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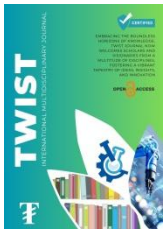

Digitalization of VAT and Tax Evasion Control in Nigeria

An Empirical Analysis

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Abstract
This study examines the impact of digitalisation on the administration of Value Added Tax (VAT) and its effect on controlling tax evasion in Nigeria. Utilising an ex-post facto research design, the study analysed secondary data obtained from the Federal Inland Revenue Service (FIRS) now known as Nigeria Revenue Service (NRS), and the Central Bank of Nigeria (CBN) Statistical Bulletin from 2000 to 2023. By comparing the pre-digitalisation and post-digitalisation periods, a paired t-test was conducted to determine whether a statistically significant difference existed in VAT revenue. The results revealed a notable increase in VAT revenue following digitalisation, suggesting that digital tools enhance transparency, reduce opportunities for tax evasion, and promote revenue generation. The findings highlight the importance of embracing digital innovations in tax administration to improve compliance and efficiency within the Nigerian tax system. The study recommends increased investment in VAT-specific digital tools and taxpayer education to further consolidate these gains.

Keywords
Tax digitalisation, VAT, Revenue generation, Tax compliance, Tax evasion, Paired t-test

INTRODUCTION

VAT is a crucial component of Nigeria's revenue generation system. Being a consumption-type tax, VAT is charged at different stages of production and distribution of goods, providing the framework with transparency and stable incomes (OECD, 2017). However, in developing countries like Nigeria, the successful administration of VAT is usually hampered by low administrative capacity, dependence on manual processes and widespread tax evasion. Tax evasion, which involves the illegal evasion of stated tax obligations (Alm, 2021), is a major undermining factor of government attempts to fund essential state facilities and amenities.

In an attempt to address these hurdles, the Federal Inland Revenue Service (FIRS) has embarked on a number of digital transformation projects with an aim of modernising tax administration. Integrated Tax Administration System (ITAS), TaxPro-Max and institutionalization of Tax Identification Numbers (TINs) are some of the platforms that have been implemented to reduce human contact, automate tax records and improve transparency in administration.

Empirical evidence indicates that there is a positive relationship between tax digitalisation and compliance. As an example, Uyar et al. (2021) indicated that digital tools increase efficiency, minimize corruption possibilities, and increase taxpayer confidence. Another important aspect brought up by Roy and Khan (2021) is that e-tax systems reduce compliance costs greatly and limit taxpayer-tax official collusion. Okunogbe and Santoro (2023) noted in the case of

Nigeria that the implementation of digital systems of tax filing and payment had led to a positive change in revenue performance.

Regardless of these results, the previous studies tend to have taken a holistic view of tax digitalization, analyzing aggregate tax outcomes without isolating specific tax types such as VAT. Therefore, since VAT is a complex, multi-layered tax that needs a detailed invoicing, it is critical to isolate VAT in the context of digital tax reforms. This paper contributes to existing literature by isolating VAT and examining how its digitalisation has influenced tax evasion outcomes in Nigeria.

This study specifically examines how the digitalisation of VAT has impacted tax evasion in Nigeria. The following hypotheses were stated to address this objective:

H_0: Digitalization of value added tax has no significant effect on tax evasion control in Nigeria

H_1: Digitalisation of value added tax has a significant effect on tax evasion control in Nigeria

Digitalisation

Digitalisation has significantly transformed how people connect and interact. It has reshaped the ways individuals communicate, acquire knowledge, and exchange ideas by reducing the limitations of time and geographical distance (Kgonare, 2017). It broadly refers to the incorporation of digital technologies into everyday life (Chand, Kostic & Reis, 2020). When applied to tax administration, digitalisation should be viewed as a fundamental transformation rather than a mere upgrade of existing procedures.

The term "digitisation" specifically means converting analog information—like text, images, or videos—into digital formats. According to Brenner and Hartl (2021), digitalisation is a multifaceted concept that is often confused with digitisation and digital transformation, though they are distinct yet related. While digitisation involves the conversion of information into digital form, digitalisation refers to how digital technologies and ICT reshape organizational structures, enhance communication, improve service delivery, and elevate overall performance. Digital transformation goes further, describing the use of digital tools to develop entirely new business models. For the purposes of this study, digitalisation refers to the adoption of technologies such as the internet, mobile devices, and other digital tools across economic activities.

Digitalisation is crucial to the enhancement of revenue generation. Particularly, digitalization of value added tax will no doubt block revenue generation loopholes in Nigeria.

Tax Digitalisation

Tax digitalisation can be understood as the combination of information and communication technologies (ICT) in tax administration in order to improve accuracy, timeliness and efficiency of handling of taxpayer data. The world over, governments are increasingly embracing the use of digital tools in the aim of enhancing tax collection, minimizing administrative expenses, and improving service delivery to the taxpayers. The most outstanding aspect of this change is E-taxation, the utilization of electrical systems in evaluating, gathering and handling of taxes (Che-Azmi & Kamarulzaman, 2014). These are services provided like electronic tax filing, online tax settlement, online issuance of the numbers identifying the taxpayers and compliance certifications.

Digital tax systems allow making administrative processes more efficient, less time-consuming to citizens when elaborating on tax declarations, and minimize transaction cost. The systems also establish accountability and availability of real-time information to both the tax officials and the taxpayers thus resulting in superior tax compliance levels and policy tracking (Wasao, 2014).

