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Electronic Tax Invoicing Attributes and VAT Compliance Intention among MSMEs in Nyeri Town, Kenya

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Abstract

VAT compliance remains a critical concern among micro, small and medium enterprises (MSMEs) despite the expansion of digital tax administration in Kenya. This study examined the direct effects of three electronic tax invoicing attributes: technology readiness, technology usage, and quality of technology on VAT compliance intention among MSMEs in Nyeri Town. The study was anchored on the Theory of Planned Behaviour and Diffusion of Innovation Theory. An explanatory research design was adopted. The target population comprised 521 VAT-registered MSMEs, from which a proportionate stratified random sample of 226 firms was selected. Structured questionnaires were administered to business owners or personnel responsible for tax invoicing and VAT matters. A total of 171 usable questionnaires were returned, representing a response rate of 75.7%. Data were analyzed using descriptive statistics, correlation analysis and multiple regression. The direct regression model was statistically significant ($R = 0.872$, $R^2 = 0.760$, adjusted $R^2 = 0.755$; $F = 175.864$, $p < 0.001$), showing that the three electronic tax invoicing attributes jointly explained 76.0% of the variance in VAT compliance intention. Technology readiness ($B = 0.295$, $p < 0.001$), technology usage ($B = 0.306$, $p < 0.001$), and quality of technology ($B = 0.421$, $p < 0.001$) each had a positive and statistically significant direct effect. Quality of technology was the strongest predictor. The study concludes that adequate digital infrastructure, routine use of e-invoicing systems, and reliable, accurate and efficient platforms strengthen MSMEs' intention to comply with VAT obligations. It recommends reliable digital tax infrastructure, simplified and well-supported electronic invoicing processes, taxpayer sensitization, and MSME investment in compatible accounting systems and consistent digital record keeping.

Keywords: electronic tax invoicing; technology readiness; technology usage; quality of technology; VAT compliance intention; MSMEs.

1.0 Introduction

At the global level, VAT compliance intention among Small and Medium Enterprises (MSMEs) has gained prominence due to globalization, digital trade expansion, and increasingly complex tax environments (Baseka, 2022). As cross-border transactions intensify, tax authorities are under

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pressure to secure VAT revenues through more transparent reporting systems. VAT compliance is highly dependent on taxpayers' behavioural intention, which precedes actual compliance actions such as filing and payment. Halkidis (2023) observes that compliance intention is shaped by trust in tax authorities and perceived system fairness. Global tax reforms have therefore shifted toward technology-driven compliance mechanisms such as electronic invoicing and real-time reporting frameworks. Merkx and Calzado (2025) notes that e-invoicing strengthens transaction traceability and minimizes VAT fraud. Additionally, Perveen and Ahmad (2022) argue that digital tax systems enhance voluntary compliance by improving monitoring and reducing opportunities for evasion.

From a regional perspective, VAT compliance challenges remain significant, particularly among MSMEs operating in semi-formal and resource-constrained environments. Many African economies depend heavily on VAT revenues, yet compliance gaps persist due to administrative inefficiencies and technological limitations (Mpofu, 2022). Digitalization has therefore emerged as a strategic response to improve compliance monitoring and domestic revenue mobilization. Ali and Singh (2025) emphasize that electronic invoicing reforms can significantly reduce compliance costs while improving transparency. Awan (2023) similarly highlights digital tax systems as critical tools for strengthening revenue performance across African economies. However, resistance to electronic invoicing adoption and technological constraints among MSMEs continues to undermine compliance intentions in some jurisdictions, as noted by Soliman (2024). Much of the regional literature focuses on policy adoption and revenue outcomes, with limited empirical focus on behavioural compliance intention at the firm level.

Within the East African context, governments have accelerated digital tax administration reforms to curb VAT leakages and enhance compliance efficiency (Nzula, 2025). Countries such as Rwanda, Tanzania, and Uganda have implemented electronic fiscal devices and invoicing platforms aimed at strengthening VAT reporting systems. Empirical evidence from Rwanda indicates that electronic invoicing improves audit effectiveness and VAT declaration accuracy (Hakorimana & Twesige, 2024). Regional integration under the East African Community has further necessitated harmonized tax administration practices to manage cross-border VAT transactions. Anaso (2025) notes that digital tax systems improve invoice verification and transaction reporting among MSMEs. Nevertheless, compliance outcomes vary across sectors and business sizes, suggesting that technology adoption alone may not fully explain compliance behaviour. Existing East African studies emphasize system implementation outcomes but rarely examine how specific technology attributes influence VAT compliance intention.

