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Digital Accounting and Tax Revenue in Nigeria

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Abstract: *The quest for improved delivery of public services to the members of the general public has necessitated the need for government at all levels to collect sufficient revenue that can cover budget expectations by encouraging taxpayers to better fulfil their tax obligation. In a rapidly evolving digital age, use of information technologies and tax management strategies is crucial. One such innovation that's been making waves in the global ecosystem, is the digital tax accounting. It allows individuals and businesses to manage their taxes conveniently and efficiently. This digital platform has transformed the way taxpayers interact with the tax authority and government of many nations. The study examined the relationship between digital accounting and tax revenue in Nigeria. The researchers adopted expost- facto research design for the study and the relevant secondary data used was obtained from Central Bank of Nigeria (CBN) Statistical Bulletins, Federal Inland Revenue Service (FIRS) Publications OECD and World Bank documents from 2002 - 2021. pre digitalization period and post digitalization period were the proxies of digital accounting while oil taxes and non-oil taxes were the proxies of tax revenue. The research hypotheses test and other data were analyzed by descriptive statistics and paired sample t-test with the aid of SPSS 27. The findings revealed that pre-digitalization period post-digitalization period positively and significantly related to oil taxes and non-oil taxes in Nigeria during the period of this study. We therefore conclude that digital tax accounting has positively contributed to the generation of tax revenue in Nigeria. We recommended that the Federal government through Federal Inland Revenue Services should work out appropriate modalities to sensitize individual corporate taxpayers on the nitty-gritty of E-tax payment with a view to maximize the expected positive impact of the digital accounting technology.*

Keywords: Digital Accounting, pre digitalization period, Post Digitilization period, Tax Revenue, oil taxes, Non-oil taxes

1. INTRODUCTION

The quest for improved delivery of public services to the members of the general public has necessitated the need for government at all levels to collect sufficient revenue that can cover budget expectations by encouraging taxpayers to better fulfil their tax obligation. The revenue that government collects from taxes and non-tax sources to cover government spending is known as government income. Money, proper public investment, and social services; are required by governments to augment their spending. Nigeria's three tiers of government need more money to provide basic services to the country's citizens. There are various sources of revenue for governments, with taxes being one of the most important in both developing and developed countries (Pascual Sáez, Alvarez-García, & Castañeda, 2017). Globally, tax revenue mobilization in all its forms and ramifications has been identified as a pertinent issue affecting economic sustainability and growth (Olaoye, 2017). The collection of taxes and fees is fundamental for countries to generate public revenues to finance investments in human capital, infrastructure and the provision of services for citizens and businesses. This is even most important for developing countries having an estimated annual $2.5trillion financing gap towards achieving the Sustainable Development Goals (SDGs). This is coming at a time when many developing countries are still struggling to collect sufficient tax revenues to finance their own development with many collecting less than 15% of their Gross Domestic Product (GDP) in taxes. This threshold of 15% tax to GDP ratio is regarded as tipping point to make a state viable and put it on growth path; thus, countries with less than the threshold must increase their tax revenue collection to meet basic needs of citizens and businesses (World Bank, 2022). Nigeria as a developing African country and recorded a tax to GDP ratio of 6% in 2019 which is far below the average of 16.60% for Africa (Organization for Economic Cooperation and Development, 2021b) making Nigeria to be in the company of war-torn countries of Yemen and Somalia (Akinmurele, 2022).

The Nigerian tax system has faced so many challenges in recent years with complex multidimensional problems which have brought about inefficiency, increase in administrative cost and consistent low tax yield. Ola (2001) explained that revenue collected from income tax of individual and entities tend to be too low because of low tax literacy, poor relationship between tax authorities and taxpayers, insufficient number of qualified and competent accountant amongst the staff of tax authorities. The use of tax personnel who are untrained and also unqualified, lack required skills on how to utilize information available for the assessment and calculating tax in a best suitable manner (Ayodeji, 2014). For instance, Olaoye and Atilola (2018), also observed that the prevalence of tax evasion and avoidance in the Nigerian tax system have reduced the amount of revenue collected from income tax which has obviously

