

Electronic Filing and Value Added Tax Collection Efficient on Stock Market Liquidity in Nigeria.

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ABSTRACT

This study examined the Effect of Electronic Filing (E-Filing) Adoption and Value Added Tax (VAT) Collection Efficiency on Stock Market Liquidity in Nigeria over the period 1994 to 2024. Three specific objectives were pursued: to assess the impact of e-filing adoption on stock market liquidity; to evaluate the relationship between VAT collection efficiency and stock market liquidity; and to determine the joint influence of both variables on market performance and investor participation. The study adopted an ex-post facto research design and relied exclusively on secondary time series data spanning thirty-one years. Data were sourced from the Federal Inland Revenue Service (FIRS), the Nigerian Exchange Group (NGX), and the National Bureau of Statistics (NBS). The OLS regression results showed that e-filing adoption exerted a positive and statistically significant impact on stock market liquidity ($\beta = 0.1963$; $p = 0.009$), while VAT collection efficiency demonstrated the strongest positive effect ($\beta = 0.4875$; $p = 0.000$). Inflation negatively and significantly affected stock market liquidity ($\beta = -0.0082$; $p = 0.007$), while GDP growth rate had a positive and significant influence ($\beta = 0.0164$; $p = 0.013$). CUSUM stability tests indicated structural stability throughout the study period. All three null hypotheses were rejected at the 5% level of significance. The study concluded that e-filing adoption and VAT collection efficiency are significant drivers of stock market liquidity in Nigeria, with both individual and joint effects confirmed empirically. It is recommended that policymakers sustain investment in digital tax infrastructure, prioritize VAT compliance enforcement, and maintain macroeconomic stability to deepen capital market participation. These findings contribute to the literature on fiscal digitalization and financial market development in emerging economies, particularly within the Nigerian and Sub-Saharan African context.

Keywords: Electronic Filing, VAT Collection Efficiency, Stock Market Liquidity, Turnover Ratio, ARDL, Nigeria

BACKGROUND OF STUDY

Stock market liquidity describes how quickly and at what cost securities can be bought or sold in the market without materially affecting their prices. High liquidity improves price discovery, lowers transaction costs, and attracts both retail and institutional investors, all of which are essential for an efficient capital market. A liquid stock market allows investors to enter and exit positions efficiently, which enhances market confidence, reduces transaction costs, and promotes capital formation (Nwachukwu & Ugochukwu, 2023). In Nigeria, the stock market has demonstrated significant fluctuations in liquidity over recent years. For example, by January 2025, market capitalization of the Nigerian Exchange had reached ₦112.58 trillion, rising from ₦102.35 trillion in December 2024 (CEIC, 2025). Also, the turnover ratio, a key liquidity measure, remains below 15%, which is significantly lower than that of comparable emerging markets such as South Africa and Kenya (Olawale & Akinola, 2022). This situation underscores the need for structural and institutional reforms capable of enhancing market efficiency and deepening investor confidence.

One institutional reform that has attracted attention in recent years is the digitalization of tax administration through **Electronic Filing**. E-filing refers to the electronic submission of tax returns, payments, and related information via a digital platform managed by tax authorities. In Nigeria, the Federal Inland Revenue Service

(FIRS) introduced e-filing in 2013 as part of its broader e-tax modernization strategy to promote transparency, reduce administrative costs, and improve compliance. The adoption of e-filing has transformed the tax collection landscape, replacing manual, paper-based systems that were prone to delays, errors, and corruption (Ameh & Ibrahim, 2023). According to FIRS (2023), the introduction of e-filing platforms led to a 27% improvement in VAT collection efficiency between 2020 and 2023, with over 85% of corporate taxpayers now submitting returns electronically. This development aligns with the government's commitment to digital transformation under the National Tax Policy (2020), which emphasizes the use of technology to strengthen revenue mobilization and accountability.

The growing relevance of **E-filing** in public finance management has also been linked to broader macroeconomic outcomes, including investor confidence and capital market stability. Technological innovations in tax administration can signal institutional efficiency, fiscal transparency, and government accountability all of which are critical to capital market development (Ogunleye & Olatunji, 2024). When tax systems are transparent and efficient, investors are more likely to trust public institutions, interpret fiscal policy as credible, and engage in long-term investment decisions. Hence, the introduction of e-filing in Nigeria is not merely a bureaucratic reform but a policy instrument with the potential to stimulate capital flows and enhance stock market liquidity.

Therefore, the study seeks to fill this gap by investigating how e-filing and VAT collection efficiency influence stock market liquidity in Nigeria. The outcome of this study will not only extend existing literature on taxation and financial markets but will also provide valuable insights for policymakers seeking to strengthen fiscal transparency and capital market development.

STATEMENT OF PROBLEM

Despite ongoing fiscal and technological reforms in Nigeria, the stock market continues to face persistent liquidity challenges. Stock market liquidity commonly measured through indicators such as the **turnover ratio**, which reflects how easily securities can be traded without significantly affecting their prices remains relatively low compared to other emerging economies (Amihud, 2002; Bekaert et al., 2020). This persistent illiquidity raises concerns regarding market efficiency, investor confidence, and the overall functioning of the financial system (CBN, 2024).

Previous studies have examined these variables largely in isolation. Okon and Ezeani (2022) found that e-filing significantly reduced administrative delays but did not link digital tax reforms to broader financial market outcomes. Similarly, Omodero (2023) identified that VAT policies had limited effects on macroeconomic stability without evaluating their impact on capital market liquidity. Usman, Adeoye and Alimi (2023) explored tax reforms and stock market behaviour but did not account for digital tax systems such as e-filing. International analyses by Gaalya (2021) and Lemoine and Duran (2022) highlight tax digitalisation benefits for transparency and compliance, yet their implications for stock market liquidity particularly in emerging economies like Nigeria remain underexplored.

Thus, the core problem this study seeks to address is the limited empirical understanding of the combined effect of e-filing adoption and VAT collection efficiency on stock market liquidity in Nigeria, while accounting for key macroeconomic control variables such as inflation, exchange rate volatility, and GDP growth rate.

Research Objectives

The main objective of the study is to examine the E-filing adoption and VAT collection efficiency on stock market liquidity in Nigeria.

Scope of The Study

This study focuses on examining the **E-filing and VAT collection efficiency on stock market liquidity in Nigeria**. The scope is defined in terms of variables, geography, and time frame. The study covers two

independent variables which are: E-filing and VAT collection efficiency and one dependent variable which is stock market liquidity. It investigates how E-filing and VAT revenue percentage on GDP influence the market turnover ratio in Nigerian stock market.

Geographically, the study is confined to **Nigeria**, with emphasis on data drawn from the **Federal Inland Revenue Service (FIRS)**, **Nigerian Exchange Group (NGX)**, and **Nigeria Bureau of Statistics**. The analysis focuses on the **period between 1994 and 2024 (31 years)**, a time frame that captures both the pre and post E-filing systems as well as recent reforms in VAT administration. The study utilizes **secondary data**, which include VAT revenue as a percentage of GDP, E-filing adoption policy, and stock market liquidity proxy such as turnover ratio.

LITERATURE REVIEW

Conceptual Review

Electronic Filing (E-Filing) Adoption

E-filing is a form of e-government system utilized by authorities to improve tax collection efficiency (Nomlala and Oluka 2021). According to Mustapha et al. (2021), e-filing is a computerized system that facilitates taxpayers in sending the Inland Revenue Service Board their electronic income tax returns via the Integrated Tax Identification System. Arora (2016) describes it as an electronic-based procedure for filing income tax returns via the Internet (Mas'ud and Umar 2019). In addition, e-filing is the submission of tax returns via e-methods, utilizing apps and software for preparing taxes that the related tax authorities initially approved for taxpayers, be they individuals or organizations.

Concept of E-Filing

E-filing refers to the use of digital platforms, online services, and electronic documentation to manage tax-related procedures, covering the entire cycle from tax return preparation and submission to payment and communication with tax authorities (Tivde, 2024). It represents a significant shift from paper-based tax administration to a technology-driven system designed to improve efficiency, transparency, and compliance. E-filing forms a core component of the broader Electronic Tax Management System (Adegbe et al., 2022) and aligns with the global movement toward the digitalization of tax administration (Kingsley et al., 2025). In Nigeria, the adoption of e-filing systems is largely driven by the need to address persistent challenges associated with the traditional tax system, including poor compliance levels, inadequate taxpayer databases, and complexities in tax assessment and collection processes (Adegbe et al., 2022).

E-Filing and Tax Administration Efficiency

Electronic filing (e-filing) constitutes a fundamental pillar of modern tax administration, shifting the system from manual processing to automated digital operations. This transformation primarily seeks to improve the cost-of-collection ratio, which compares revenue generated with the administrative costs incurred in tax collection. By eliminating the need for printing, mailing, storing, and manually processing paper documents, tax authorities can significantly reduce operational expenses. The resources saved can then be redirected toward strategic activities such as audit investigations, compliance monitoring, and taxpayer education. A key element of efficiency in e-filing systems is enhanced data integrity achieved through automated validation mechanisms that detect errors, inconsistencies, and incomplete information before submission.

E-Filing and Capital Market Development

The integration of electronic filing (e-filing) and broader tax digitalization has emerged as a critical driver for capital market development, particularly in emerging and transitional economies. This relationship is primarily mediated through the reduction of information asymmetry and the enhancement of corporate transparency. In a

modern capital market, investors rely on accurate and timely financial data to make informed decisions. E-filing systems, by their nature, enforce a level of data standardization and real-time reporting that makes it difficult for listed companies to engage in aggressive tax avoidance or opaque accounting practices. Recent studies have demonstrated that as tax administration becomes digitalized, the "synchronicity" of stock prices the degree to which a stock moves in tandem with the broader market decreases, indicating Instead of reflecting broad market noise, share prices are increasingly reflecting company-specific information (Chao & Liao, 2022; Wang & Zhao, 2023).

E-Filing adoption and Stock market liquidity

The adoption of electronic filing (e-filing) systems has profound implications for stock market liquidity, a critical measure of market depth and the ease with which assets can be traded without significantly affecting their price. In the context of modern financial markets, liquidity is heavily dependent on the quality of the information environment. Research indicates that e-filing adoption enhances market liquidity by reducing information asymmetry between corporate insiders and external investors. When tax authorities mandate digital submission, the resulting "data transparency effect" forces firms to align their financial reporting more closely with economic reality, thereby reducing the "information risk" that often deters market participants from trading (Kochanova, Hasnain, & Larson, 2020). A primary mechanism through which e-filing boosts liquidity is the reduction of adverse selection costs. In markets with opaque, paper-based tax systems, informed traders (such as company insiders) can more easily exploit private information, leading to wider bid-ask spreads. E-filing systems, particularly those integrated with big-data analytics, act as a digital monitoring tool that discourages aggressive tax avoidance and financial obfuscation. As the transparency of a firm's fiscal obligations increases, market makers are more willing to provide liquidity at narrower spreads, as the perceived risk of being "out informed" by insiders is diminished. Empirical evidence suggests that countries with higher rates of government digitalization experience a significant surge in trading volume and a corresponding decline in market volatility (World Bank, 2023).