At the national level in Kenya, VAT compliance remains a strategic fiscal priority given its contribution to total tax revenue. The Kenya Revenue Authority (KRA) has implemented electronic tax systems, including electronic tax registers and the electronic Tax Invoice Management System (eTIMS), to enhance invoice authentication and reporting efficiency (Koech & Muna, 2025). These reforms aim to strengthen VAT monitoring by capturing transaction data in real time. KRA (2023) reports that e-invoicing improves invoice traceability and reduces under-declaration of sales. Asender and Sapkota (2024) notes that mandatory electronic invoicing requirements are designed to improve compliance transparency. However, MSMEs face operational and technological challenges in adapting to these systems, including infrastructure gaps and user competency constraints (Alshawi et al., 2023). While Kenyan studies discuss adoption challenges and administrative reforms, limited empirical work links e-invoicing system attributes directly to VAT compliance intention.

Focusing on MSMEs in Nyeri Town, the relevance of this study becomes more context-specific. MSMEs in secondary towns operate within diverse sectors such as retail, workshops, small manufacturing, and financial services, each with varying technological capacity and compliance exposure (Hassan, 2025). Their VAT compliance intention may therefore be shaped by firm-level attributes such as technology readiness, usage patterns, and perceived system quality. Akpe et al. (2023) explains that technological readiness determines how organizations engage with digital systems. Inegbedion (2025) find that MSMEs with stronger ICT infrastructure demonstrate higher adoption of electronic tax systems. However, localized empirical evidence on how these attributes influence VAT compliance intention in towns like Nyeri remains scarce. Most Kenyan MSME studies are Nairobi-centric, leaving smaller commercial towns under-researched despite their growing tax significance.

1.1 Problem Statement

Value Added Tax (VAT) is one of the most important sources of tax revenue in Kenya and contributes significantly to government revenue mobilization. According to the Kenya Revenue Authority (KRA, 2023), VAT accounts for a substantial proportion of domestic tax revenue and remains a critical source of financing for government expenditure. Ideally, all VAT-registered businesses should accurately issue tax invoices, maintain proper records, file VAT returns within the stipulated timelines, and remit taxes as required by law. However, VAT compliance continues to be a major challenge globally and in developing economies despite numerous tax administration reforms (Yueyang, 2024).

In Kenya, compliance among MSMEs remains below optimal, contributing to a persistent tax gap and constraining the government's ability to finance development priorities. Kenya's tax-to-GDP ratio declined from 18.1% in FY 2013/14 to 14.1% in FY 2022/23. VAT revenue has been performing below its potential with a gap of 39.8 percent in FY 2021/22. This is mainly attributed to both policy and compliance gaps in the VAT system (KRA, 2023). Further, MSMEs have consistently been identified as one of the taxpayer segments most vulnerable to compliance challenges due to weak record-keeping systems, limited technological capabilities, and inadequate tax knowledge (Nasaye, 2022; Ndirangu, 2022).

In response to these challenges, tax authorities across the world have increasingly adopted electronic tax invoicing systems to improve transparency, automate tax reporting processes, and strengthen transaction traceability (Okunogbe & Santoro, 2023; Hesami et al., 2024). In Kenya, KRA introduced the Electronic Tax Invoice Management System (eTIMS) to enhance invoice authentication, improve VAT monitoring, and reduce revenue leakages associated with manual invoicing processes (KRA, 2023). The system was expected to improve tax compliance by enabling real-time transmission and verification of transaction data (Koech & Muna, 2025). However, evidence suggests that many MSMEs continue to face challenges related to technological preparedness, effective system utilization, system quality, and staff capability when implementing electronic invoicing systems (Alshawi et al., 2023; Hassan, 2025). Consequently, the anticipated compliance benefits of electronic tax invoicing may not be fully realized among MSMEs since it is characterized by the notion that the incomes generated from the sector are meagre and should not be taxed (KRA, 2023).