The technological framework in which tax digitalisation is based covers a set of hardware tools and software requirements. It was further stated by Adewoye and Olaoye (2014) that these devices are computers, modems, mobile phones, and networks, and data management applications and they all facilitate the collection, processing, and storage of information that is pertinent to the tax operation. These digital tools are also useful in helping to make forecast and strategic plans as it gives the institutions access to source historical and real-time tax information (Adigbole & Olaoye, 2013).

Moreover, the purpose of the tax digitalisation systems is to automate the administrative work as well as to aid in the decision making. Obi (2003) observed that electronic systems have the ability to automatically oversee the disruptions in operations, analyse corrective alternatives and take the right measures to ensure stability of the system. According to Adewoye and Olaoye (2014), these systems are constructed based on their core components such as personnel, data communication, data processing, information retrieval and strategic planning.

It is necessary to mention that although tax authorities differ in their particular aims and organisational hierarchies in various nations, they are shared in the context of digitalisation, which is to enhance administrative effectiveness and service provision. Thus, in order to know whether a digital tax system works effectively, then it is important to have a clear picture of what is supposed to be done by tax authorities using ICT based solutions.

Tax evasion

Tax avoidance has often been talked about together with tax evasion, and a clear distinction has been drawn between the two. Tax avoidance implies using the legal means to reduce the taxes, whereas tax evasion is unlawful and deliberate action aimed at evasion of paying taxes through providing misinformation or hiding money (Alm, 2021; Sandmo, 2005).

It is intentional tax evasion and is identified as a criminal offense and regularly incorporates fraud or default of individuals or corporate entities (Najib et al., 2021; Ibe, 2022). According to Temitope et al. (2010), it is the failure to pay taxes due by law over a given three-year time frame whereas Fakile and Adegbie (2011) state that also, it involves representation and outright concealing of income with the express aim of paying less tax. According to Kemsley et al. (2022), a mistake or understatement of the tax base as well as the deliberate attempt to minimize taxes are the two constituents that make an action a tax evasion.

Tax fraud continues to be a world challenge and is becoming rather complicated under the conditions of the digital economy. This behavior is motivated by different reasons that include wealth accumulation drive, non-deduction of income, corruption, and socio-economic pressure (Khyareh, 2019). Di Gioacchino and Fichera (2020) point at the fact that tax morale influences to a considerable extent the patterns of behaviour adopted by taxpayers. Tax morale is an attitude whereby people with high tax morale are likely to obey the law because they perceive or view the tax laws as fair and rewarding to them. Conversely, higher tax evasion is frequently related to the lack of trust in the government offices or the opinion of corruption in these offices.

Tax evasion has especially been commonly associated with corruption in the literature. As Amoh and Ali-Nakyea (2019) notice, in the states with poor governance, evasion can be facilitated or even promoted by corrupt practices in tax authorities themselves. The economic conditions are also poor and this enhances the problem further where people are trying to safeguard the little they have by evading taxes (Dragomir et al., 2011). In this regard, taxation burden particularly where it is felt to be high as compared to income can promote tax evasion and create a negative attitude towards tax compliance among the population.

There is an increasing number of studies that have investigated the determinants of tax evasion. Khlif and Achek (2015) and Khlif et al. (2016) divide the determinants into four classes, namely, demographic (age, gender, education level, unemployment), cultural and behavioral (individualism, tax morale, uncertainty avoidance), legal and institutional (corruption, bureaucracy), and economic (economic development, inflation, tax burden). According to Savic et al. (2015), the effectiveness of the tax administration is an influential factor, and Tekin et al. (2018) claim that the higher economic freedom, the lower the risk of evasion due to the increased productivity.

Tax evasion has far reaching effects. Governments all over the world rely on tax revenues as a primary source of finance which is used in investing in the society, infrastructure, and other social amenities (Abdixhiku et al., 2017). Tax evasion by individuals means that the states can hardly achieve developmental targets, and economic inequality is likely to increase (Gaspar & Hagan, 2016; Riahi-Belkaoui, 2004). This has led to the issue of combating tax evasion as a major policy priority in most countries.

The fundamental challenge with the issue of tax evasion is the inability to have updated and precise details about the incomes and transactions of taxpayers, particularly in the setting where the predominance of cash-based operations prevails and is difficult to trace (Alm, 2021). As a reaction to this, digitalisation has become one of the possible solutions to the problem. Public administration through the use of digital technologies, e-government platforms contributes to improving the capacity of the tax authorities to track, analyze, and monitor financial transactions (Kitsios et al., 2022). Uyar et al. (2021) conclude that digital transformation increases the transparency and accountability of the governing process, which prevents fraudulent tax activities and improves compliance.

In conclusion, tax evasion is a severe economic and legal dilemma, which is caused by the combination of behavioral, institutional, and economic drivers. The digitalisation process presents governments with new possibilities to deal with evasion in the form of better information systems and increased transparency in the public sector.

Economic and Social Tax Evasion Costs

Tax evasion has far reaching implications touching on a broad base of stakeholders such as governments, investors, entrepreneurs, employees and the general citizenry. The biggest implication of this is that the government loses a lot of revenue. Tax evasion by many people decreases the ability of the state to fund basic goods and services since taxes are the major source of public funds. This underfunding weakens the delivery of healthcare, education, infrastructure, and welfare thus reducing the standard of living and destroying the trust of people in institutions.

