing had a positive and statistically significantly affected on revenue performance ($\beta = 0.140$, $p = 0.030$). This implies that increased adoption and effectiveness of electronic tax filing systems contribute positively to revenue performance. In addition, electronic filing systems improve efficiency, reduce processing time, enhance taxpayer convenience, and promote timely submission of tax returns. This contributes to higher compliance levels and improved revenue collection outcomes. The finding concurred with a study by Achibo and Wanjohi (2024) which analyzed the connection between i-tax system's capabilities and KRA's revenue collection and showed that tax registration, efficiency, adherence and tax awareness greatly affected revenue mobilization.

CONCLUSION

Efficient and secure data storage systems enhance data integrity, reduce revenue leakages, support real-time monitoring of transactions, and improve decision-making in revenue administration. Therefore, improved storage of tax invoice data contributes to better revenue collection outcomes.

Invoice verification and authentication significantly improve revenue performance. Effective verification systems reduce fraudulent invoices, enhance compliance, and improve taxpayer confidence in the tax system. As a result, strengthened verification and authentication processes lead to improved efficiency in revenue collection and increased tax compliance.

VAT compliance is the most influential factor among the study variables. Higher levels of VAT compliance reduce tax evasion, broaden the tax base, and significantly bolster revenue mobilization. Therefore, improving VAT compliance is critical for achieving optimal revenue performance.

Electronic tax filing positively affects revenue performance by improving efficiency, reducing filing time, and enhancing taxpayer convenience. The system promotes timely submission of tax returns and increases compliance levels, thereby contributing to improved revenue collection performance.

Recommendation of the Study

Consistent with stated objectives and study findings, the subsequent recommendations are made; The Authority should strengthen and continuously upgrade its digital data storage infrastructure. This includes investing in secure, scalable, and integrated data storage systems to ensure real-time access, data integrity, and reduced risk of data loss or manipulation. Enhanced storage systems will improve monitoring of transactions and reduce revenue leakages.

It is recommended that the Authority further enhance automation and real-time validation of invoices to improve accuracy and reduce fraudulent activities. Integration of advanced analytics and artificial intelligence tools should be prioritized to strengthen detection of fake invoices and improve compliance monitoring. Additionally, reducing verification processing time will improve overall revenue collection efficiency. The study recommends strengthening VAT compliance enforcement mechanisms, including stricter monitoring, targeted audits, and enhanced penalty systems for non-compliance. At the same time, taxpayer awareness programs should be expanded to improve voluntary compliance. Enhancing VAT compliance remains critical for increasing revenue performance. The Authority should continue improving the usability, reliability, and accessibility of electronic tax filing systems. This includes upgrading online platforms, ensuring system stability during peak filing periods, and expanding customer support services. Simplifying the filing process will further encourage timely and accurate tax submissions.

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