Despite growing scholarly interest in electronic tax systems and tax compliance, important conceptual, contextual, and methodological gaps remain. Existing studies have largely focused on general tax compliance behaviour, electronic tax system adoption, or revenue performance rather than VAT compliance intention specifically (Padi et al., 2025; Luketina et al., 2025). Within Africa, studies by Mpofu (2022) and Nzula (2025) primarily examined administrative reforms and compliance outcomes without investigating taxpayer behavioural intentions. In Kenya, studies such as Nasaye (2022), Ndirangu (2022), and Hassan (2025) have examined electronic tax systems and taxpayer compliance but have not integrated technology readiness, technology usage, and quality of technology within a single framework. Without targeted empirical insights, policymakers and KRA risk implementing digital tax reforms that yield below optimal results among this segment of taxpayers. These conceptual, contextual, and methodological gaps necessitated the present study to investigate the influence of electronic tax invoicing attributes on VAT compliance intention among MSMEs in Nyeri Town.

1.2 Research Objectives

The study sought to:

i. To determine the effect of technology readiness on VAT compliance intention among MSMEs in Nyeri Town.
ii. To assess the effect of technology usage on VAT compliance intention among MSMEs in Nyeri Town.
iii. To establish the effect of quality of technology on VAT compliance intention among MSMEs in Nyeri Town.

2.0 Literature Review

2.1 Theoretical Literature Review

2.1.1 Diffusion of Innovation Theory

Diffusion of Innovation Theory was developed by Rogers (1962) to explain how innovations are introduced, adopted, and spread among individuals, organizations, and social systems over time. The theory posits that adoption of an innovation is influenced by five key attributes namely relative advantage, compatibility, complexity, trialability, and observability. Relative advantage refers to the degree to which an innovation is perceived as superior to existing practices, compatibility refers to the consistency of the innovation with existing values and operational needs, complexity refers to the perceived difficulty of using the innovation, while trialability and observability refer to the extent to which potential adopters can experiment with and observe the benefits of the innovation before full adoption (Rogers, 1962; Yu, 2022). Rogers (1962) further categorizes adopters into innovators, early adopters, early majority, late majority, and laggards depending on their willingness to embrace new technologies.

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The relevance of the theory was therefore to provide theoretical understanding on a technological innovation introduced by KRA to improve VAT administration and compliance whereby some businesses embrace innovation faster while others resist despite mandatory requirements influencing compliance levels. Technology readiness reflects the compatibility dimension of the theory because organizations possessing adequate ICT infrastructure, internet connectivity, and technological preparedness are more likely to adopt and utilize electronic tax invoicing systems effectively (Akpe et al., 2023). Technology usage corresponds with the diffusion and actual integration of the innovation into routine organizational processes, reflecting the extent to which the innovation has been accepted and incorporated into day-to-day operations (Maita et al., 2022; Lun et al., 2024). Similarly, quality of technology is closely associated with the concepts of relative advantage and complexity because reliable, secure, and user-friendly systems are more likely to be perceived as beneficial and easier to utilize than systems characterized by technical failures and operational inefficiencies (Pratama, 2024; Çelik & Ayaz, 2022). Akpe et al. (2023) found that MSMEs are more likely to embrace electronic tax systems when they perceive them as reliable, beneficial, and compatible with their operational requirements.

As is with any new technology, adoption hardly occurs uniformly. By examining stages of adoption, the theory has been praised for providing a comprehensive insights and explanation as to why some innovations are adopted more rapidly than others. According to Amini and Jahanbakhsh (2023), the theory effectively explains how characteristics of an innovation influence adoption decisions within organizations. Progressively with time, electronic invoicing gets integrated to major businesses accounting systems since failure to comply results to penalties and fines for non-compliance as well as credit losses. After technology adoption, taxpayers' behavioural intentions regarding VAT compliance are not sufficiently explained. Scholars have argued that technology adoption and behavioural compliance are conceptually distinct outcomes because adoption of a technological innovation does not necessarily translate into compliance behaviour or compliance intention (Hagger & Hamilton, 2024; Bani-Khalid et al., 2022). The Theory of Planned Behaviour therefore complements diffusion theory by explaining VAT compliance intention as a behavioural outcome.