One of the structural effects of tax evasion is the increase of social and economic inequality. When governments cannot raise sufficient tax revenues, they find it difficult to provide minimal services that can have undue benefits to the low-income groups. According to Alm (2021), underprivileged groups are highly dependent on publicly funded infrastructure and services because they cannot afford the counterparts. On the contrary, more affluent people and organizations tend to be more capable of using either legal or illegal means to minimize their tax payments, which increases the income and opportunity gaps (Amoh & Ali-Nakyea, 2019). This creates a retrogressive tax climate in which the burden of sustaining the costs of the provision of the public goods is relegated to the less well-paid and small enterprises. On the part of the business sector, the impact of committing or being involved in tax evasion is no less devastating. The legally binding sanctions that can be imposed on companies that are guilty of tax-related crimes include fines, criminal charges, and limitations in their operations. The reputational losses may also be significant resulting in the loss of investor trust, the loss of business partners, customer mistrust, and employee resignation. Unethical tax practices come with a stigma, which may impede the performance of a firm in the market and its long-term development.

Besides, tax evasion eliminates the environment that entrepreneurs and small businesses require. According to Khyareh (2019), companies flourish in environments where services and public infrastructure are available and sound.

Tax evasion also curbs the growth of such supportive systems as it diminishes the amount of public funds and hence, unintentionally deters the establishment of new businesses and the community development.

To conclude, the expenses of tax avoidance are not only about the lost revenue; they reach the income distribution, trust in the institutions, business survive and economic growth. These multidimensional effects make the fact that tax evasion should be addressed by appropriate policy, enforcement, and transparency in the public sector essential.

Theoretical Framework

Review of benefits-received principle of taxation, theory of planned behaviour, technology acceptance theory and theory of innovation translation were done. Technology Acceptance Model is the best theory that serves as the basis of this study.

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) was first proposed by Davis (1986) and since then it has become one of the most popular theories explaining human behavior in terms of technology adoption and usage. It was created to predict the behavior of the user in terms of new technologies, where it was necessary to focus on a person and his or her attitude and not on the use of the system itself (Monyoncho, 2015). The model posits that two primary factors—Perceived Ease of Use (PEOU) and Perceived Usefulness (PU)—shape an individual's attitude toward the acceptance and usage of a technological system (Lule, Omwansa, & Waema, 2012). PEOU can be identified as how confident a person feels that the utilization of a certain system will not require efforts whereas PU is the extent to which the person feels that the utilization of the system will improve his performance either in the short or long term (Mojtahed, Nunes, & Peng, 2011). Wang, Duan, Yang, and Cao (2023) state that the TAM is one of the most popular theoretical frameworks in the research of user acceptance of information systems and technologies. It has over the years become famous in information systems and behavioural study.

Mishra et al. (2023) further reinforce that both PEOU and PU directly affect a user's attitude toward using a technology, as well as their behavioral intention to adopt it. In addition, the two constructs are related, where PEOU directly and positively impacts PU, and both of them are affected by the outside factors like user training, system features and support structure.

The model also encompasses measurable elements to assess the acceptance by the user. PEOU is typically assessed through statements like "this system is easy to use," while PU is measured through responses such as "this system improves my work effectiveness." Attitude of users is assessed with the help of such indicators as it is prudent to use this system and behavioral intention is assessed with such statements as I am going to use this system regularly.

According to TAM, behavioral intention determines actual usage of a system, which in turn is motivated by attitude of the users towards the usefulness of the system and ease of use (Lim & Ting, 2012). These perceptions are made up of personal and contextual variables and eventually will determine whether a user will adopt a technology or not.

Moreover, TAM can be applied to make the prediction of user acceptance in different fields, including digital financial services. It can be used to understand the differences in consumer behaviors as to the adoption of such technologies (Lim & Ting, 2012). TAM is more concise and narrowly defined compared to other models like Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) as it singles out system-related constructs of usability and utility. It is also more affordable to apply besides being highly flexible in various technology environments (Mojtahed et al., 2011).

TAM also gives us an idea into the psychological and attitude aspect of adoption of technology. It is predictive and explanatory because it captures the motivating factors that make the users either accept or reject information systems. It has been commonly used in determining the probability of individuals and organizations accepting new technological advancements (Mojtahed et al., 2011).

Empirical Review

Within the perspective of tax evasion and digitalisation of taxation processes, a lot of works have been done regarding the influence of information technology on tax compliance in various countries. Nimer, Uyar, Kuzey, and Schneider (2022) examined the hypothesis that the introduction of e-government services in the United Kingdom between 2006 and 2017 had any considerable impact on tax evasion. Based on the use of fixed-effects panel data analysis, their results proved that digital public services were essential in restraining tax evasion. In a similar way, Okunogbe and Fabrizio (2022) studied how effective and limited information technology could be in increasing tax mobilization in the UK. They discovered that, the digital systems reduced the burden of compliance to taxpayers and also enhanced the relationship between the taxpayers and the authorities hence increasing the formal payment of taxes and decreasing the unofficial payments.

Uyar, Nimer, Kuzey, Shahbaz & Schneider (2021) aim to measure the connection between tax evasion and digitisation of government services through the mediating role of ICTs. In this analysis, the scholars used a sample of 1677 country-year observations between the years 2006 and 2017. As indicated in findings of the fixed study, tax evasion was greatly minimised by the six indicators of long-term vision as well as digitisation of government services. The influence of government service digitisation on tax evasion was more significant in countries and societies that had a greater rate of information and communication technology adoption and this influence was somewhat reduced by the level of the personal and social use of ICT. To serve the general population better, the research proposed numerous

opportunities of applying ICT to service delivery. This may result in a reduced amount of tax collected by governments and an increased total taxation. To ensure that taxpayers incur an easy time in claiming and paying their income tax, the writers have stated that the e-government structure and e-filing systems must be enhanced by the public authorities. The research was also subjected to the fallacious threat of discrepancy of data since the study area is wide and encompasses a number of countries.