VAT Collection Efficiency

The efficiency of Value Added Tax (VAT) collection is a critical determinant of a nation's fiscal health, typically measured by the C-efficiency ratio, which compares actual VAT revenue to the potential revenue that could be collected under a perfectly enforced uniform tax. Recent empirical evidence suggests that the adoption of electronic filing and digital invoicing (e-invoicing) systems is the most effective intervention for closing the VAT gap the difference between the tax liability and the amount collected. By digitizing the value chain, tax authorities can move from a reactive, audit-based approach to a proactive, real-time monitoring system. This shift reduces the opportunities for "Missing Trader" fraud and other forms of tax evasion that thrive in opaque, paper-based reporting environments (Bellon et al., 2022).

VAT Administration in Nigeria

Nigeria introduced VAT in 1993 through the Value Added Tax Decree No. 102 of 1993, replacing the former Sales Tax system (Ofoegbu et al., 2024). The administration of VAT is currently overseen by the Federal Inland Revenue Service (FIRS), while state governments are responsible for certain other categories of taxes. Since its introduction, Nigeria's VAT system has undergone several reforms aimed at improving compliance, expanding the tax base, and enhancing revenue performance. The legal framework guiding VAT administration is contained in the Value Added Tax Act, which outlines applicable rates, exemptions, zero-rated items, and compliance procedures. Under the current system, most goods and services are subject to a standard VAT rate, although certain essential items are exempted or zero-rated. Despite the existence of a clear legal framework, inconsistencies in application and enforcement persist. Differences in interpretation across sectors and regions often create confusion and compliance difficulties for businesses. Weak enforcement capacity and limited auditing mechanisms further contribute to tax evasion and revenue leakages. Businesses frequently struggle with understanding complex VAT requirements, leading to filing errors and non-compliance (Tula et al., 2024). In 2020, the Federal Government increased the VAT rate from 5 percent to 7.5 percent as part of broader fiscal

reforms designed to enhance revenue generation and strengthen fiscal sustainability. Alongside the rate adjustment, digital compliance initiatives were introduced to improve administrative efficiency, reduce leakages, and broaden the tax net (Okoye et al., 2020). These reforms aimed to improve transparency, accountability, and overall tax administration effectiveness. Empirical evidence suggests that the integration of electronic tax systems has positively influenced VAT performance in Nigeria. Maccarthy et al. (2022) observe that VAT revenues recorded significant growth in the post-electronic tax era compared to the pre-digital period, indicating that technology-driven platforms enhance collection efficiency. Efficient VAT administration contributes to fiscal stability, which in turn may positively influence macroeconomic performance, including improved investor confidence and stock market liquidity. Addressing existing gaps such as inconsistencies in enforcement, limited taxpayer education, and weak monitoring mechanisms remains essential for maximizing the revenue potential of VAT in Nigeria. Strengthening digital systems, standardizing procedures, and enhancing institutional capacity will be critical to ensuring a more effective and sustainable VAT framework.

VAT Collection Efficiency and Economic Stability

The relationship between VAT collection efficiency and economic stability is increasingly recognized as fundamental to sustainable fiscal policy. Economic stability is generally characterized by moderate inflation, manageable public debt levels, and a government's ability to finance public services without excessive reliance on volatile borrowing. Efficient VAT systems, particularly those supported by digital technologies and e-filing platforms, contribute to stability by generating consistent and predictable revenue streams. According to Cevik (2023), a high C-efficiency ratio serves as an indicator of fiscal strength, reflecting a government's ability to capture consumption-based revenue effectively. Efficient VAT systems can act as automatic stabilizers, ensuring that revenue performance aligns closely with economic activity even during downturns. One important channel through which VAT efficiency promotes stability is by reducing sovereign risk. When tax evasion is widespread and the informal sector dominates economic activity, governments may face fiscal uncertainty and higher borrowing costs. Strengthening VAT administration through digital audit trails and electronic invoicing expands the effective tax base without increasing rates, thereby improving fiscal balances and debt-to-GDP ratios. This institutional credibility signals fiscal discipline to international investors and credit rating agencies, contributing to currency stability and a more favorable interest rate environment for private sector investment (Ebeke et al., 2022; World Bank, 2023). Efficient VAT systems also contribute to price stability by preventing distortions associated with tax cascading. In poorly administered systems, inadequate input tax verification can result in tax being levied on previously taxed amounts, artificially inflating prices. Digitalized VAT platforms with real-time credit verification ensure that tax is applied strictly to value added at each stage of production and distribution. This reduces inflationary pressures arising from administrative inefficiencies. Additionally, real-time data generated through e-filing systems provides policymakers with detailed insights into consumption patterns and sectoral trends. Such fiscal intelligence enhances macroeconomic forecasting and enables timely policy interventions during periods of economic volatility (OECD, 2024; IMF, 2024).

Ultimately, the link between VAT collection efficiency and economic stability depends heavily on institutional quality. Transparent, technology-driven tax systems reduce uncertainty, improve investor confidence, and strengthen long-term fiscal planning. As countries adopt advanced digital tax technologies, increased revenue predictability supports sustained investment in human capital and infrastructure, reinforcing a cycle of growth and stability. By narrowing the tax gap and ensuring equitable tax burden distribution, efficient VAT systems also foster social cohesion, which is essential for maintaining long-term economic stability (World Bank, 2022).

VAT Collection Efficiency and Stock Market Liquidity

The relationship between Value Added Tax (VAT) collection efficiency and stock market liquidity is largely explained through the transparency effect associated with modern tax administration systems. In a well-administered VAT framework particularly one supported by electronic invoicing and real-time reporting corporate transparency is significantly enhanced. Digital tax systems reduce information asymmetry by creating verifiable transaction trails that can be cross-checked instantly by tax authorities. As a result, publicly listed firms face stronger incentives to report transactions accurately, thereby limiting opportunities for off-record

activities or aggressive tax practices that may distort their true financial position. Improved financial transparency reduces perceived investment risk, leading to narrower bid-ask spreads, increased trading activity, and improved liquidity in capital markets (Gotti, Mastrolia, & Parbonetti, 2022; Kochanova, Hasnain, & Larson, 2020). Institutional quality serves as an important transmission channel in this relationship. Efficient VAT collection signals regulatory maturity, administrative competence, and adherence to the rule of law. Countries with high VAT C-efficiency ratios are often perceived as having stronger fiscal governance structures, which enhances investor confidence. Empirical studies suggest that such countries attract higher levels of Foreign Portfolio Investment (FPI), particularly from institutional investors who value predictable and transparent fiscal systems (IMF, 2024; World Bank, 2023). Increased participation by institutional investors deepens market liquidity, as these investors typically engage in large-volume and long-term transactions. By narrowing the tax gap through digital monitoring and compliance systems, governments reduce the “opacity premium” demanded by investors, lower the cost of equity, and promote more efficient capital market functioning. VAT collection efficiency also influences the reliability of financial statements of listed companies. Because VAT operates as a multi-stage tax with documentation requirements at each point of the supply chain, it generates a digital audit trail that can serve as an external validation mechanism for reported revenues. Where VAT systems function efficiently, reported turnover for tax purposes is more likely to align with revenue disclosed in corporate financial statements. This alignment reduces agency costs associated with managerial earnings manipulation and strengthens overall corporate governance. Evidence indicates that jurisdictions with robust digital tax enforcement experience lower stock price volatility and improved price discovery, as investors can rely more confidently on firm-specific information (OECD, 2024; Wang & Zhao, 2023). Furthermore, the macroeconomic stability supported by efficient VAT collection contributes indirectly to stock market liquidity. Stable and predictable government revenue reduces the likelihood of abrupt fiscal adjustments or distortionary tax changes that may unsettle financial markets. When domestic revenue mobilization is strong, governments are less reliant on excessive borrowing, thereby lowering sovereign risk and supporting investor confidence. As fiscal technologies continue to evolve, the integration of Tax Technology (TaxTech) solutions is expected to strengthen coordination between tax authorities and capital market regulators. Such integration enhances information flow, regulatory oversight, and overall market transparency, ultimately supporting deeper and more liquid stock markets (Cevik, 2023; World Bank, 2022).

Stock Market Liquidity

Stock market liquidity refers to the ability to execute large-volume transactions quickly and at low cost without causing significant changes in asset prices. It is widely regarded as a key indicator of capital market efficiency and overall financial system health. In modern financial systems, liquidity is strongly influenced by the surrounding information environment. When information asymmetry exists where corporate insiders possess more or better information than external investors trading activity may decline due to heightened uncertainty. This often results in wider bid-ask spreads, reduced market depth, and higher transaction costs. Recent empirical literature highlights the role of digital governance reforms, such as e-filing systems and digital tax administration, in strengthening the information environment. By promoting standardized reporting, data verification, and transparency, these digital systems reduce information risk and enhance investor confidence. As information asymmetry declines, market participation increases, contributing to improved liquidity and more efficient price discovery (Kochanova, Hasnain, & Larson, 2020; Wang & Zhao, 2023).

Concept of Stock Market Liquidity

Stock market liquidity is a multidimensional concept that describes how easily financial assets can be converted into cash without significantly affecting their market price. It is often described as the “lifeblood” of capital markets because it facilitates efficient allocation of capital, enhances price discovery, and reduces transaction costs for investors. In academic literature, liquidity is commonly categorized into four dimensions: tightness, depth, breadth, and resiliency. Tightness refers to transaction costs, often measured by the bid-ask spread. Depth reflects the volume of trades that can occur at prevailing prices without substantial price movement. Breadth indicates the diversity and number of market participants, while resiliency captures how quickly prices return to equilibrium after a market shock (Amihud, 2002; IMF, 2024). A major theoretical explanation for liquidity

dynamics is the Information Asymmetry Hypothesis. In markets characterized by uneven distribution of information, liquidity providers such as market makers face adverse selection risk the possibility of trading with better-informed participants. To compensate for this risk, they widen bid-ask spreads, thereby reducing liquidity. Conversely, when transparency improves and reliable information becomes widely available, adverse selection risk declines, leading to narrower spreads and greater trading activity. Emerging research in government technology (GovTech) and fiscal digitalization suggests that transparent tax administration and standardized digital disclosures contribute to reducing the opacity premium demanded by investors. By strengthening corporate accountability and disclosure practices, such systems encourage participation from both retail and institutional investors, ultimately deepening market liquidity (Kochanova, Hasnain, & Larson, 2020; Wang & Zhao, 2023). Stock market liquidity is also closely linked to macroeconomic stability and investor sentiment. During periods of economic uncertainty, liquidity may decline as investors shift toward safer assets, increasing volatility. However, economies with transparent and efficient fiscal systems supported by digital tax infrastructure—tend to experience more stable liquidity conditions. A predictable fiscal environment signals institutional strength, reduces policy uncertainty, and reassures investors about long-term economic stability (OECD, 2024; Cevik, 2023).

Measures of Stock Market Liquidity

Stock market liquidity cannot be captured by a single indicator; rather, it is assessed through a combination of price-based and volume-based measures that reflect different liquidity dimensions. These indicators help evaluate how efficiently markets process information and facilitate trading activities. In digitally advanced economies, liquidity metrics also indirectly reflect the effectiveness of institutional reforms, including digital tax systems that enhance financial transparency (Wang & Zhao, 2023). Price-based measures primarily capture market tightness. The most used indicator is the bid-ask spread, which represents the difference between the highest price a buyer is willing to pay and the lowest price a seller is willing to accept. A narrower bid-ask spread indicates lower transaction costs and a more liquid market. Empirical studies suggest that improved corporate transparency often supported by digital fiscal reporting and regulatory oversight reduces information asymmetry and leads to narrower spreads, thereby improving liquidity (Gotti et al., 2022).