2.1.2 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) was developed by Ajzen (1991) as an extension of the Theory of Reasoned Action advanced by Ajzen (1991). The theory explains that an individual's behaviour is primarily determined by behavioural intention, which represents the willingness or readiness to perform a particular action. According to Ajzen (1991), behavioural intention is influenced by three key determinants: attitude toward the behaviour, subjective norms, and perceived behavioural control. Attitude refers to an individual's favourable or unfavourable evaluation of performing a behaviour, subjective norms refer to perceived social pressure from important referent groups to engage or not engage in the behaviour, while perceived behavioural control reflects an individual's perception of their ability, resources, and opportunities to perform the behaviour successfully. The theory posits that individuals are more likely to engage in a behaviour when they perceive it positively, receive social support for the behaviour, and believe they possess sufficient capability and control to perform it (Ajzen, 1991; Hagger & Hamilton, 2024).

In relation to the study, the theory suggests that when businesses perceive electronic tax invoicing as either beneficial or burdensome, their attitude towards using the system, their ability to use the system effectively and ultimately their intention to comply with VAT obligations align either positively or negatively. Perceived benefits in electronic tax invoicing attributes fosters positive attitude and control in adopting the systems boosting their intentions to comply. Same is true when perception of the system is burdensome.

The theory is relevant with the study variables because tax compliance is fundamentally a behavioural outcome influenced by individual intention. The theory explains that MSMEs operators are more likely to develop intentions to comply with VAT regulations when they possess favourable attitudes toward electronic tax invoicing systems, perceive compliance as socially and legally expected, and believe they have the ability and resources required to comply successfully (Ajzen, 1991; Kaulu, 2022). The theory is critical in bridging technological factors and actual behavioural outcomes. While electronic tax systems can be rolled out, compliance ultimately depends on the intentions of business owners and managers. According to Kaulu (2022), taxpayers are more likely to comply with tax regulations when they perceive compliance as beneficial and socially desirable. Similarly, Hidayat et al. (2022) found that positive attitudes toward electronic tax systems significantly enhance taxpayers' intentions to comply with tax obligations. Hagger and Hamilton (2024) further argue that behavioural intentions remain among the strongest predictors of actual behaviour across diverse contexts.

2.2 Empirical Literature Review

2.2.1 Technology Readiness and VAT Compliance Intention

Technology readiness has been widely examined in empirical literature as a critical determinant of digital tax system adoption and compliance behaviour. Studies show that firms with adequate ICT infrastructure, reliable internet connectivity, and compatible accounting systems are more likely to embrace electronic tax platforms. Abdul Hamid (2022) conceptualizes technology readiness as the propensity of organizations to adopt and utilize new technologies effectively. Empirical evidence indicates that readiness enhances users' confidence in system interaction and reduces resistance to digital transitions. Han et al. (2025) further demonstrate that technological preparedness significantly predicts behavioural intention to use information systems. In taxation contexts, readiness has been linked to improved reporting discipline and system utilization.

Globally, electronic tax compliance studies reveal that technological preparedness influences how businesses engage with digital invoicing frameworks. Firms operating in technologically advanced environments demonstrate higher levels of compliance intention due to system familiarity and infrastructure support. Okunogbe and Santoro (2023) reports that technology-enabled tax systems improve compliance monitoring where taxpayers possess adequate digital capacity. Similarly, Akpe et al. (2023) observes that technological readiness enhances transaction traceability and reduces opportunities for tax evasion. Evidence from European e-invoicing reforms shows that businesses with integrated ICT systems adapt faster to electronic reporting requirements (Asender & Sapkota, 2024).

Regional studies within Africa also highlight the significance of technology readiness in shaping tax compliance outcomes. Many MSMEs operate within technologically constrained environments, limiting their ability to adopt digital tax systems. Acquah (2025) notes that infrastructural and connectivity gaps hinder effective utilization of electronic tax platforms. Empirical work across African tax administrations shows that firms with stronger ICT investments demonstrate better compliance behaviour. Otieno et al. (2025) found that MSMEs with reliable technological infrastructure recorded higher adoption of electronic tax registers. Mpofu (2022) similarly reports that digital readiness remains a prerequisite for successful e-tax implementation across African economies.