As a developing technology that seemed to affect tax evasion in Tulane's future years, Alm (2021) also thought about the potential effects of data translation into computer-usable formats. From 2015 to 2020, the research used secondary data derived from the selected banks' annual reports. Due to the changes in technology, taxpayers will not be able to evade paying taxes and economic inequality will rise. In line with these results is that of Thuneibat, Ali, Alqaraleh, & Thneibat. (2022), who applied the same questionnaire to examine the relationship between IT and the reduction in tax evasion through the mediating variable of call innovation, sampling 200 auditors of the listed companies in Jordan. High-quality information technology (the system and the user) could be used to minimize cases of tax evasion. The study's findings on the use of information and communication technologies to public service delivery have important implications for efforts to reduce tax evasion and increase tax payments worldwide. The authors have highlighted that taxpayers require support in income tax declaration and payment through enhancement of e-filing systems and e-government infrastructure. Although a valuable source of information, the research could not be generalised because it did not encompass a very large area.

Ofurum, Amaefule, Okonya, and Henry (2018) evaluated how electronic taxation affects revenue growth and economic growth in Nigeria. Their research was on post-2015 tax reforms, and they used Federal Inland Revenue Service (FIRS) and Central Bank of Nigeria (CBN) data between the second quarter of year 2013 and the fourth quarter of year 2016. From the results of regression analysis and paired t-tests, the findings revealed that e-taxation introduction had not been very effective in increasing the tax revenue. In its recommendations, the study suggested additional education of taxpayers to increase their awareness and usage of digital platforms in all the 36 states of Nigeria.

The article by Onyeka and Nwankwo (2016) has also investigated the situation in Nigeria, which was the impact of tax evasion and avoidance on economic growth of the country between 1999 and 2012. Applying a research design of ex-post facto and Ordinary Least Squares (OLS) regression, they found out that tax non-compliance significantly affected the economic performance in a negative way. Their advice was that there should be a coherent fiscal policy reform which should be geared towards growth.

Nwamgbebu, Oketa, Odom, and NwekeCharles (2019) carried out a similar study in Nigeria where they discussed the gaps in the conventional taxation system and the feasibility of replacing the system with electronic taxation. They did this by conducting content analysis on academic and media materials and found that e-taxation is the solution to frequent administrative problems as low collection efficiency, poor record keeping and high compliance cost. Nevertheless, the fact that the research was based on secondary data and descriptive analysis reduced its access to realities of operations.

Alake and Olatunji (2012) examined the effect of e-taxation on tax evasion and avoidance in the banking industry of Nigeria. The structured questionnaires were used to collect the data that was analyzed with the help of descriptive statistics. Their results proved that electronic taxation played an important role in preventing tax evasion and avoidance. While the results were promising, the study's focus on a single industry limits the generalizability of its conclusions to other sectors.

Overall, the empirical literature shows that there is an increasing agreement on the potential of digitalisation to fight tax evasion, but the results are context-dependent, method-specific and scope-specific. It is widely agreed that electronic taxation systems are capable of enhancing tax compliance, though the efficiency of this method is usually conditional upon the quality of infrastructure, the use of ICT, the awareness of the population, and the consistency of policies.

METHODOLOGY

In this study, researchers used ex-post facto research design to examine the effect of digitalisation on Value Added Tax (VAT) and its implication on curbing tax evasion in Nigeria. The secondary data was obtained on the websites of Federal Inland Revenue Service (FIRS), and Central Bank of Nigeria (CBN) Statistical Bulletin. The research period followed an annual pattern spanning from year 2000 to 2023.

A comparative method was taken and the study period was divided into two: the period before the digitalisation (2000-2011) and the period after the digitalisation (2012-2023). The main analysis tool that was used in hypothesis testing was the paired sample t-test that determined whether there was a significant difference on VAT revenue before and after digitalisation. This statistical procedure allowed the research to establish how effective digitalisation is in preventing tax evasion in the Nigerian taxation framework.

RESULTS

Hypothesis: Digitalization of value added tax has no significant effect on the control of tax evasion practices in Nigeria.
The comparative analysis of value added tax revenue in Nigeria from 2000 to 2011 for pre-digitalization period, and from 2012 to 2023 for post-digitalization period is presented in the Table 1 below.

Table 1 Pre- and Post-digitalisation of Value Added Tax Revenue in Nigeria

Years	Pre-digitalization tax revenue (a)	Years	Pre-digitalization tax revenue (b)	Difference (b-a)	% Rise in value added tax
2000	58.47	2012	710.56	652.09	1,115.27
2001	91.76	2013	802.68	710.93	774.79
2002	108.60	2014	802.96	694.36	639.37
2003	136.40	2015	767.33	630.93	462.56
2004	159.50	2016	828.20	668.70	419.25
2005	192.70	2017	1,944.70	1,752.00	909.18
2006	232.70	2018	1,108.04	875.34	376.17
2007	312.60	2019	1,189.98	877.38	280.67
2008	401.70	2020	1,531.17	1,129.47	281.17
2009	580.00	2021	2,072.85	1,492.85	257.39
2010	564.89	2022	2,511.52	1,946.63	344.60
2011	659.15	2023	3,639.32	2,980.17	452.12
TOTAL	**3,498.47**		**17,909.31**	**14,410.84**	**6,312.55**
AVERAGE	291.54		1,492.44	1.200.90	526.05

***Source**: Central Bank of Nigeria Statistical Bulletin, 2023 and FIRS, 2023*

Table 1 is a comparative analysis of value added tax. The pre-digitalization of value added tax covering a period of 12 years was ₦3.498 trillion with an annual average of ₦291.54 billion. The post-digitalization of value added tax for a 12 year period was ₦17.909 trillion with an annual average of ₦1.492 trillion. This shows a total positive value added tax revenue variation of ₦14.410 trillion and mean positive annual tax revenue variation of ₦1.201 trillion signifying that digitalization of value added tax collection administration has significant effect on tax evasion practices in Nigeria.