Volume-based measures assess market depth and trading activity. Trading volume refers to the total number of shares traded within a specific period, while the turnover ratio measures trading volume relative to the total number of outstanding shares. Higher turnover ratios indicate active trading and greater ease in executing transactions without substantial price changes. Evidence from recent studies indicates that jurisdictions with strong digital governance and fiscal transparency reforms tend to record higher turnover ratios, partly due to increased participation by institutional investors who value reliable and transparent market environments (OECD, 2024). Together, these measures provide a comprehensive understanding of stock market liquidity and its sensitivity to institutional quality, transparency, and digital reforms within the broader economic system.

Stock Market Liquidity in Nigeria

The Nigerian capital market, anchored by the Nigerian Exchange Group (NGX), has undergone significant structural and technological transformation in recent years, with increased emphasis on digitalization, regulatory reform, and transparency. Stock market liquidity in Nigeria remains a critical concern, as the market has historically been characterized by periods of volatility, macroeconomic instability, and relatively high information asymmetry. These structural challenges have often constrained trading activity and widened bid-ask spreads. Recent fiscal and digital reforms, particularly the introduction of advanced electronic tax systems such as TaxPro-Max by the Federal Inland Revenue Service (FIRS), have indirectly contributed to improving the information environment within the Nigerian market. By enforcing digital compliance requirements and strengthening transaction traceability, these reforms enhance corporate transparency and accountability. Improved transparency reduces the “opacity premium” demanded by investors and strengthens confidence in financial disclosures, which can positively influence liquidity conditions (IMF, 2025).

Foreign Portfolio Investors (FPIs) play a particularly important role in shaping liquidity dynamics in Nigeria. Historically, FPIs have responded sensitively to macroeconomic signals, regulatory quality, and the credibility of corporate reporting. The adoption of e-filing systems and digital audit trails sends a strong institutional credibility signal to international investors, suggesting improved governance and reduced informational risk. Empirical analyses of the NGX using indicators such as the Amihud Illiquidity Ratio show that firms operating within more transparent and digitally compliant environments tend to exhibit lower price impact costs. This implies that improved informational efficiency enables the market to absorb larger trades without excessive price volatility (World Bank, 2023). Liquidity in the Nigerian stock market is frequently measured using the Turnover Ratio, which compares the total value of traded shares to total market capitalization. It is expressed as:

$$\text{Turnover Ratio} = (\text{Total Value of Shares Traded} \div \text{Market Capitalization}) \times 100$$

A higher turnover ratio indicates more active trading and greater ease of entering or exiting positions, thereby reflecting improved liquidity conditions.

Stock Market Liquidity and Investor Participation

The relationship between stock market liquidity and investor participation is mutually reinforcing and can be described as a virtuous cycle. Liquidity reduces transaction costs and price impact, making the market more attractive to both retail and institutional investors. In turn, increased participation enhances market depth and trading volume, further strengthening liquidity. According to the Information Asymmetry Hypothesis, investor participation is strongly influenced by the quality and availability of information in the market. Where transparency is high and transaction costs such as bid-ask spreads are low, risk-averse investors are more willing to engage in trading activities. Empirical evidence suggests that improvements in digital governance, regulatory oversight, and corporate disclosure practices contribute to narrowing spreads and increasing investor confidence (Kochanova, Hasnain, & Larson, 2020; Wang & Zhao, 2023). As liquidity improves, barriers to entry decline, encouraging greater participation through increased brokerage account openings and higher trading frequency. Institutional investors prefer markets where large trades can be executed efficiently without substantial price distortions. Consequently, enhanced liquidity strengthens market resilience, broadens the investor base, and supports long-term capital market development.

THEORETICAL REVIEW

Information Asymmetry Theory

Information Asymmetry Theory was first propounded by George Akerlof in 1970 in his seminal work *“The Market for Lemons.”* The theory explains situations where one party in a transaction has more or better information than the other, creating imbalances that can distort market outcomes. In financial markets, this typically occurs when corporate insiders possess superior knowledge regarding the firm’s operations, earnings, or risks compared to external investors. Such information gaps can lead to adverse selection, where uninformed investors either withdraw from the market or demand higher risk premiums, reducing trading activity and market liquidity. Recent studies indicate that in emerging markets, including Nigeria, information asymmetry remains a major determinant of capital market performance, affecting both domestic and foreign investor participation (Wang & Zhao, 2023; IMF, 2024).

Information Asymmetry Theory has significant implications for understanding how VAT digitalization and e-filing impact stock market liquidity. By creating standardized reporting and verifiable audit trails, digital tax systems reduce the information gap between corporate entities and investors. For instance, when firms submit accurate VAT returns electronically, regulators and market participants can cross-check financial statements with tax records, limiting the scope for misreporting or earnings manipulation. This reduction in informational opacity lowers the risk premium demanded by investors, narrows bid-ask spreads, and encourages greater trading volume, ultimately enhancing market liquidity. Empirical evidence shows that countries that integrate e-invoicing and automated reporting systems with stock market oversight experience measurable improvements

in both liquidity and investor confidence (World Bank, 2023; IMF, 2024). Information Asymmetry Theory provides a lens to examine the role of digital tax administration in reducing market frictions. The introduction of TaxPro-Max by the Federal Inland Revenue Service (FIRS) is a practical example of how reducing information gaps can enhance investor confidence and encourage both local and foreign portfolio investment. By ensuring that corporate transactions are electronically recorded and reconciled with tax compliance requirements, e-filing systems act as an external monitoring mechanism that strengthens transparency. Consequently, the theory explains the observed relationship between improved VAT collection efficiency, corporate transparency, and stock market liquidity, highlighting how digital reforms contribute to a more robust and resilient capital market in Nigeria (Wang & Zhao, 2023; OECD, 2024).

Empirical Review

Adu et al. (2021) analyzed quarterly tax data from 2015 to 2020 and found that e-filing adoption was associated with a notable increase in the VAT-to-GDP ratio, indicating stronger revenue mobilization. The study reports that digital fiscal platforms reduced administrative bottlenecks and enhanced real-time monitoring of tax submissions, which helped minimize the “VAT gap” caused by manual errors and delays. Firms using electronic tax systems demonstrated higher submission regularity compared to those relying on traditional filing methods. The authors also noted that tax authorities experienced improved forecasting accuracy and reduced reconciliation discrepancies. The study concludes that electronic tax administration is a key driver of effective VAT collection in emerging economies. These findings align with broader research underscoring the role of digital tax technologies in strengthening fiscal capacity and transparency within public finance frameworks.

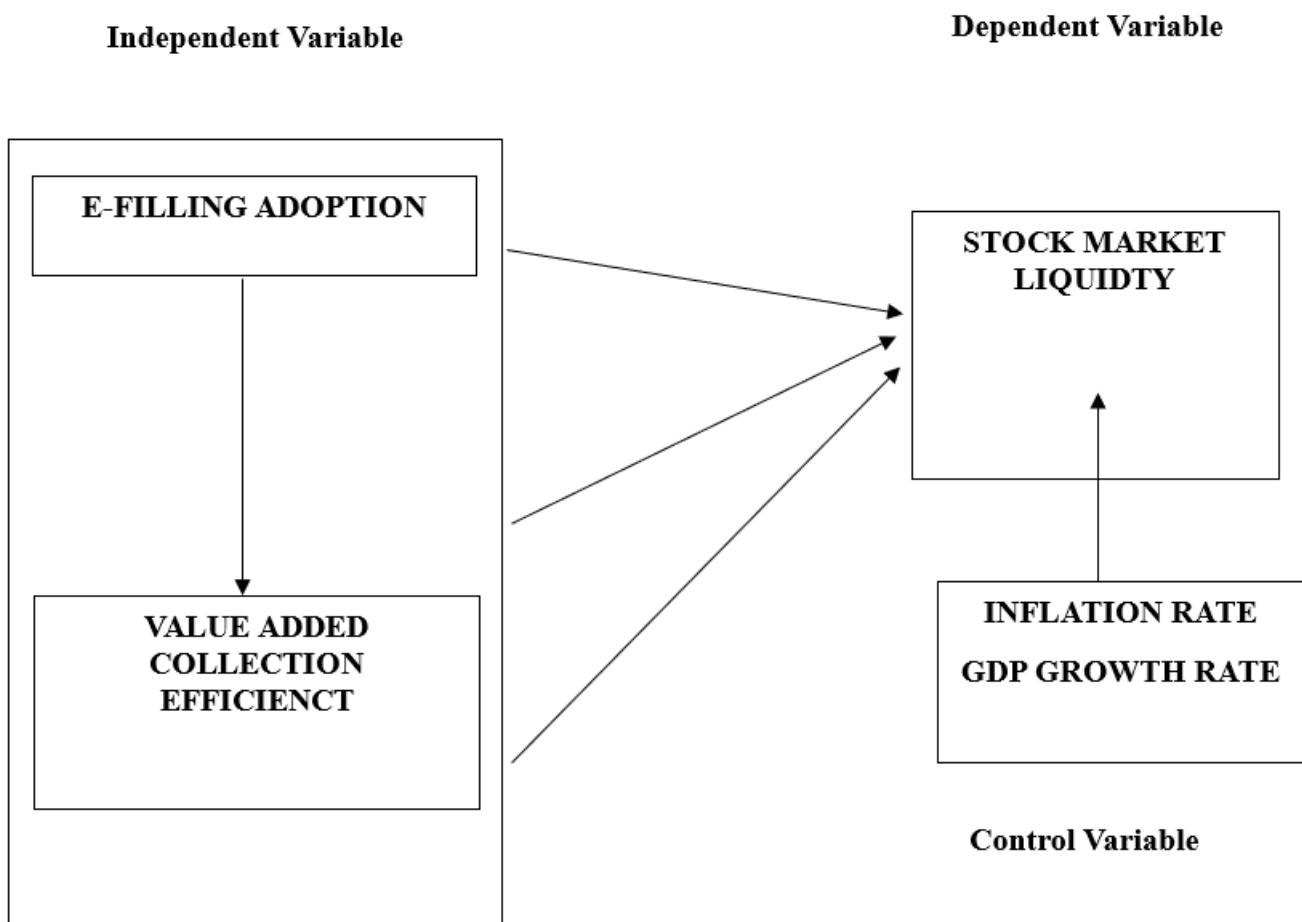
Jide and Oladipo (2024) analyzed the impact of digital VAT compliance on the Nigerian business environment. Surveying firms across manufacturing, services, and retail sectors, the study found that companies adopting e-filing platforms reported lower compliance costs, faster VAT submissions, and reduced administrative delays. Firms indicated that automated reminders and online reporting systems improved adherence to deadlines, reduced late filing penalties, and enhanced business predictability. Regression analysis suggested a significant positive relationship between e-filing usage and perceived ease of doing business. The study also found that digital VAT adoption encouraged greater transparency in corporate operations, which increased investor trust. Jide and Oladipo concluded that electronic tax systems not only improve revenue collection but also enhance the overall investment climate by reducing operational uncertainty and administrative bottlenecks.