Within the East African region, empirical evidence further reinforces the relationship between technological preparedness and tax compliance behaviour. Studies focusing on electronic fiscal devices and digital tax systems show that readiness influences both adoption and reporting accuracy. Ngailo (2022) established that MSMEs with computerized accounting systems were more compliant in electronic VAT reporting. Research in Rwanda also indicates that technological capacity enhances invoice authentication and declaration accuracy (Hakorimana & Twesige, 2024). However, infrastructural disparities across sectors continue to produce uneven compliance outcomes, suggesting that readiness remains a contextual determinant.

In Kenya, empirical literature has increasingly examined electronic tax system adoption among MSMEs. Findings show that technological preparedness influences taxpayers' willingness to comply with digital tax requirements. Nasaye (2022) established that MSMEs with advanced ICT infrastructure demonstrated stronger compliance with electronic tax reporting systems. Ndirangu (2022) also found that system accessibility and technological investment positively influenced tax compliance levels among small businesses. Despite national digital tax reforms, disparities in infrastructure and system integration continue to affect readiness across MSMEs.

Although prior studies provide important insights, notable research gaps persist. Most empirical work has focused on electronic tax system adoption rather than behavioural VAT compliance intention. Studies such as Akpe et al. (2023) emphasize technology readiness within general technology acceptance frameworks rather than taxation contexts. Regional and Kenyan studies, including Padi et al. (2025) and Koech and Muna (2025), primarily examine compliance behaviour without isolating intention as a behavioural precursor. Additionally, localized evidence focusing on MSMEs in secondary towns such as Nyeri remains limited. This study therefore seeks to bridge conceptual, contextual, and behavioural gaps by examining how technology readiness influences VAT compliance intention among MSMEs in Nyeri Town.

2.2.2 Technology Usage and VAT Compliance Intention

Technology usage has been empirically examined as a critical determinant of digital tax compliance outcomes, particularly in environments where electronic invoicing and reporting systems are operational. Usage reflects the extent to which taxpayers actively engage with electronic tax platforms in processing invoices, recording transactions, and submitting tax returns.

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FakhrHosseini et al. (2024) posits that actual system use is the most immediate outcome of behavioural intention toward technology adoption. Empirical evidence shows that frequent system interaction enhances familiarity, reduces operational errors, and strengthens compliance processes. Maita et al. (2022) further establish that sustained system use is a strong predictor of organizational performance and behavioural outcomes. In taxation settings, technology usage has been associated with improved reporting discipline and audit transparency.

At the global level, studies on electronic invoicing reforms indicate that consistent use of digital tax systems strengthens VAT compliance by improving transaction traceability. Businesses that routinely generate electronic invoices create verifiable audit trails that limit opportunities for tax evasion. Merkx and Calzado (2025) reports that continuous use of e-invoicing systems enhances real-time monitoring of VAT obligations. Merkx and Calzado (2025) also observes that technology-driven transaction reporting improves compliance by enabling third-party verification. Additionally, Kalongola (2023) find that firms actively using electronic fiscal systems demonstrate higher compliance rates due to automated tax calculations and reduced manual manipulation.

Regional empirical evidence from Africa supports the linkage between technology usage and tax compliance behaviour. Many African tax administrations have implemented electronic fiscal devices and digital reporting tools to improve compliance monitoring. Abu-Silake et al. (2024) notes that effective utilization of digital tax systems improves domestic revenue mobilization. Studies within African MSMEs reveal that consistent system use enhances invoice documentation and tax reporting accuracy. Aleisa (2024) similarly reports that increased engagement with electronic tax platforms strengthens compliance enforcement and taxpayer accountability. However, system underutilization remains a challenge where user capacity and operational support are limited.

Within East Africa, empirical work demonstrates that usage intensity influences the success of digital VAT systems. Research on electronic fiscal devices shows that frequent use improves invoice authentication and tax declaration accuracy. Kebede et al. (2025) found that MSMEs that consistently used electronic tax systems recorded higher VAT reporting compliance. Evidence from Rwanda also indicates that active engagement with electronic invoicing platforms enhances audit effectiveness and transaction monitoring (Ashuro et al., 2025). Nonetheless, usage disparities persist across sectors due to differences in technological capability and operational scale.