Table 2 Paired t-test for Value added tax

Variable	Obs	Mean	Std.Dev	t-value	p-value	Decision
Pre-digitalization	12	291.5392	210.6441			
Post-digitalization	12	1492.443	902.4847			
Predig-postdig	12	-1200.903	721.9025	-5.7626	0.0001	significance

Source: Stata 16 output 2025

The result in Table 2 above show that pre-digitalization of value added tax has a mean value of ₦291.54 billion while that of post-digitalization of value added tax is ₦1.492 trillion. This indicates that the mean of post-digitalization of value added tax exceeds the mean of pre-digitalization of value added tax by ₦1.201 trillion. The t-test result of the paired sample revealed that the mean of the pre and post-digitalization of value added tax has a p-value of 0.0001 and is statistically significant at 0.05 level of significance. We reject the null hypothesis and conclude that digitalization of value added tax has significant effect on the control of tax evasion practices in Nigeria.

FINDINGS AND DISCUSSION

Analysis shows that digitalisation of the Value Added Tax (VAT) has statistically influenced the control of tax evasion practices in Nigeria. In particular, the paper provided a comparative analysis of VAT revenue both prior to and after the introduction of digital systems, and the findings showed that there was a significant increase in the amount of revenue collected due to the introduction of digitalisation.

The average revenue collected by VAT before digitalisation was 291.54 billion naira, but after digitalisation, it shot up to a high 1.492 trillion naira. This represents an increase of about 1.2 trillion naira in VAT collections which is indicative of the deep fiscal implications of digital tax platforms adoption. The t-test result was paired sample t-test and t-value = -5.7626, p-value = 0.0001 with a statistically significant difference at 1 percent level. Despite the negative t-value, since the direction of the test statistic is positive, the outcome affirms a strong positive impact of digitalisation to VAT revenue performance that is interpreted as a significant decrease in tax evasion.

The finding lends credence to the theoretical postulation that automation enhances revenue administration by minimizing human error, restricting ways through which tax evasion can occur, and enhancing the efficiency of tax collection procedures. E-filing, real time reporting and integrated databases enable tax authorities to track compliance more effectively, identify underreporting, and minimise tax system leakages.

Furthermore, the finding is consistent with empirical findings in the existing literature. Oladele et al. (2020) and Uguagu et al. (2023) revealed a similar increase in tax performance after the introduction of digital tax systems in Nigeria. In their research, they reached the conclusion that automation reduces the rate of tax evasion as well as increases voluntary compliance due to the simplification of the process to both the taxpayers and the authorities.

Ironically, the result differs with that recorded in the study by Alade (2018), which found out that digitalisation had no significant positive impact on VAT revenue. The difference can be explained by the period of data compilation, the extent of VAT reforms at the given moment in time, or the inability of the digital infrastructure at the time to support the process. In contrast, newer applications of sound digital structures, such as automated filing of taxes and integration of third-party information, could be the reasons behind the greater impact after digitalisation that this research has caught.

Overall, the drastic increase in the amount of VAT revenue after digitalisation testifies to a high level of importance of technology in contemporary tax management. It implies that digital systems can help to not only mobilize better revenues but also aid in better monitoring of compliance and less evasion. This supports the argument of the necessity to maintain investments in tax digitalisation infrastructure and constant enhancement of the technological potential of the Federal Inland Revenue Service (FIRS) now called Nigeria Revenue Service (NRS).

The conclusions of this paper indicate that digitalisation can increase tax enforcement capabilities of the government by a great degree. In particular, the adoption of digital technologies in tax system allows the authorities to gather and process detailed data on different economic operations of taxpayers, including income, capital gains, consumption, gifts, and inheritances, among others. Such exposure to a wider data base enables the detection of patterns of tax evasion and also the means of cross referencing information on different platforms within the tax administration system. The interconnection of the existing records in the various departments allows the tax authorities to identify the inconsistencies and improve the compliance enforcement (Kgonare, 2017; Brenner & Hartl, 2021; ICAEW, 2022).

Improved enforcement capacity will enable the government to either raise revenue without raising tax rates, or stabilize its revenue at the current level but with lower tax burdens- which will enhance economic efficiency. In essence, digitalisation improves the government's "tax enforcement technology," and by doing so, it reduces the prevalence of tax evasion (Brenner & Hartl, 2021). It corresponds with the general opinion in the existing literature, which suggests that digital technologies do not only facilitate the process of tax administration, but also enhance revenue mobilization (Kuzey et al., 2019; Marija, 2018; Sijabat, 2020).