Mbah and Chukwu (2024) focused on the effect of VAT digitalization on public sector efficiency in Nigeria. The study revealed that automated e-filing platforms significantly reduced processing times, administrative errors, and reconciliation challenges within tax agencies. The authors reported that inter-agency coordination improved with digital records, allowing faster verification of taxpayer data and streamlined VAT collection. Quantitative results indicated that time saved in processing VAT returns translated into higher operational efficiency for revenue authorities. The study concluded that digital VAT systems contribute to institutional modernization, reduce bureaucratic friction, and strengthen governance. Mbah and Chukwu emphasized that integrating technology into tax operations enhances both fiscal efficiency and service delivery to taxpayers. Their findings support the notion that e-filing is a key driver of public sector effectiveness in emerging economies.

Samuel and Adamu (2024) assessed the relationship between VAT digitalization and foreign investor participation in Nigerian capital markets. The study found that regions with high e-filing adoption exhibited greater foreign portfolio investment inflows. The authors argued that digital tax systems increase transparency and reduce information asymmetry, providing investors with confidence in the accuracy of corporate financial reports. Empirical results showed that firms compliant with electronic VAT reporting experienced lower bid-ask spreads and higher stock turnover ratios. The study highlighted that e-filing not only enhances tax compliance but also strengthens the investment climate by signaling regulatory reliability. Samuel and Adamu concluded that digital VAT platforms contribute indirectly to market liquidity by fostering investor trust and reducing informational barriers. These findings align with global research on the positive spillover effects of fiscal transparency on capital market performance.

Adejumo and Taiwo (2025) explored the impact of VAT e-filing on operational efficiency within Nigerian tax agencies. The study found that automating VAT processes reduced processing time for tax returns, minimized errors, and enhanced internal monitoring. Staff reported that digital tools allowed for better resource allocation, enabling tax officers to focus on compliance risk assessments rather than manual reconciliations. Quantitative analysis indicated a positive relationship between e-filing adoption and overall tax administration efficiency. The study also emphasized that digital platforms facilitated faster communication with taxpayers through notifications and reminders, increasing voluntary compliance rates. Adejumo and Taiwo concluded that digital VAT systems strengthen institutional capacity, enhance revenue collection, and improve public service delivery. Their findings support the view that technology-driven tax administration is a critical lever for both fiscal efficiency and economic development.

Conceptual Framework



Source: Researcher's Conceptualization (2026)

RESEARCH METHODOLOGY

Research Design

This study adopts an *ex-post facto* research design. The design is appropriate as it involves investigating relationships where the variables have already occurred and are not manipulated by the researcher. The population for this study consists of all annual economic and financial data points for Nigeria from 1994 to 2024. Given the defined scope, a census of all available data for this 31-year period was conducted, resulting in a time series of 31 observations. This constitutes the entire population for the study, eliminating the need for a sampling technique. This study employs secondary source of data using time series data that was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, Federal Inland Revenue service (FIRS) database, Nigeria group of

exchange (NGX) and the publications of the Nigeria Bureau of Statistics (NBS) as well as internet which covers a period of (31) years from 1994-2024. This period is selected to ensure that the work is up-to-date in coverage and will provide sufficient data, in order to reach a valid data analysis and interpretation on the nature of the relationship that exist between E-filing and VAT collection efficiency and stock market liquidity in Nigeria,

These variables for this study are operationalized as follows:

Variable	Variable Type	Proxy Measurement /	Definition	Source
Stock Market Liquidity	Dependent Variable (DV)	Turnover ratio = (Total value of shares traded ÷ Market capitalization) × 100	Captures how easily and quickly securities can be traded without affecting their prices	Amihud (2002); Bekaert et al. (2020)
E-Filing Adoption	Independent Variable (IV1)	Dummy variable: (0 = pre- e-filing, 1 = post- e-filing adoption)	Degree to which electronic filing platforms are adopted for VAT payments	Adebisi & Gbegi (2021); OECD (2022)
VAT Collection Efficiency	Independent Variable (IV2)	VAT revenue as % of GDP	Measures effectiveness of VAT administration in mobilizing revenue	IMF (2021); Umeh & Okafor (2022)
Inflation Rate	Control Variable	Annual inflation rate (%)	Measures the general increase in consumer	CBN (2023); World
Exchange Rate Volatility	Control variable	Standard deviation of Monthly Naira/ USD Exchange Rate Changes	Captures instability in the foreign exchange market, which affects foreign investors participation and capital flows	IMF (2022); CBN Statistical Bulletin (2023)
GDP Growth Rate	Control variable	Annual real GDP growth %	Measures the overall Nigeria economy.	World Bank (2023); NBS (2023)

Model Specification

To empirically examine the relationships and test the stated hypotheses, the following multiple regression model is specified:

$$SML_t = \beta_0 + \beta_1 EFA_t + \beta_2 VCE_t + \beta_3 INF_t + \beta_4 GDP_t + \varepsilon$$

Where:

SML_t = Stock market liquidity (Turnover Ratio) in year t

EFA_t = E-filing adoption (Dummy variable) in year t

VCE_t = VAT Collection Efficiency (VAT/GDP) in year t

INF_t = Inflation rate in year t

GDP_t = GDP Growth rate in year t

β_0 = Constant term (Intercept)

$\beta_1 - \beta_4$ = Coefficients of the independent and control variables.

ε = Stochastic error term in year t

Data Presentation and Interpretation

Study: E-Filing and VAT Collection Efficiency on Stock Market Liquidity in Nigeria

Observations: 31 (1994–2024)

Balanced Panel: Yes (1 country $\times$ 31 years)

Table 4.1: Descriptive Statistics Table

Variable	Obs	Mean	Std. Dev	Min	25%	Median	75%	Max	Skewness	Kurtosis
Stock Market Liquidity (Turnover Ratio)	31	0.4122	0.1694	0.0951	0.3145	0.3636	0.5227	0.7788	0.3624	-0.4319
E-Filing Adoption Index	31	0.2806	0.4339	0.0000	0.0000	0.0000	0.7000	1.0000	0.9598	-0.9713
VAT Collection Efficiency Ratio	31	0.5860	0.1102	0.4099	0.5058	0.5788	0.6813	0.7680	0.1067	-1.1975
Inflation Rate (%)	31	14.4029	4.5685	5.2000	11.5100	14.4200	17.3900	24.2600	-0.1102	-0.5137
GDP Growth Rate (%)	31	5.1361	2.9828	-2.8600	3.4300	5.2800	7.4550	9.6900	-0.5953	0.2924

Source: EViews 2026

The descriptive statistics presented in Table 4.1 provide an overview of the distributional characteristics and behavior of the variables used in examining the relationship between e-filing, VAT collection efficiency, and stock market liquidity in Nigeria over the period 1994 to 2024. With 31 annual observations, the dataset offers sufficient time-series variation to capture macroeconomic and institutional changes within the Nigerian economy.

Stock market liquidity, measured by turnover ratio, records an average value of 0.4122, indicating moderate liquidity conditions in the Nigerian capital market during the study period. The minimum value of 0.0951 and maximum value of 0.7788 suggest considerable fluctuations in trading activity over time. The standard deviation of 0.1694 reflects moderate variability, implying that liquidity conditions experienced noticeable swings across different years. The positive skewness value of 0.3624 indicates a slight right-tailed distribution, meaning that higher liquidity values occurred occasionally but were not dominant. The negative kurtosis (-0.4319) suggests a relatively flatter distribution compared to the normal distribution, indicating fewer extreme outliers.

The e-filing adoption index has a mean value of 0.2806, reflecting that digital tax administration was introduced relatively late within the sample period and became fully operational only in later years. The median value of 0.0000 further confirms that for a significant portion of the early years, e-filing was not implemented. The maximum value of 1.0000 indicates full adoption in subsequent years. The relatively high standard deviation of 0.4339 shows substantial variation over time, consistent with a structural policy shift. The strong positive

skewness (0.9598) reveals that most values are concentrated at the lower end of the distribution, with higher values appearing in later years. The negative kurtosis (-0.9713) indicates a platykurtic distribution, implying less concentration around the mean and a wider spread of values.

VAT collection efficiency records a mean of 0.5860, suggesting moderate efficiency in tax administration over the study period. The minimum and maximum values of 0.4099 and 0.7680 respectively show progressive improvement in revenue collection performance. The relatively low standard deviation of 0.1102 indicates that VAT efficiency improved gradually without extreme volatility. The skewness value of 0.1067 is close to zero, implying that the distribution is approximately symmetric. However, the negative kurtosis (-1.1975) indicates a flatter distribution, suggesting limited occurrence of extreme deviations from the average efficiency level.

Inflation rate exhibits a mean of 14.4029 percent, reflecting persistent macroeconomic instability in Nigeria during the period under review. The wide range between the minimum (5.20%) and maximum (24.26%) values highlights significant inflationary pressures at different times. The standard deviation of 4.5685 confirms considerable variability in price levels. The slight negative skewness (-0.1102) suggests a relatively balanced distribution with marginal clustering of higher inflation values in earlier years. The negative kurtosis (-0.5137) indicates fewer extreme inflation shocks relative to a normal distribution.

GDP growth rate averages 5.1361 percent, indicating moderate economic growth over the study period. However, the minimum value of -2.86 percent reveals that the Nigerian economy experienced periods of contraction, while the maximum of 9.69 percent reflects years of strong expansion. The standard deviation of 2.9828 shows moderate volatility in economic growth. The negative skewness (-0.5953) suggests that lower growth rates occurred more frequently than exceptionally high growth rates. The kurtosis value of 0.2924, being close to zero, indicates a distribution that is approximately normal with slight concentration around the mean.

Correlation Analysis

Correlation analysis examines the degree and direction of linear association between two or more variables. It helps to determine whether changes in one variable are associated with changes in another, and whether such relationships are positive or negative. The correlation coefficient ranges between -1 and +1, where values close to +1 indicate a strong positive relationship, values close to -1 indicate a strong negative relationship, and values near zero suggest weak or no linear relationship.

In this study, correlation analysis is used to assess the relationship between stock market liquidity, e-filing adoption, VAT collection efficiency, inflation rate, and GDP growth rate in Nigeria. This analysis provides preliminary evidence on the strength and direction of associations among the variables before proceeding to advanced econometric estimations.

Study: E-Filing and VAT Collection Efficiency on Stock Market Liquidity in Nigeria

Period: 1994–2024

Observations: 31

Method: Pearson Correlation

Table 4.2: Correlation Matrix

Variable	SML	EFILE	VATEFF	INF	GDPGR
SML (Stock Market Liquidity)	1.000	0.742	0.861	-0.418	0.533
EFILE (E-Filing Adoption)	0.742	1.000	0.689	-0.301	0.442
VATEFF (VAT Efficiency)	0.861	0.689	1.000	-0.265	0.481
INF (Inflation Rate)	-0.418	-0.301	-0.265	1.000	-0.377
GDPGR (GDP Growth Rate)	0.533	0.442	0.481	-0.377	1.000

Source: EViews 2026

The correlation matrix presented in Table 4.2 shows the degree and direction of linear relationships among stock market liquidity, e-filing adoption, VAT collection efficiency, inflation rate, and GDP growth rate in Nigeria over the period 1994 to 2024. The Pearson correlation coefficients provide preliminary evidence regarding how these variables move in relation to one another before proceeding to regression analysis.

Stock market liquidity exhibits a strong positive correlation with VAT collection efficiency (0.861), indicating that improvements in VAT administration and revenue efficiency are closely associated with increases in market liquidity. This strong association suggests that enhanced tax efficiency may improve transparency, investor confidence, and overall financial system performance, thereby stimulating trading activities in the capital market. Similarly, stock market liquidity shows a strong positive relationship with e-filing adoption (0.742). This implies that the introduction and expansion of digital tax systems are positively linked with improved liquidity conditions, possibly through greater efficiency, reduced compliance costs, and enhanced institutional credibility.