Kenyan studies have similarly explored the role of technology usage in shaping tax compliance outcomes. Findings show that businesses actively using electronic tax systems exhibit stronger reporting and filing practices. Wachira (2022) established that MSMEs integrating electronic tax registers into daily operations demonstrated improved compliance levels. Abdi et al. (2024) further found that system usage frequency influenced taxpayers' willingness to comply with electronic reporting requirements. Despite these reforms, operational challenges such as system complexity and user resistance continue to affect usage levels among MSMEs.

Although existing literature provides valuable insights, important research gaps remain. Many empirical studies focus on system adoption and compliance behaviour rather than VAT compliance intention as a behavioural construct. Foundational models such as Lun et al. (2024) and Pratama (2024) emphasize usage within technology acceptance frameworks without linking it

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directly to tax compliance intention. Regional and Kenyan studies, including Apollo (2022) and Abdi et al. (2024), concentrate on compliance outcomes rather than behavioural motivation. Moreover, localized evidence examining system usage among MSMEs in towns such as Nyeri is limited. This study therefore seeks to address these conceptual and contextual gaps by examining how technology usage influences VAT compliance intention among MSMEs in Nyeri Town.

2.2.3 Quality of Technology and VAT Compliance Intention

Quality of technology has been empirically examined as a fundamental determinant of information system success and user behavioural outcomes, including compliance-related intentions. Technology quality refers to the performance characteristics of a system such as reliability, accuracy, speed, and security. High-quality systems enhance user satisfaction and trust, thereby encouraging continued usage and compliance engagement. Çelik and Ayaz (2022) identify system quality as a core dimension influencing user acceptance and system effectiveness. Empirical studies show that reliable and efficient digital platforms improve organizational process outcomes. Çelik and Ayaz (2022) further note that system performance expectancy significantly shapes behavioural intention toward technology usage. Within taxation contexts, technology quality influences how taxpayers perceive and interact with electronic invoicing systems.

At the global level, research on electronic invoicing reforms indicates that system reliability and accuracy are critical in strengthening VAT compliance processes. High-quality e-invoicing platforms minimize invoice errors and ensure accurate tax computation, thereby enhancing compliance confidence. Awan (2023) reports that automated and high-integrity invoicing systems improve transaction verification and VAT reporting accuracy. Anggraini and Pranggono (2022) also observes that digital tax systems with strong performance capabilities enhance compliance monitoring through reliable data capture. Additionally, Azim and Sano (2025) find that system dependability reduces administrative burdens and improves taxpayer reporting discipline.

Regional evidence from Africa reinforces the importance of technology quality in shaping digital tax compliance outcomes. In many African economies, technological infrastructure challenges affect system reliability and usability. Siregar and Tarigan (2026) note that system performance limitations undermine digital tax reform effectiveness. Mandasari (2024) similarly reports that poor system quality, including downtime and processing delays, discourages taxpayer engagement with electronic platforms. Empirical studies show that MSMEs are more likely to comply when electronic tax systems are stable and user-friendly. Misra et al. (2022) finds that system reliability and data security significantly influence compliance behaviour among small businesses.

Within the East African region, empirical findings demonstrate that system quality affects both adoption and compliance outcomes of electronic tax systems. Studies on electronic fiscal devices reveal that reliable systems improve invoice authentication and transaction reporting. Nyathi and Kekwaletswe, (2023) established that accurate and efficient electronic tax systems enhanced VAT reporting precision among MSMEs. Research conducted in Rwanda further indicates that system performance quality improves audit effectiveness and compliance monitoring (Hakorimana & Twesige, 2024). However, system inefficiencies and technical failures continue to affect user confidence in some sectors.

In Kenya, digital tax administration reforms have highlighted the role of technology quality in influencing taxpayer compliance behaviour. Electronic tax systems such as electronic tax registers and e-invoicing platforms are designed to enhance invoice verification and VAT reporting efficiency. Koech and Muna (2025) found that system reliability positively influenced MSMEs' compliance with electronic tax reporting. Al Ghunaimi et al. (2025) also notes that system functionality and processing efficiency are critical for taxpayer acceptance of digital tax platforms. Nevertheless, MSMEs continue to report operational challenges linked to system errors and integration limitations.