Digital systems introduced by the then FIRS now known as Nigeria Revenue Service (NRS) make it easier to file and pay taxes, reduce the chances of human error and enhance convenience to the taxpayers. Such gains have led to an increased input of taxpayers and confidence in the system. Brenner and Hartl (2021) also advocate the existence of a more data-driven and structured approach to tax administration using digital tools and harnessing the power of automation and analytics to make improved decisions. Che-Azmi and Kamarulzaman (2014) also add that the effective application of advanced digital systems would assist authorities to focus their scarce enforcement resources on high-risk zones of evasion and aggressive avoidance and this will enhance the quality of tax collection. Adewoye and Olaoye (2014), Kuzey et al. (2019), and Hamilton and Stekelberg (2017) share a similar opinion.

Additionally, digitalisation of tax processes in Nigeria has also seen a remarkable change of the tax landscape. It has enhanced administrative capacity, improved digital service delivery and greater participation of taxpayers. An efficient and convenient system increases the readiness of taxpayers to comply, which eventually leads to an increase in revenue (Adu et al., 2019; Ogbada et al., 2023; Tyokoso et al., 2021). Nevertheless, such emergent issues as cybersecurity risks and the digital divide amid taxpayers, especially in underserved or rural areas, are important to discuss to guarantee sustainable and efficient digital tax reforms in the long run.

CONCLUSION AND RECOMMENDATIONS

The results of the study confirm that digitalisation of Value Added Tax (VAT) in Nigeria has been contributing massively and positively towards reducing the occurrence of tax evasion practices. The fact that VAT revenue has grown significantly by an average of 291.54 billion naira collected in the pre-digitalisation period to the 1.492 trillion naira collected in the post-digitalisation period depicts the efficiency of automated taxation systems in terms of improving tax compliance and eliminating revenue leakages. The statistically significant t-test result further affirms that digitalisation has played a critical role in strengthening the government's capacity to monitor, track, and collect taxes efficiently.

The fact that technological changes in tax administration have resulted in increased revenue performance of the system affirms the theoretical expectation that technological changes in tax administration have an impact of improving revenue performance of the system through sealing of compliance gaps and curtailing the scope of fraudulent practices. The adoption of digital tools in the VAT system has enhanced transparency and reduced the occurrence of manual errors and made taxpayers work simpler. In sum, digitalization of VAT administration has not just raised the amount of government revenue but has also raised the credibility and efficacy of the Nigerian taxi.

According to the results of the empirical evidence and its conclusions, the following recommendations are provided:

i. Digitalisation of Other Tax Types: Since the success of Digitalisation in VAT, there is need to extend similar digital systems to other categories of taxes like corporate income tax, personal income tax, and customs duties to achieve the same compliances and revenues.
ii. Invest in Technological Infrastructure: The Nigeria Revenue Service (NRS) must keep investing in new modern ICT infrastructure to enable larger and more resilient electronic tax infrastructure. This incorporates the implementation of safe and convenient systems that are available to every taxpayer.
iii. Taxpayer Awareness and Digital Literacy: There should be an intensive public sensitization program and training to make taxpayers aware of the usage of digital tax platforms in a proper way. Special attention must be paid to the small companies and rural regions where digital literacy can be not high.
iv. Enhance Data Integration and Third-Party Information Exchange: Taxing bodies are advised to intensify data sharing and integration with financial firms, state agencies and regulatory agencies to increase precision of tax estimates and extend auditing capacities.
v. Security of System and Data Protection: With the increased use of digital platforms in taxation, there must be high-level security procedures that ensure security of information and any person that uses taxation systems.