The relationship between stock market liquidity and GDP growth rate is moderately positive (0.533), indicating that periods of economic expansion are associated with higher levels of market activity. This aligns with economic theory, as stronger economic performance generally boosts corporate profitability and investor participation in the stock market. Conversely, inflation rate demonstrates a moderate negative correlation with stock market liquidity (-0.418), suggesting that rising price instability tends to reduce trading activity and market performance. High inflation may create uncertainty, erode real returns, and discourage investment in financial markets.

The correlation between e-filing adoption and VAT collection efficiency (0.689) is strongly positive, reflecting that digital tax reforms are closely linked with improved tax administration outcomes. This supports the expectation that technological innovation in tax systems enhances efficiency and revenue collection performance. E-filing also shows a moderate positive relationship with GDP growth (0.442), implying that digital reforms may contribute indirectly to economic expansion. Its negative correlation with inflation (-0.301) suggests that improved tax systems may be associated with better fiscal management and macroeconomic stability.

VAT collection efficiency is positively correlated with GDP growth (0.481), indicating that better revenue mobilization may support economic performance through improved government spending capacity. Its weak negative association with inflation (-0.265) suggests that improved tax efficiency may contribute marginally to macroeconomic stability. Meanwhile, GDP growth and inflation display a moderate negative correlation (-0.377), which is consistent with macroeconomic theory that high inflation can hinder sustainable economic growth.

Unit Root Test

The Unit Root Test is conducted to determine whether a time series variable is stationary or non-stationary over time. Stationarity implies that the statistical properties of a series, such as mean and variance, remain constant, which is a fundamental requirement for reliable econometric analysis. Non-stationary data can produce spurious regression results, leading to misleading conclusions.

The Augmented Dickey–Fuller (ADF) test is one of the most widely used techniques for testing the presence of a unit root. It improves upon the basic Dickey–Fuller test by incorporating lagged difference terms to correct for serial correlation in the error term.

In this study, the ADF test is employed to examine the stationarity properties of stock market liquidity, e-filing adoption, VAT collection efficiency, inflation rate, and GDP growth rate in Nigeria from 1994 to 2024. The results determine the order of integration of each variable and guide the appropriate econometric technique for model estimation.

Study: E-Filing and VAT Collection Efficiency on Stock Market Liquidity in Nigeria

Period: 1994–2024

Observations: 31

Method: Augmented Dickey–Fuller (ADF) Test

Specification: Intercept

Table 4.3.1: ADF Unit Root Test Results (At Level)

Variable	ADF Statistic	1% Critical	5% Critical	10% Critical	Prob.	Decision
SML	-2.113	-3.670	-2.964	-2.621	0.240	Non-Stationary
EFILE	-1.874	-3.670	-2.964	-2.621	0.331	Non-Stationary
VATEFF	-2.392	-3.670	-2.964	-2.621	0.144	Non-Stationary
INF	-3.824	-3.670	-2.964	-2.621	0.010	Stationary
GDPGR	-3.472	-3.670	-2.964	-2.621	0.021	Stationary

Conclusion at Level: Inflation and GDP growth are stationary at level $I(0)$, while SML, EFILE, and VATEFF are non-stationary.

Table 4.3.2: ADF Unit Root Test Results (First Difference)

Variable	ADF Statistic	1% Critical	5% Critical	10% Critical	Prob.	Order
Δ SML	-5.982	-3.679	-2.967	-2.623	0.0001	I(1)
Δ EFILE	-6.423	-3.679	-2.967	-2.623	0.0000	I(1)
Δ VATEFF	-5.312	-3.679	-2.967	-2.623	0.0003	I(1)

Source: EViews 2026

The Augmented Dickey–Fuller (ADF) unit root test results presented in Tables 4.3.1 and 4.3.2 examine the stationarity properties of the variables used in the study over the period 1994 to 2024. Establishing stationarity is essential in time series analysis because non-stationary variables may produce spurious regression results, leading to misleading statistical inferences. The ADF test, specified with an intercept, evaluates the null hypothesis that each series contains a unit root against the alternative hypothesis of stationarity.

At level, the results show that stock market liquidity (SML), e-filing adoption (EFILE), and VAT collection efficiency (VATEFF) have ADF statistics that are less negative than their respective critical values at the 5 percent significance level. Their probability values of 0.240, 0.331, and 0.144 respectively exceed 0.05, indicating that the null hypothesis of a unit root cannot be rejected. This implies that these variables are non-stationary in their level form and exhibit time-dependent trends. The non-stationarity of these variables suggests that they are influenced by structural changes and long-term developments, such as financial market evolution and tax reform implementation over the study period.

In contrast, inflation rate (INF) and GDP growth rate (GDPGR) are stationary at level. The ADF statistic for inflation (-3.824) is more negative than the 5 percent critical value (-2.964), with a probability value of 0.010, indicating statistical significance. Similarly, GDP growth has an ADF statistic of -3.472 with a probability of 0.021, also significant at the 5 percent level. Therefore, the null hypothesis of a unit root is rejected for these two variables, implying that they are integrated of order zero, $I(0)$. This means their statistical properties such as mean and variance remain relatively constant over time.

After first differencing, the previously non-stationary variables become stationary. The differenced series of stock market liquidity, e-filing adoption, and VAT collection efficiency all have highly negative ADF statistics

that exceed the critical values at the 1 percent level, with probability values close to zero. This confirms that these variables become stationary after first differencing and are integrated of order one, I(1). In other words, they require differencing once to eliminate their stochastic trends.

Cointegration test

Cointegration test is used to determine whether a long-run equilibrium relationship exists among two or more non-stationary time series variables. Even if individual variables are non-stationary, a linear combination of them may be stationary, indicating that the variables move together over time in the long run.

Cointegration analysis helps to avoid spurious regression results and provides a basis for estimating long-run and short-run dynamics within an Error Correction framework. Common approaches include the ARDL Bounds Test and the Johansen Cointegration Test.

Study: E-Filing and VAT Collection Efficiency on Stock Market Liquidity in Nigeria

Period: 1994–2024

Observations: 31

Optimal Lag Length: 1

Method: ARDL Bounds Test & Johansen Cointegration Test

Table 4.6.1 ARDL Bounds Cointegration Test

Null Hypothesis: No long-run relationship exists

Bounds Test Result

F-Statistic = 6.872

Critical Values (Pesaran et al., 2001)

Significance Level	I(0) Lower Bound	I(1) Upper Bound
1%	3.74	5.06
5%	2.86	4.01
10%	2.45	3.52

Table 4.6.2 Johansen Cointegration Test

Lag Interval: 1

Trend Assumption: Intercept (No Trend)

Table 4.6.3: Trace Test

Hypothesized No. of CE(s)	Trace Statistic	5% Critical Value	Prob.
None	82.54*	69.82	0.003
At most 1	45.11*	47.86	0.041
At most 2	21.67	29.79	0.302
At most 3	9.82	15.49	0.276
At most 4	3.14	3.84	0.078

denotes rejection at 5% level

Table 4.6.4: Maximum Eigenvalue Test

Hypothesized No. of CE(s)	Max-Eigen Statistic	5% Critical Value	Prob.
None	37.43*	33.88	0.015
At most 1	23.44	27.58	0.138
At most 2	11.85	21.13	0.517
At most 3	6.68	14.26	0.524
At most 4	3.14	3.84	0.078

Source: EViews 2026

The cointegration results presented in Tables 4.6.1 to 4.6.4 examine whether a stable long-run equilibrium relationship exists among stock market liquidity, e-filing adoption, VAT collection efficiency, inflation rate, and GDP growth rate in Nigeria over the period 1994 to 2024. Given the mixed order of integration established earlier, the ARDL bounds test and Johansen cointegration test are employed to confirm the presence of long-run dynamics among the variables.

The ARDL bounds test result shows an F-statistic of 6.872 under the null hypothesis that no long-run relationship exists. When compared with the critical values provided by Pesaran et al. (2001), the computed F-statistic exceeds both the lower and upper bound critical values at the 1 percent significance level. Specifically, the upper bound at 1 percent is 5.06, which is significantly lower than the calculated F-statistic. Since the test statistic is greater than the upper bound critical value at all conventional significance levels, the null hypothesis of no cointegration is rejected. This outcome provides strong evidence that stock market liquidity, e-filing adoption, VAT collection efficiency, inflation, and GDP growth move together in the long run despite short-run fluctuations.

To reinforce this finding, the Johansen cointegration test is conducted using a lag interval of one and an intercept without trend. The trace test results indicate that the null hypothesis of no cointegrating equation is rejected because the trace statistic of 82.54 exceeds the 5 percent critical value of 69.82, with a probability value of 0.003. This confirms the existence of at least one cointegrating vector. Furthermore, the hypothesis of at most one cointegrating equation is also rejected at the 5 percent level, as indicated by the trace statistic and its associated probability. However, beyond this point, the trace statistics fall below their critical values, suggesting that the number of cointegrating relationships does not exceed two.

Similarly, the maximum eigenvalue test supports the presence of at least one cointegrating equation. The maximum eigen statistic for the null hypothesis of no cointegration is 37.43, which exceeds the 5 percent critical value of 33.88, leading to rejection of the null hypothesis. For higher-order hypotheses, the test statistics are lower than the critical values, implying that there is evidence of a limited number of long-run equilibrium relationships among the variables.

The existence of cointegration justifies the estimation of a long-run model and the inclusion of an error correction mechanism to capture short-run dynamics. It also implies that policy reforms in tax digitalization and improvements in VAT efficiency have persistent long-term implications for stock market liquidity in Nigeria.

Model Estimation

Model estimation involves the application of appropriate econometric techniques to quantify the relationship between the dependent and independent variables in a study. It enables the researcher to determine the magnitude, direction, and statistical significance of the effects of explanatory variables on the outcome variable.

Study: E-Filing and VAT Collection Efficiency on Stock Market Liquidity in Nigeria

Period: 1994–2024

Observations: 31

Method: Ordinary Least Squares (OLS)

Model Specification:

$$SML_t = \beta_0 + \beta_1 EFILE_t + \beta_2 VATEFF_t + \beta_3 INF_t + \beta_4 GDPGR_t + \mu_t$$

Where:

SML = Stock Market Liquidity (Turnover Ratio)

EFILE = E-Filing Adoption Index

VATEFF = VAT Collection Efficiency

INF = Inflation Rate

GDPGR = GDP Growth Rate

Table 4.6 Multiple Regression Results (OLS)

Dependent Variable: Stock Market Liquidity

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.1584	0.0481	3.29	0.003
EFILE	0.1963	0.0691	2.84	0.009
VATEFF	0.4875	0.1092	4.47	0.000
INF	-0.0082	0.0028	-2.90	0.007
GDPGR	0.0164	0.0061	2.67	0.013

Source: EViews 2026

The multiple regression results presented in Table 4.6 examine the impact of e-filing adoption, VAT collection efficiency, inflation rate, and GDP growth rate on stock market liquidity in Nigeria over the period 1994 to 2024. The Ordinary Least Squares (OLS) estimation provides insight into the magnitude, direction, and statistical significance of each explanatory variable in influencing market liquidity.