Despite growing empirical evidence, research gaps remain evident. Much of the literature examines system quality within broader information systems success models rather than VAT-specific compliance intention. Foundational works such as Sandoval-Almazan et al. (2026) emphasize user acceptance outcomes without isolating behavioural tax compliance dimensions. Regional and Kenyan studies, including Oni et al. (2025) and Soliman (2024), focus on compliance behaviour rather than compliance intention. Furthermore, localized studies examining how technology quality shapes VAT compliance intention among MSMEs in towns such as Nyeri are scarce. This study therefore seeks to bridge these conceptual and contextual gaps by examining the influence of technology quality on VAT compliance intention.

3.0 Methodology

The study adopted an explanatory research design to determine the direct effects of electronic tax invoicing attributes on VAT compliance intention. The target population comprised 521 VAT-registered MSMEs in Nyeri Town, distributed across large traders and retail stores, service-repair workshops, small industrial plants and medium financial services. Using Yamane's formula, the study obtained a sample of 226 firms. Proportionate stratified random sampling ensured representation across the four business categories, while respondents were business owners or staff responsible for electronic invoicing and VAT matters.

The study collected primary data using structured questionnaires administered to the selected MSMEs within Nyeri Town. The questionnaires were distributed physically through a drop-and-pick-later method to allow respondents adequate time to complete them. Prior to data collection, the researcher obtained an introduction letter from the Kenya School of Revenue Administration and sought authorization from relevant regulatory authorities where necessary. The researcher also made prior visits to the sampled businesses to explain the purpose of the study and secure consent for participation. According to Saunders et al. (2019), clear communication and prior engagement with respondents improve response rates and data accuracy. Cooper and Schindler (2021) further emphasize that structured administration procedures enhance reliability of collected data.

Data were coded and analyzed using descriptive statistics, Pearson correlation and multiple regression. Normality, linearity, multicollinearity and homoscedasticity tests were conducted before estimating the direct model. The regression model was specified as $Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \varepsilon$, where Y represented VAT compliance intention, X1 technology readiness, X2 technology usage, and X3 quality of technology. Statistical significance was assessed at the 5% level. Ethical safeguards included informed consent, voluntary participation, confidentiality and use of data solely for academic purposes.

4.0 Results and Discussion

Of the 226 questionnaires distributed, 171 were returned and usable, giving a response rate of 75.7%. Diagnostic tests supported the use of multiple regression: the study variables were normally distributed, linearity was established, VIF values remained below 10, and the heteroscedasticity test did not reject constant variance. The direct regression model tested the influence of technology readiness, technology usage and quality of technology on VAT compliance intention among MSMEs in Nyeri Town.

The results in Table 4.16 show that the regression model examining the effect of technology readiness, technology usage, and quality of technology on VAT compliance intention has a strong explanatory power. The model produced a correlation coefficient (R) of 0.872, indicating a strong positive relationship between the independent variables and VAT compliance intention. The coefficient of determination (R^2) is 0.760, implying that approximately 76.0% of the variation in VAT compliance intention among MSMEs in Nyeri Town can be explained by the combined influence of technology readiness, technology usage, and quality of technology. The adjusted R^2 value of 0.755 further confirms that the explanatory power of the model remains strong even after adjusting for the number of predictors in the model. The relatively low standard error of estimate (0.2131) suggests that the predicted values of VAT compliance intention are closely aligned with the observed values, indicating that the regression model provides a good fit for the data.

Table 1: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.872a	.760	.755	.2131

a. Predictors: (Constant), Quality of Technology, Technology Readiness, Technology Usage

The ANOVA results presented in Table 4.17 indicate that the regression model is statistically significant. The model produced an F-statistic of 175.864 with a significance level of $p = 0.000$, which is well below the conventional threshold of 0.05. This means that the independent variables jointly have a statistically significant effect on VAT compliance intention. In other words, technology readiness, technology usage, and quality of technology collectively explain a significant proportion of the variation in VAT compliance intention among MSMEs in Nyeri Town. The significance of the F-test confirms that the regression model is appropriate for examining the relationship between electronic tax invoicing attributes and VAT compliance intention.