vi. Periodic Performance Evaluations: Periodic checks and balances on the digital tax systems should be conducted to evaluate performance, solve the problems, and make policy corrections where and when needed.
vii. Adopting such measures, Nigeria will be in a better position to use digitalisation to make its tax regime even more efficient, encourage voluntary compliance, and raise revenues required to finance economic growth and the provision of public services.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES
1. Abdixhiku, L., Krasniqi, B., Pugh, G., & Hashi, I. (2017). Firm-level determinants of tax evasion in transition economies. *Economic Systems, 41*(3), 354–366. https://doi.org/10.1016/j.ecosys.2016.12.004
2. Adegbie, F. F., & Fakile, A. S. (2011). Company income tax and Nigeria economic development. *European Journal of Social Sciences*, 22, 309-332.
3. Adegbie, E & Fakile, A. (2011). The relationship between company income tax and Nigeria economic development for the period 1981-2007. *Global Journal of Management and Business Research*, 11(96), 1-5.
4. Adewoye, J. O., & Olaoye, C. (2014). Usage of information technology to enhance professional productivity among Accountants in Ekiti State. *International Journal of Accounting and Financial Management Research, 4*(2), 7-18.
5. Adu, E. P., Buabeng, T., Asamoah. K., & Damoah, C. M. (2019). Digitization of local revenue collection in Ghana: An evaluation of Accra Metropolitan Assembly (AMA). *Electronic Journal of Information Systems in Developing Countries, 86*(1), 1 – 12. https://doi.org/10.1002/ isd2. 121 12.
6. Alade, B. J. (2018). E-taxation adoption and revenue generation in Nigeria. *Journal of Finance and Accounting*, 9(24), 116-124.
7. Alake, S.F. and Olatunji V.A (2012). Impact of electronic taxation on tax evasion and avoidance. *International Journal of Current Research in Multidisciplinary, 2*(2), 19-26. Online at http://www.ijecrm.com
8. Alm, J. (2021). Tax evasion, technology, and inequality. Economics of Governance, 22(4), 321–343. https://doi.org/10.1007/s10101-021-00247-w
9. Brenner, B., & Hartl, B. (2021). The perceived relationship between digitalization and ecological, economic, and social sustainability. *Journal of Cleaner Production, 315*(1), 128128. https://doi.org/10.1016/j.jclepro.2021.128128
10. Amoh, J. K., & Ali-Nakyea, A. (2019). Does corruption cause tax evasion? Evidence from an emerging economy. *Journal of Money Laundering Control, 22*(2), 217–232. https://doi.org/10.1108/JMLC-01-2018-0001
11. Chand, V., Kostic, S. & Reis, A. (2020). Taxing artificial intelligence and robots: Critical Assessment of potential policy solutions and recommendations for alternative approaches-sovereign measure: Education Taxes/global measure: Global Education tax or planetary. *World Tax Journal, 1*(1), 711-761
12. Che-Azmi, A. A. & Kamarulzaman, Y. (2009). *Adoption of tax e-filling: A conceptual paper*. [Online] Available from: https://academicjournals.org/journal/AJBM/article-full- textpdf/BBA89DB22827. [Accessed: 03/03/2024].
13. Davies, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information, technology, *MIS Quarterly*, 13(3), 319–340. https://doi.org/10.2307/ 249008
14. Di Gioacchino, D., & Fichera, D. (2020). Tax evasion and tax morale: A social network analysis, *European Journal of Political Economy,* Elsevier, 65, Doi:10.1016/j.ejpoleco.2020.101922
15. Dragomir, G., Nicolau, M., Necsulescu, E., Modiga, G. & Dragomir, C. (2011). Approaches of taxation under current circumstances between desiderata and results-I Acta Universitatis Danubius O*Economica,* 1(1), 110-122
16. Gaspar, V., & Hagan, S. (2016). *Corruption: Costs and mitigating strategies.* International Monetary Fund Staff Discussion Note, SDN 16/05. US: International Monetary Fund. https://doi.org/10.5089/9781513594330.006
17. Hamilton, R., & Stekelberg, J. (2017). The effect of high-quality information technology on corporate tax avoidance and tax risk. *Journal of Information Systems*, 31(2), 83–106. https://d oi.org/10.2308/isys-51482
18. Ibe, I. U. (2022). Legal responses to tax evasion and avoidance in Nigeria. *Chukwuemeka odumegwu ojukwu University Journal of Private and Public Law, 1*(1), 1 – 5.
19. Institute of Chartered Accountants in England and Welsh (2022). Digitization of Tax: International perspectives. Retrieved from https://www.icaew.com/-/media/corporate/files/technical/technology/thought-leadership/digitalisation-of-tax.ashx?la=en
20. Kgonare, M. J. G. (2017). *The Impact of Information Communication Technology on Tax Administration: A Systematic Review.* Unpublished master's thesis. Pretoria: University of Pretoria. https://repository.up.ac.za/bitstream/handle/2263/68040/Kgonare_Impact_2017.pdf?sequence=1&isAllowed=y. [Accessed: 03/03/2024].