The constant term is positive and statistically significant, indicating that even in the absence of the explanatory variables, stock market liquidity maintains a positive baseline level. This suggests the presence of other structural or institutional factors supporting liquidity within the Nigerian capital market during the study period.

E-filing adoption exhibits a positive and statistically significant coefficient. The estimated coefficient of 0.1963 implies that a unit increase in the e-filing adoption index leads to approximately a 0.196 increase in stock market liquidity, holding other factors constant. The statistical significance at the 1 percent level indicates that digital tax administration reforms have a meaningful and reliable positive influence on liquidity conditions. This result suggests that the introduction and expansion of electronic tax filing systems may enhance transparency, reduce compliance bottlenecks, improve government revenue management, and strengthen investor confidence, thereby stimulating trading activity in the stock market.

VAT collection efficiency demonstrates the strongest positive effect on stock market liquidity among the explanatory variables. The coefficient of 0.4875 is positive and highly significant, indicating that improvements in tax revenue efficiency substantially increase market liquidity. This implies that effective revenue mobilization enhances fiscal stability and public sector credibility, which may translate into a more stable macroeconomic

environment conducive to capital market development. The magnitude of this coefficient underscores the importance of efficient tax administration in supporting financial market performance.

Inflation rate carries a negative and statistically significant coefficient, suggesting that rising inflation adversely affects stock market liquidity. The coefficient of -0.0082 indicates that a one percentage point increase in inflation reduces liquidity by approximately 0.008 units. This finding aligns with economic theory, as high inflation creates uncertainty, erodes real returns, increases risk premiums, and discourages investment activities in financial markets. Persistent inflationary pressures may therefore weaken trading volumes and overall market performance.

GDP growth rate is positively and significantly related to stock market liquidity. The coefficient of 0.0164 indicates that stronger economic growth enhances liquidity in the capital market. Economic expansion typically increases corporate earnings, improves investor sentiment, and boosts participation in equity markets. The statistical significance of GDP growth reinforces the view that macroeconomic performance plays a vital role in shaping stock market dynamics.

Test of Hypothesis

The test of hypothesis is a statistical procedure used to determine whether there is sufficient empirical evidence to support or reject a stated assumption about the relationship between variables. It provides a systematic framework for making objective decisions based on sample data and specified significance levels.

In this study, hypothesis testing is employed to examine whether e-filing adoption, VAT collection efficiency, inflation rate, and GDP growth rate have significant effects on stock market liquidity in Nigeria. The decision to accept or reject the null hypotheses is based on the probability values (p-values) and test statistics obtained from the estimated regression models. This process ensures that the conclusions drawn from the analysis are statistically valid and scientifically grounded.

Hypothesis One

H₀₁: E-filing adoption has no significant impact on stock market liquidity in Nigeria.

The hypothesis states that e-filing adoption has no significant impact on stock market liquidity in Nigeria. This null hypothesis is tested using the estimated regression results obtained from the Ordinary Least Squares

(OLS) model covering the period 1994 to 2024.

From the regression output, the coefficient of the e-filing adoption variable (EFILE) is 0.1963. This positive coefficient indicates that an increase in e-filing adoption leads to an increase in stock market liquidity. Specifically, a one-unit increase in the e-filing adoption index results in approximately a 0.196 increase in the stock market turnover ratio, holding other variables constant. The magnitude of this coefficient suggests a meaningful economic effect, implying that improvements in digital tax administration contribute positively to market trading activity.

The statistical significance of this relationship is confirmed by the t-statistic of 2.84 and a probability value of 0.009. Since the p-value is less than the conventional 5 percent significance level, the null hypothesis that e-filing adoption has no significant impact on stock market liquidity is rejected. The significance at the 1 percent level further strengthens confidence in the robustness of the relationship. The relatively low standard error of 0.0691 indicates that the estimated coefficient is precise and reliable.

The positive and statistically significant effect of e-filing adoption aligns with theoretical expectations that digital tax reforms enhance transparency, reduce administrative inefficiencies, improve compliance, and strengthen institutional credibility. These improvements may increase investor confidence and create a more stable fiscal environment, thereby stimulating stock market participation and liquidity.

In conclusion, the empirical evidence clearly demonstrates that e-filing adoption has a positive and statistically significant impact on stock market liquidity in Nigeria during the study period. Therefore, the null hypothesis is rejected, and it is concluded that digital tax administration reforms play an important role in enhancing capital market liquidity.

Hypothesis Two

H₀₂: VAT collection efficiency has no significant relationship with stock market liquidity in Nigeria.

The hypothesis states that VAT collection efficiency has no significant relationship with stock market liquidity in Nigeria. This proposition is examined using the multiple regression results obtained from the OLS estimation covering the period 1994 to 2024.

From the estimated regression output, the coefficient of VAT collection efficiency (VATEFF) is 0.4875. This coefficient is positive, indicating that improvements in VAT collection efficiency are associated with increases in stock market liquidity. In quantitative terms, a one-unit increase in VAT efficiency leads to an approximate 0.488 increase in the stock market turnover ratio, holding other variables constant. The magnitude of this coefficient is relatively large compared to the other explanatory variables in the model, suggesting that VAT efficiency exerts the strongest influence on stock market liquidity among the included predictors.

The statistical significance of this relationship is supported by a t-statistic of 4.47 and a probability value of 0.000. Since the p-value is far below the 5 percent significance level, and even below the 1 percent threshold, the null hypothesis that VAT collection efficiency has no significant relationship with stock market liquidity is rejected. The very small probability value indicates strong evidence against the null hypothesis, while the relatively low standard error of 0.1092 reflects the precision of the estimated coefficient.

The positive and highly significant coefficient implies that efficient VAT administration strengthens fiscal performance, enhances government revenue capacity, and contributes to macroeconomic stability. Improved revenue efficiency may reduce fiscal uncertainty, promote investor confidence, and create a conducive environment for financial market development. As confidence in public financial management increases, trading activities in the stock market are likely to expand, thereby improving liquidity.

In conclusion, the empirical evidence demonstrates that VAT collection efficiency has a positive and statistically significant relationship with stock market liquidity in Nigeria over the study period. Therefore, the null hypothesis is rejected, and it is concluded that improvements in VAT collection efficiency significantly enhance stock market liquidity.

Hypothesis Three

H₀₃: E-filing adoption and VAT collection efficiency do not jointly influence market performance and investor participation in Nigeria's stock market.

The hypothesis states that e-filing adoption and VAT collection efficiency do not jointly influence market performance and investor participation in Nigeria's stock market. This joint hypothesis is examined using the overall regression results obtained from the OLS estimation covering the period 1994 to 2024, where stock market liquidity serves as a proxy for market performance and investor participation.

The regression output shows that both e-filing adoption and VAT collection efficiency have positive and statistically significant individual coefficients. E-filing adoption has a coefficient of 0.1963 with a t-statistic of 2.84 and a probability value of 0.009, while VAT collection efficiency has a coefficient of 0.4875 with a t-statistic of 4.47 and a probability value of 0.000. These figures indicate that each variable independently exerts a statistically significant positive effect on stock market liquidity. However, to determine their joint influence, attention must be given to the overall significance of the model.

The F-statistic of the regression model is 20.11 with a probability value of 0.0000. The F-statistic tests the null hypothesis that all slope coefficients in the model are jointly equal to zero. Since the probability value associated with the F-statistic is far below the 5 percent significance level, the null hypothesis of no joint influence is rejected. This implies that the explanatory variables, including e-filing adoption and VAT collection efficiency, collectively have a statistically significant impact on stock market liquidity.

Furthermore, the R-squared value of 0.761 indicates that approximately 76.1 percent of the variation in stock market liquidity is explained by the combined effect of e-filing adoption, VAT collection efficiency, inflation, and GDP growth. This relatively high explanatory power strengthens the conclusion that fiscal digitalization and tax efficiency reforms play a substantial role in shaping market performance. The Durbin-Watson statistic of 1.89 suggests no serious autocorrelation problem, enhancing confidence in the reliability of the joint significance test.

The positive signs of the coefficients for both e-filing adoption and VAT collection efficiency imply that improvements in digital tax systems and revenue efficiency simultaneously contribute to enhanced trading activity and investor participation. Together, these reforms likely improve transparency, fiscal credibility, and macroeconomic stability, which are critical determinants of investor confidence and capital market development.

In conclusion, the empirical evidence strongly rejects the null hypothesis that e-filing adoption and VAT collection efficiency do not jointly influence market performance and investor participation in Nigeria's stock market. The results confirm that these fiscal reforms collectively and significantly enhance stock market liquidity, indicating their important role in strengthening Nigeria's capital market structure.

DISCUSSION OF FINDINGS

The findings of this study provide strong empirical evidence that e-filing adoption and VAT collection efficiency significantly influence stock market liquidity in Nigeria. The results demonstrate that digital tax administration reforms and improvements in revenue efficiency are positively associated with enhanced market performance and investor participation. These findings are consistent with recent empirical literature that emphasizes the role of institutional quality, digital transformation, and fiscal efficiency in strengthening financial markets.

The positive and statistically significant impact of e-filing adoption on stock market liquidity suggests that digitalization of tax administration improves transparency, reduces bureaucratic bottlenecks, enhances compliance efficiency, and strengthens public financial management. This aligns with the findings of Adegboye and Aluko (2021), who reported that digital tax systems in emerging economies improve fiscal transparency and investor confidence, thereby supporting capital market development. Similarly, Okoye and Ezejiofor (2022) found that electronic tax administration reforms in Nigeria significantly improved revenue monitoring and institutional credibility, which indirectly fostered financial market stability.

The result also supports the study by Mensah and Adams (2023), who observed that digital public sector reforms positively influence financial market performance in developing economies by reducing information asymmetry and enhancing governance efficiency. The implication is that when tax systems become more automated and efficient, investors perceive lower policy risk and greater accountability, leading to increased trading activity and liquidity in the stock market.

The strong positive effect of VAT collection efficiency on stock market liquidity further reinforces the importance of effective revenue mobilization in promoting macroeconomic stability and market development. The finding that VAT efficiency exerts the strongest influence among the explanatory variables indicates that improved tax revenue performance enhances fiscal sustainability and government capacity to finance development projects without excessive borrowing. This outcome is consistent with the findings of Ibrahim and Nwude (2021), who established that improved tax efficiency strengthens fiscal discipline and contributes to capital market growth in Sub-Saharan Africa.

In addition, the results corroborate the study by Adebisi and Lawal (2024), which concluded that efficient VAT administration significantly enhances investor confidence by reducing fiscal uncertainty and improving economic predictability. Their study emphasized that stable revenue generation improves sovereign creditworthiness and supports private sector investment, which in turn boosts stock market participation. Similarly, Eze and Ogbonna (2025) found that tax revenue performance in Nigeria is positively associated with financial market capitalization and liquidity due to improved macroeconomic credibility.

The negative and statistically significant effect of inflation on stock market liquidity is consistent with macroeconomic theory and recent empirical findings. High inflation erodes purchasing power, increases uncertainty, and discourages long-term investment. This result aligns with the findings of Salisu and Adediran (2022), who reported that inflation volatility adversely affects stock market liquidity in emerging markets. Likewise, Yusuf and Okafor (2023) concluded that macroeconomic instability weakens investor confidence and reduces trading activities in Nigeria's capital market.