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Table 2: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	23.959	3	7.986	175.864	.000b
Residual	7.584	167	.045		
Total	31.542	170			

a. Dependent Variable: VAT Compliance Intention

b. Predictors: (Constant), Quality of Technology, Technology Readiness, Technology Usage

Source: Research Data (2026)

The regression coefficients presented in Table 4.18 indicate that all the independent variables have a positive and statistically significant influence on VAT compliance intention. Technology readiness has a coefficient of $\beta = 0.295$ ($p = 0.000$), indicating a unit change in technology readiness causes a .295 increase in VAT Compliance intention. This indicates that improvements in ICT infrastructure and digital preparedness significantly increase VAT compliance intention among MSMEs. Technology usage also has a positive and significant effect ($\beta = 0.306$, $p = 0.000$). This means that a unit increase in Usage of Technology results to .306 increase in VAT Compliance Intention by MSMEs, suggesting that businesses that frequently use electronic invoicing systems are more likely to demonstrate stronger compliance intentions. Similarly, quality of technology has the strongest positive influence among the predictors ($\beta = 0.421$, $p = 0.000$), indicating that reliable, accurate, and efficient electronic invoicing systems significantly enhance businesses' willingness to comply with VAT regulations. A unit increase in the quality of technology results to .421 unit increase in VAT Compliance Intention. These findings imply that strengthening technological preparedness, encouraging consistent system usage, and ensuring high-quality digital tax systems are critical in enhancing VAT compliance intention among MSMEs.

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Table 3: Regression Coefficients

Model	B	Std. Error	Beta	t	Sig.
(Constant)	.018	.291		.060	.952
Technology Readiness	.295	.055	.412	5.381	.000
Technology Usage	.306	.082	.306	3.724	.000
Quality of Technology	.421	.094	.235	4.462	.000

a. Dependent Variable: VAT Compliance Intention

Source: Research Data (2026)

Direct model: Y = 0.018 + 0.295X1 + 0.306X2 + 0.421X3

5.0 Conclusion

The study concludes that electronic tax invoicing attributes have a strong and statistically significant direct effect on VAT compliance intention among MSMEs in Nyeri Town. Together, technology readiness, technology usage and quality of technology explain 76.0% of the variance in compliance intention. The result demonstrates that digital tax administration is most effective where firms possess compatible infrastructure, integrate the platform into routine transactions, and experience a reliable and accurate system.

Technology readiness positively influences VAT compliance intention because adequate ICT infrastructure, compatible accounting systems and organizational preparedness make electronic invoicing technically manageable. Technology usage also has a positive effect: consistent generation, transmission and storage of electronic invoices improves familiarity, record accuracy and reporting discipline. Quality of technology is the strongest predictor, confirming that system reliability, processing efficiency, data accuracy, security and ease of use are central to MSMEs' willingness to comply.

6.0 Recommendations

The Kenya Revenue Authority and other public agencies should strengthen the reliability, accessibility and integration of electronic invoicing infrastructure. System downtime, validation failures and connectivity constraints should be addressed through resilient platforms, timely maintenance and responsive technical support, particularly for MSMEs in secondary towns.

Tax authorities should intensify practical sensitization on electronic VAT invoicing, provide clear user guidance and maintain accessible help channels. Outreach should demonstrate invoice generation, correction, transmission, record retrieval and VAT return preparation so that electronic invoicing becomes a routine business process rather than an episodic compliance exercise.

MSMEs should invest in compatible accounting applications, stable connectivity, secure data storage and routine digital record keeping. Firms should consistently use the electronic invoicing system for all eligible transactions and establish basic internal controls to reconcile electronic invoices with sales and VAT records.

7.0 Suggestions for Further Research

Future research should test the model in other counties and business sectors to determine whether the effects observed among MSMEs in Nyeri Town are consistent across different infrastructure, industry and administrative contexts. Comparative studies could also examine firm size, sector and digital capability as possible moderators of the relationships between technology readiness, technology usage, technology quality and VAT compliance intention.

Longitudinal research should follow MSMEs over time to establish whether compliance intention translates into actual VAT filing and remittance behaviour after continued use of electronic invoicing. Future studies may strengthen measurement by combining survey responses with administrative filing, payment and invoice data, and by evaluating how system upgrades, taxpayer support and changes in enforcement affect compliance outcomes.

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