21. Khlif, H. & Achek, I. (2015). The determinants of tax evasion: a literature review. *International Journal of Law and Management,* 57(5), 486-497. http://dx.doi.org/10.1108/IJLMA-03-2014-0027.
22. Khlif, H., Guidara, A., & Hussainey, K. (2016),"Sustainability level, corruption and tax evasion: a cross-country analysis", *Journal of Financial Crime*, 23(2). 1-31 http://dx.doi.org/10.1108/JFC-09-2014-0041
23. Kuzey, C., Dinc, M. S., Gungormus, A. H., & Incirkus, L. (2019). Quality in e-Government accounting services: A model of relationships between e-service quality dimensions and behaviors. *Eurasian Journal of Business and Economics,* 12(23), 63–78. https://doi.org/10. 17015/ejbe.2019.023.04
24. Lim, W. M. & Ting, D. H. (2012). E-shopping: An analysis of the uses and gratifications theory. *Modern Applied Science,* 6(5), 48-63
25. Lim, W. M. & Ting, D. H. (2012). E-shopping: An analysis of the Technology Acceptance Model. *Modern Applied Science,* 6(4), 49-62
26. Lule, T. Y., Omwansa, P. R. and Waema, P. P (2012). Application of technology acceptance model (TAM) in M-Banking Adoption in Kenya. *International Journal of Computing and ICT Research, 6*(1), 31-43.
27. Marija, V. (2018). *Towards the Digitization of Tax Administration*. International Taxation Higher School of Professional Business Studies, Novi Sad, Serbia.
28. Mishra, A., Shukla, A., Rana, N. P., Currie, W. L., & Dwivedi, Y. K. (2023). Re-examining post-acceptance model of information systems continuance: A revised theoretical model using MASEM approach. *International Journal of Information Management*, 68, 1-13.
29. Mojtahed, E., Nunes, K and Peng, L. M. (2011). *Financial Inclusion, Regulation and Stability: Kenyan Experience and Perspective.* A paper presented at the UNCTAD's Multi-Year Expert Meeting on Trade, Services and Development held in Geneva, Switzerland.
30. Monyoncho, K. M. (2018). *Effect of Online Banking on Financial Performance of Commercial Banks in Kenya.* Unpublished MBA Project, University of Nairobi, 1 – 18.
31. Nimer, K., Uyar, A., Kuzey, C., & Schneider, F. (2022). E-government, education quality, internet access in schools, and tax evasion. *Cogent Economics & Finance, 10*(1), 2044587.
32. Najib, K. S. & Badamasi, N. (2021). Does moderating role of tax knowledge on the relationship between deterrence variables and petroleum profit tax evasion in Nigeria: A conceptual Framework. *FUDMA Journal of Management Sciences, 3*(1), 44 – 56.
33. Nwamgbebu, O.P., Oketa, C. U. Odom, A., Nwambe, C. O. and Nweke–Charles, U. E. (2019). Electronic tax system as a panacea for tax revenue leakages in Nigeria. *African Journal of Politics and Administrative Studies,* 12(1) 40-50.
34. Obi, E. (2003) Educational Management: Theory and Practice. Jamoe Nigeria Enterprises, Enugu
35. Obi, C. (2003). Information Technology Skills needed by Business Education Teachers for effective instruction in the Secondary School in Enugu State. *The Journal of WCCI Nigeria*, 4 (2), 99-106.
36. Ofurum, C. N., Amaefule, L. I., Okanyan, B. E., & Amaefule, C. H. (2018). Impact of e-taxation on Nigeria's revenue and economic growth: a pre-post analysis. *International Journal of Finance and Accounting*, 7(2), 19-26. Doi:10.5923/j.ijfa.20180702.01
37. Ogbada, E. I., Onyedika, A. V., & Modebelu, M. N. (2023). Digitalisation and effective tax administration in Nigeria. *Journal of Accounting and Financial Management, 9*(4), 58-68
38. Okunogbe, O. & Santoro, F. (2023). Increasing tax collection in African countries: The role of information technology. *Journal of African Economies*, 32(1), 57-83. https://doi.org/10.1093/jae/ejac036
39. Oladele, R., Aribaba, F.O. & Adekunle, A.R. (2020). E-tax administration and tax compliance among corporate taxpayers in Nigeria, *Accounting and taxation review*, 4(3), 93-101.
40. Onyeka, V. N. & Nwankwo, C. (2016). The effect of tax evasion and avoidance on Nigeria's economic growth. *European Journal of Business and Management, 8*(24), 158-166.
41. Organisation for Economic Co-operation and Development (2017). *Rising tax revenues are key to economic development in African countries.* OECD, Website: http://www.oecd.org/tax/ retrieved on 3-01-2024.
42. Sandmo, A. (2005). The theory of tax evasion: A retrospective view. *National Tax Journal, 58*(4), 643–663. https://doi.org/10.17310/ntj.2005.4.02
43. Sijabat, R. (2020). Analysis of e-government services: A study of the adoption of electronic tax filing in Indonesia. *Jurnal Ilmu Sosial Dan Ilmu Politik,* 23(3), 179–197. https://doi.org/10.22146 /jsp.52770
44. Riahi-Belkaoui, A. (2004). Relationship between tax compliance internationally and selected determinants of tax morale. *Journal of International Accounting, Auditing and Taxation, 13*(2), 135–143. https://doi.org/10.1016/j.intaccaudtax.2004.09.001
45. Roy, P., & Khan, M. H. (2021). Digitizing Taxation and Premature Formalization in Developing Countries. *Development and Change*, *52*(4), 855-877. DOI: 10.1111/dech.12662.
46. Savić, G., Dragojlović, A., Vujošević, M., Arsić, M. & Martić, M.. (2015). Impact of the efficiency of the tax administration on tax evasion. *Economic Research-Ekonomska Istra_zivanja, 28*(1), 1138–1148. https://doi.org/10.1080/1331677X.2015.110083
47. Scarpini, C. Okunogbe, O., & Fabrizio, S. (2022). The promise and limitations of information technology for tax mobilization: Research in Brief 82, Brighton: Institute of Development Studies, DOI: 10.19088/ICTD.2023.005

48. Tekin, A., Geuney, T., & Sagdic, E. N. (2018). The effect of economic freedom on tax evasion and social welfare: An empirical evidence. *Yeonetim ve Ekonomi: Celal Bayar Universitesi_Iktisadi ve_Idari Bilimler Fak€ultesi Dergisi, 25*(1), 1–13. https://doi.org/10.18657/yonveek.299237
49. Temitope, O. F., Olayinka, M. U. & Abdurafiu, O. N. (2010). The ethics of tax evasion: perceptual evidence from Nigeria. *European Journal of Social Science.* 8(3), 360-371
50. Thuneibat, N., Ali, B., Alqaraleh, M. & Thneibat, H. (2022). The mediating role of innovation on the relationship between information technologies and reducing tax evasion. *Information Sciences Letters An International Journal*, 11(5), 1359-1370. http://dx.doi.org/10.18576/isl/110505
51. Tyokoso, G. M., Onho, S. I., Musa, B. B. (2021). Tax identification number (TIN) and tax revenue performance in Nigeria. *Accounting and Taxation Review, 5*(2), 53-61.
52. Uguagu, N. G., Asomba, I. C., & Kalu, I. O. (2023). E-taxation and tax compliance in Nigeria: Periscoping change perspectives. 12(1), 29-41. https://dx.doi.org/10.4314/ngjsd.v12i1.3
53. Uyar, A., Nimer, K., Kuzey, C., Shahbaz, M., & Schneider, F. (2021). Can e-government initiatives alleviate tax evasion? The moderation effect of ICT. *Technological Forecasting and Social Change*, 166, 120597. https://doi.org/10.1016/j.techfore.2021.120597
54. Wang, S. Duan, Y., Yang, X., Cao, C. & Pan, S. (2023). Small Museum in China from technology labs to sustainable knowledgescapes. *Digital Scholarship in the Humanities,* 38(3), 40-58.
55. Wasao, W. (2014). *Effect of Online Tax System on Tax Compliance Among Small Taxpayers in East of Nairobi Tax District.* (Unpublished master's thesis). University of Nairobi.