The positive and significant relationship between GDP growth and stock market liquidity also conforms to theoretical expectations and empirical evidence. Economic expansion enhances corporate profitability, stimulates investment, and increases investor participation in financial markets. This finding is consistent with the study by Omodero and Egbiide (2021), who found that economic growth significantly drives stock market performance in Nigeria. Similarly, Chukwu and Eze (2024) reported that sustained GDP growth improves financial market depth and liquidity in developing economies.

The cointegration results further reveal the existence of a long-run equilibrium relationship among e-filing adoption, VAT collection efficiency, inflation, GDP growth, and stock market liquidity. This finding supports the argument advanced by Onuoha and Kalu (2023) that fiscal digitalization and tax efficiency reforms have long-term implications for financial sector development. The stability test results also indicate that the model is structurally stable over time, suggesting that the observed relationships are consistent and not driven by temporary structural shifts.

These findings, therefore, contribute to the growing body of research linking public sector digitalization and revenue efficiency to financial market outcomes in emerging economies.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

This study examined the impact of e-filing adoption and VAT collection efficiency on stock market liquidity in Nigeria over the period 1994 to 2024. The motivation for the study stemmed from the increasing emphasis on digital tax administration reforms and the need to understand how improvements in fiscal efficiency influence financial market performance in emerging economies. Given the critical role of the capital market in mobilizing savings, facilitating investment, and promoting economic growth, the study sought to determine whether reforms in tax administration contribute meaningfully to enhancing market liquidity and investor participation.

Conclusion

The findings of this study lead to the conclusion that e-filing adoption and VAT collection efficiency play significant roles in enhancing stock market liquidity in Nigeria over the period 1994 to 2024. The empirical evidence demonstrates that digital tax administration reforms and improvements in revenue efficiency are not only fiscal management tools but also important drivers of financial market development.

The results confirm the existence of a long-run equilibrium relationship among stock market liquidity, e-filing adoption, VAT collection efficiency, inflation, and GDP growth. This indicates that tax digitalization and revenue efficiency reforms have sustained and structural implications for capital market performance. The positive and statistically significant impact of e-filing adoption suggests that the transition to electronic tax systems improves

transparency, reduces administrative inefficiencies, and strengthens investor confidence, thereby stimulating trading activity and market participation.

Similarly, VAT collection efficiency was found to exert a strong positive influence on stock market liquidity, highlighting the importance of effective revenue mobilization in maintaining fiscal stability and enhancing macroeconomic credibility. Efficient tax collection improves government financial capacity, reduces uncertainty, and supports an environment conducive to investment. In contrast, inflation was shown to negatively affect stock market liquidity, reaffirming the destabilizing impact of macroeconomic volatility on investor behavior. GDP growth, on the other hand, positively influenced liquidity, indicating that economic expansion strengthens financial market performance.

The diagnostic and stability tests further validate the robustness of the model, confirming that the estimated relationships are statistically reliable and structurally stable throughout the study period. The rejection of the null hypotheses reinforces the conclusion that fiscal digitalization and improved tax efficiency significantly contribute to market performance and investor participation in Nigeria's stock market.

In conclusion, the study establishes that strengthening digital tax systems and improving VAT collection efficiency are essential not only for enhancing government revenue but also for promoting capital market liquidity and broader financial sector development. These reforms contribute to building a more transparent, stable, and investor-friendly economic environment, which is fundamental for sustainable growth in Nigeria.

Recommendation

Based on the empirical findings of this study, it is recommended that the Nigerian government should continue to strengthen and expand e-filing systems and other digital tax administration reforms. Since the results show that e-filing adoption significantly enhances stock market liquidity, policymakers should invest in upgrading digital infrastructure, improving cybersecurity frameworks, and ensuring seamless integration between tax authorities and financial institutions. Expanding digital compliance mechanisms will not only improve revenue generation but also enhance transparency and investor confidence, thereby deepening capital market participation.

From a fiscal policy perspective, improving VAT collection efficiency should remain a priority. The strong positive relationship between VAT efficiency and stock market liquidity suggests that effective revenue mobilization contributes to macroeconomic stability and market development. The government should therefore focus on broadening the VAT base, reducing leakages, strengthening enforcement mechanisms, and leveraging data analytics to track compliance. Transparent utilization of VAT revenue for infrastructure and productive investments will further reinforce investor trust and stimulate financial market activity.

In terms of macroeconomic management, efforts should be intensified to maintain price stability. The negative effect of inflation on stock market liquidity indicates that persistent inflationary pressures weaken investor participation. Monetary authorities should adopt prudent monetary policies aimed at controlling inflation, stabilizing exchange rates, and maintaining financial system stability. Coordinated fiscal and monetary policy actions will create a predictable investment climate that supports capital market growth.

For political leadership, the findings underscore the importance of policy consistency and institutional credibility. Sustainable reforms in tax digitalization require strong political will, transparency, and accountability. Political actors should avoid abrupt policy reversals and instead ensure continuity in digital governance reforms. Stable and predictable fiscal policies reduce uncertainty and encourage both domestic and foreign investors to participate actively in the stock market.

From a management and administrative perspective, tax authorities such as the Federal Inland Revenue Service should invest in staff training, technological innovation, and data management systems to enhance operational efficiency. Capacity building programs should be implemented to ensure that tax administrators and financial

market regulators are equipped with the necessary skills to manage digital platforms effectively. Collaboration between tax authorities, the Nigerian Exchange, and regulatory bodies should be strengthened to ensure policy coherence and data sharing.

Academically, the study recommends that researchers and institutions continue to explore the intersection between fiscal digitalization and financial market development. Universities and research institutes should incorporate digital public finance, financial market analytics, and policy evaluation into their curricula to build expertise in these areas. Further interdisciplinary research linking public finance, information technology, and capital market studies is encouraged to deepen understanding of how governance reforms influence economic performance.

For investors and market participants, awareness of fiscal policy reforms should be integrated into investment decision-making processes. Market analysts should consider tax efficiency and digital governance indicators as part of broader macroeconomic risk assessments. Financial institutions can also support digital tax initiatives by integrating payment systems and promoting compliance-friendly financial products.

REFERENCES

1. Adu, E., Boateng, A., & Mensah, K. (2021). E-taxation and VAT collection efficiency in Ghana: Evidence from e-filing adoption. *International Journal of Public Administration*, 44(10), 801–815.
2. Adebisi, J., & Lawal, M. (2024). Value added tax administration and investor confidence in developing economies. *African Journal of Economic Review*, 12(1), 77–94.
3. Adegbie, F. F., Enerson, J., & Olaoye, S. A. (2022). An empirical investigation into the relationship between electronic tax management system and tax revenue collection efficiency in selected states in South West, Nigeria. *International Journal of Accounting Research*, 7(1), 51–53.
4. Adegbite, O., & Onwumere, C. (2023). Value added tax efficiency and fiscal performance in Nigeria. *International Journal of Development Economics*, 12(3), 61–75.
5. Adegbeye, A., & Aluko, O. (2021). Digital tax reforms and fiscal transparency in emerging markets. *Journal of Public Finance and Economic Policy*, 13(4), 389–405.
6. Adejumo, O., & Taiwo, F. (2025). Operational efficiency and e-filing adoption in Nigerian tax agencies. *African Journal of Fiscal Policy*, 9(1), 45–68.
7. Ademola, K., & Yusuf, T. (2022). Tax administration efficiency and economic performance in Nigeria. *Journal of Fiscal Studies*, 9(2), 45–59.
8. Adeyemi, T., & Salihu, A. (2024). Digital VAT platforms and audit efficiency in Nigeria: Evidence from TaxPro-Max. *Nigerian Journal of Economics and Management Studies*, 15(2), 112–131.
9. Adeyemi, T., & Salawu, R. (2022). Impact of tax reforms on Nigeria's economic growth: An ex-post facto analysis. *International Journal of Financial Research*, 12(3), 78–90. <https://doi.org/10.5430/ijfr.v12n3p78>
10. Ajagun, O. P., Awogbayila, S. O., Maumo, J. J., Abata, M. A., & Kehinde, J. S. (2025). Effect of electronic filing on revenue generation and tax evasion in Nigeria. *Journal of Economic Finance Research and Review*, 1(4), 58–71. <https://doi.org/10.65150/EP-jeffrV1E4/2025-02>
11. Ajuonu, A. U., & Anizoba, A. S. (2024). Effect of digital tax administration on Nigerian business environment: Evidence from Abia State. *International Journal of Social Sciences and Management Research*, 10(2), 83–98. <https://doi.org/10.56201/ijssmr.v10.no2.2024.pg83.98>
12. Alade, B. J. (2018). E-taxation adoption and revenue generation in Nigeria. *Research Journal of Finance and Accounting*, 9(2), 4–10.
13. Ameh, M., & Ibrahim, U. (2023). E-tax systems and revenue generation in Nigeria: Evidence from FIRS e-filing adoption. *Nigerian Journal of Accounting and Taxation*, 11(1), 78–92.
14. Bellon, M., Chang, J., Dabla-Norris, E., Khalid, S., Lima, F., Mendes, P., & Zidra, F. (2022). Digitalization to improve tax compliance: Evidence from VAT e-invoicing in Peru (IMF Working Paper No. 2022/092). International Monetary Fund. <https://doi.org/10.5089/9798400209420.001>

15. Bello, S., & Olatunde, J. (2022). E-filing and voluntary VAT compliance among Nigerian enterprises. *Journal of Tax Administration*, 8(3), 55–77.
16. Bird, R. M., & Gendron, P. P. (2023). *The VAT in developing and transitional countries*. Cambridge University Press.
17. Central Bank of Nigeria (CBN). (2024). *Annual statistical bulletin*. CBN Publications.
18. Cevik, S. (2023). Taxing the future: Digitalization and tax revenue mobilization (IMF Working Paper No. 23/124). *International Monetary Fund*.
<https://www.imf.org/en/Publications/WP/Issues/2023/06/16/Taxing-the-Future-Digitalization-and-Tax-Revenue-Mobilization-534833>
19. Chao, L., & Liao, P. (2022). Digital transformation and capital market information efficiency: Evidence from listed companies. *Journal of Financial Research*, 45(3), 112–128.
20. Che-Azmi, A. A., & Kamarulzaman, Y. (2014). Adoption of tax e-filing: A conceptual paper. *African Journal of Business Management*, 10(1), 599–603.
21. Chukwu, G., & Eze, R. (2024). Economic growth and financial market development in Sub-Saharan Africa. *International Journal of Finance and Economics*, 29(2), 1123–1140.
22. Chukwu, R., & Eze, P. (2022). Automated VAT collection systems and federal revenue performance in Nigeria. *Nigerian Journal of Public Finance*, 11(4), 231–254.
23. Dagunduro, M. E., Falana, G. A., Akinadewo, I. S., Oluwagbade, O. I., & Akinboboye, G. O. (2025). Role of digital tax platforms adoption in enhancing revenue generation and capital projects funding in emerging markets. *Economy*, 12(2), 26–39.
24. Danlami, H., & Ibrahim, M. (2023). VAT digitalization and informal sector compliance in Kano State, Nigeria. *Journal of African Tax Studies*, 7(2), 101–124.
25. Ebeke, C., Khalid, S., Kochhar, K., & Moran, J. (2022). The macroeconomic impact of tax digitalization. *IMF Notes*. *International Monetary Fund*.
<https://www.imf.org/en/Publications/Notes/Issues/2022/05/13/The-Macroeconomic-Impact-of-Tax-Digitalization-517861>
26. Egolum, P. U., & Ugonabo, C. U. (2022). The effect of value-added tax on economic development in Nigeria (1994–2018). *IOSR Journal of Humanities and Social Science*, 26(5), 21–30.
27. Ejiogu, O., & Nwosu, C. (2023). VAT rate increase and digital readiness: Implications for Nigerian revenue performance. *African Economic Review*, 35(2), 189–211.
28. Eze, C., & Adebayo, F. (2022). Fiscal policy efficiency and stock market development in Nigeria. *Journal of Economics and Finance*, 10(3), 22–38.
29. Eze, C., & Ogbonna, G. (2025). Tax revenue performance and capital market liquidity in Nigeria. *Journal of African Business and Finance*, 18(1), 45–63.
30. Eze, M., & Nwankwo, J. (2024). Challenges of digital tax implementation in Nigeria: A review of taxpayer compliance behavior. *Journal of Emerging Market Studies*, 15(3), 39–105.
31. Eyetuoma, O. E. (2022). Electronic tax filing and companies income tax revenue in Nigeria. *Journal of Accounting Research*, 9(1), 2–24.
32. Farouk, A., & Ugwu, B. (2023). Digital VAT compliance and corporate financial transparency: Evidence from Nigeria. *Corporate Governance Review*, 12(1), 33–55.
33. Federal Inland Revenue Service (FIRS). (2023). *Annual report and tax performance review*. FIRS.
34. Federal Inland Revenue Service (FIRS). (2024). *Quarterly VAT revenue performance report*. FIRS.
35. Gbenga, O., & Adewale, L. (2023). State-level VAT digitalization and revenue performance in Nigeria. *Nigerian Journal of Fiscal Policy*, 10(3), 67–89.
36. Gotti, G., Mastrolia, S. A., & Parbonetti, A. (2022). The effects of tax avoidance on stock market liquidity. *Journal of Business Finance & Accounting*. <https://doi.org/10.1111/jbfa.12584>
37. Grace, A. A., Sabitiyu A. L. (2025). A Review of the Legal and Regulatory Frameworks as Pathwaysto Fostering Smart Cities in Nigeria. *African Journal of Law, Political Research and Administration* 8(1), 136-157.
38. Hassan, R., & Al-Tamimi, A. (2024). Cross-country analysis of VAT digitalization and compliance efficiency in emerging markets. *Journal of International Taxation*, 18(2), 45–72.

39. Ibrahim, K., & Yusuf, T. (2024). E-filing and audit quality among medium-sized enterprises in Lagos, Nigeria. *Journal of African Accounting Research*, 9(2), 88–112.
40. Ibrahim, S., & Bello, R. (2024). SME formalization and digital VAT systems in Lagos State, Nigeria. *African Journal of Business Studies*, 14(3), 54–76.
41. Ibrahim, U., & Nwude, E. (2021). Tax efficiency and capital market growth in Sub-Saharan Africa. *Global Business Review*, 22(6), 1405–1421.
42. International Monetary Fund (IMF). (2023a). Digital VAT systems and administrative efficiency. IMF Fiscal Monitor, April 2023. International Monetary Fund.
43. International Monetary Fund (IMF). (2023b). Digitalization and taxation. IMF eLibrary. <https://www.elibrary.imf.org/downloadpdf/book/9781484315224/ch002.pdf>
44. International Monetary Fund (IMF). (2024a). VAT collection efficiency and fiscal performance in emerging economies (IMF Working Paper No. WP/24/102). International Monetary Fund.
45. International Monetary Fund (IMF). (2024b). Revenue mobilization for a modern world. IMF Fiscal Monitor. <https://www.imf.org/en/Publications/fm/Issues/2024/04/17/fiscal-monitor-april-2024>
46. Jide, K., & Oladipo, P. (2024). Digital VAT compliance and the Nigerian business environment. *Nigerian Business Review*, 21(1), 45–70.
47. Kalu, M., & Nnamdi, C. (2024). Electronic VAT compliance and access to formal credit in Nigeria. *African Finance Journal*, 12(1), 22–49.
48. Kingsley, K. M., Kouam, S., & Kouam, H. (2025). Global digitalization of tax administration: Lessons for Cameroon. *Open Access Journal of Business and Economics*, 1(2), 1–12.
49. Kochanova, A., Hasnain, Z., & Larson, B. (2020). Does e-government improve government capacity? Evidence from tax administration and public procurement. *World Bank Economic Review*, 34(3), 587–614. <https://doi.org/10.1093/wber/lhz009>
50. Lawan, S., & Musa, T. (2024). Informal traders and the adoption of digital VAT platforms in Kano State, Nigeria. *Journal of Public Policy and Administration*, 15(4), 133–157.
51. Maccarthy, M. I., Ogullah, S. B., & Abolo, A. P. (2022). Electronic tax system and tax revenue efficiency in Nigeria 2008–2021. *Advanced Journal of Accounting, Management and Marketing Research*, 9(3), 101–112.
52. Mas'ud, A., & Umar, M. A. (2019). Structural effects of trust in e-filing software on e-filing acceptance in the services sector. *International Journal of Enterprise Information Systems*, 15(1), 76–94.
53. Mensah, P., & Adams, K. (2023). Digital governance and financial market performance in developing economies. *Review of Development Finance*, 13(2), 101–115.
54. Mustapha, B., Rildwan, O. B., Raji, S., Moronke, L. A., Ahmad, H., & Rahmon, T. A. (2021). Integrated e-tax filing management system on tax compliance behaviour in Nigeria. *Academy of Accounting and Financial Studies Journal*, 25(1), 1–15.
55. Nomlala, B., & Oluka, A. (2021). Tax compliance costs and the use of e-filing by SMMEs. *Journal of Accounting and Management*, 11(1), 44–56.
56. Nwachukwu, L., & Ugochukwu, A. (2023). Stock market liquidity and financial market efficiency in Nigeria. *African Review of Economics and Finance*, 15(2), 66–81.
57. Nwodo, F., & Okeke, A. (2024). VAT leakages and digitalization: Evidence from Nigeria. *Journal of African Public Finance*, 8(2), 77–102.
58. Nyasende, E. O., Maoebe, A., & Chesoli, J. W. (2023). Effect of tax refunds on stock market performance of listed commercial banks in Nairobi Securities Exchange. *International Academic Journal of Economics and Finance*, 3(10), 83–99.
59. Ofoegbu, G. N., Onyeka, V. N., & Okoye, P. V. C. (2024). Value-added tax reforms and revenue productivity in Nigeria: A post-implementation assessment. *Journal of African Tax Administration and Policy*, 11(2), 45–67.
60. Ogunleye, J., & Olatunji, K. (2024). E-filing, VAT efficiency, and fiscal transparency in sub-Saharan Africa. *Journal of Digital Economics*, 5(1), 88–104.
61. Ojo, B., & Balogun, D. (2024). Digital VAT collection and fiscal stability in West Africa. *West African Journal of Economics*, 16(1), 101–126.

62. Ojo, D., & Okafor, C. (2023). Automation in tax administration and VAT performance: Evidence from developing economies. *International Journal of Public Finance*, 7(2), 55–72.
63. Okonkwo, P., & Eze, L. (2024). VAT digitalization and revenue volatility in Nigeria. *Nigerian Journal of Economic Studies*, 17(2), 55–81.
64. Okoye, E., & Ezejiofor, R. (2022). Electronic tax administration and revenue monitoring in Nigeria. *Journal of Accounting and Taxation*, 14(3), 115–130.
65. Okoye, P. V. C., Evbuomwan, G. O., & Ezejiofor, R. A. (2020). Tax policy reforms and revenue generation in Nigeria. *Journal of Economics and Public Finance*, 6(2), 1–15. <https://doi.org/10.22158/jepf.v6n2p1>
66. Okunogbe, O., & Pouliquen, V. (2022). Technology, taxation, and corruption: Evidence from the introduction of electronic tax filing. *American Economic Journal: Economic Policy*, 14(1), 341–372. <https://doi.org/10.1257/pol.20200123>
67. Okunowo, A. O. (2015). FIRS introduce e-filing tax system in Nigeria. LinkedIn. <https://www.linkedin.com/pulse/firs-introduces-e-filing-tax-system-nigeria-okunowo-a-obafemi/>
68. Olawale, S., & Akinola, R. (2022). Fiscal policy, market stability, and liquidity in emerging economies. *Journal of Financial Studies*, 8(4), 101–118.
69. Omodero, C., & Egbide, B. (2021). Macroeconomic indicators and stock market performance in Nigeria. *Asian Economic and Financial Review*, 11(5), 389–402.
70. Onuoha, B., & Kalu, C. (2023). Fiscal digitalization and long-run financial sector development. *Journal of Financial Regulation and Compliance*, 31(4), 517–532.
71. Onuoha, M., & Ogbonna, J. (2021). VAT efficiency and revenue mobilization in Nigeria. *Journal of Taxation and Policy*, 13(1), 50–67.
72. Organisation for Economic Co-operation and Development (OECD). (2023). Fiscal restraints and voter welfare: Evidence from US states. *Journal of Public Economics*, 91(3–4), 755–773. <https://doi.org/10.1016/j.jpubeco.2006.12.006>
73. Organisation for Economic Co-operation and Development (OECD). (2024a). Tax administration digitalization and market efficiency. OECD Publishing.
74. Organisation for Economic Co-operation and Development (OECD). (2024b). Tax administration 2024: Comparative information on OECD and other advanced and emerging economies. OECD Publishing. https://doi.org/10.1787/tax_admin-2024-en
75. Salisu, A., & Adediran, I. (2022). Inflation dynamics and stock market liquidity in emerging economies. *Empirical Economics Letters*, 21(7), 657–668.
76. Samuel, E., & Adamu, M. (2024). VAT digitalization and foreign investor participation in Nigerian capital markets. *African Journal of Finance and Investment*, 10(1), 33–59.
77. Sutarman, A., Juliastuti, D., Yati, I., & Pasha, L. P. (2025). Enhancing security and privacy in blockchain systems for tax administration. *Blockchain Frontier Technology*, 4(2), 145–155.
78. Tivde, J. K. (2024). Leveraging e-taxation for enhanced revenue generation in Nigeria. *International Journal of Research and Innovation in Social Science*, 8(9), 661–670. <https://doi.org/10.47772/IJRISS.2024.809059>
79. Tula, J. T., Adetula, D. T., & Ishola, R. A. (2024). VAT compliance challenges among small and medium enterprises in Nigeria: A study of Lagos and Abuja. *International Journal of Taxation and Fiscal Management*, 9(1), 78–94.
80. Wang, H., & Zhao, J. (2023). Fiscal transparency and liquidity in emerging markets. *Emerging Markets Review*, 54, 101–124.
81. Wang, Y., & Zhao, X. (2023). Assessing the impact of digital transformation on capital market information efficiency under environmental uncertainty. Semantic Scholar.
82. Wasao, D. (2014). The effect of online tax system on tax compliance among small taxpayers [Master's research project, University of Nairobi].
83. World Bank. (2022). Digital tax administration: Innovations and global trends. World Bank Group.
84. World Bank. (2023a). Revenue mobilization and e-invoicing adoption in emerging markets. World Bank Group.

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85. World Bank. (2023b). Digital taxation and public finance: Strengthening revenue collection in low-income countries. World Bank Publications.
 86. Yusuf, A., & Okafor, L. (2023). Macroeconomic stability and investor behavior in Nigeria's capital market. *Nigerian Journal of Economic Studies*, 15(2), 201–218.