affected the cost of governance. Similarly, in a Federal Inland Revenue Press release through Punch, 2015, it was reported that about 12 billion Naira traditionally vanishes into the pockets of individuals annually, and this was believed to be due to the manual system of tax revenue collection; characterized by unavailability of tax statistics and poor record keepings, complexity of payment and poor technological exposure on the part of both the tax payers and tax authorities.The dysfunction in collection system and tax administration, multifaceted statute and apathy of taxpayers because of absence of utilities enjoyed in turn for their tax collected. The general opinion of the taxpayers is that the rich and wealthy individuals in the country do not pay tax; this has made the situation grave. Generally speaking, it is very hard to distinguish between tax matters from financial issues since the problem was typically borne under a single consistent caption. It is also viewed as a process of determining the legitimate position laborious and difficult (Ola, 2001). It is further contended that while the official numbers suggest that the government is collecting less taxes as percentage of GDP, Nigerians are actually paying lot of taxes, paying not only formal taxes but also paying informal and implicit taxes; thus, it is the government that is collecting so little from the formal taxes (Akinmurele, 2022). This may not be unconnected with poor tax administration, unavailability of tax statistics, tax multiplicity, failure to prioritize tax efforts, regulatory challenges, structural problems in the economy and complexity of the tax laws among the numerous problems confronting tax administration in the country (Onuigbo, 2021; Simeon, Simeon, & Roberts, 2017). Conversely, Nigeria's rapidly increasing population means more added pressure on available public infrastructures and services and the greater need to build more infrastructures and enhancement of provision of services (World Bank, 2022b). These can only be achieved if the federal government is able to enhance inflow of viable and sustainable revenue such as revenues from taxes. Currently, the federal pool of revenue on which both the federal, state local governments heavily depend on is from oil and gas natural resources which are almost always associated with shocks and rent seeking (Ogbonna & Ebimobowei, 2013). The tax revenue efforts of in Nigeria is said to be inconsistent with prevailing economic reality as Nigeria's tax laws do not conform to global best practices (Ndekwu, 2018).

To overcome the challenges in tax administration and reduce the heavy reliance on oil and gas revenues required the introduction of a digital tax accounting; this dynamism has placed economies in the frontier of what constitutes the overall best practices in modern tax revenue mobilization (Strawczynski & Zeira, 2017). Digital tax accounting refers to the use of digital technologies and software for managing and processing tax-related tasks and data. This includes the automation of tax calculations, filing tax returns online, and tracking tax liabilities and deductions. Digital tax accounting can help businesses and individuals streamline their tax processes, improve accuracy, and ensure compliance with tax laws and regulations.The Federal Inland Revenue Services (FIRS) has embarked on digitalization of its services for easy and enhanced revenue collection (Federal Inland Revenue Service, 2022a). Precisely, modern technology has changed the conventional payment system into a more efficient and effective system, devoid of 'cash and carry' syndrome. The world all over is becoming automated and as such, there is need for improvement of tax administration. The manual system of revenue collection has been faulted because it makes the process cumbersome to have an audit trail of the efficiency of revenue collection received by the Tax Authorities (Federal Inland Revenue Service (FIRS) and State Internal Revenue Services (SIRS)). The unprecedented advancement in computer technology over the last 30 years has resulted in computer taking over several roles that were once occupied by humans. Many people, businesses, government parastatal and agencies of the government have since adopted the use of computer systems and internet in their business transactions in order for them to stay abreast of the competition and reduce the prevalent human drudgery. The deployment of digital sophistication and stringent regulations have also been identified as key determinants of government capability to capture financial inflows through the internet domain and prevent capital flights that are not directly invested in the host countries. These funds are creatively repatriated to the domestic country with the view of evading tax where incomes, profits, and revenues are initially generated, derived and/or earned. Section 30 of the Finance Act 2020, emphasizes the introduction of tax identification numbers as a prerequisite for opening a bank account that could mitigate tax avoidance and evasion, thereby bringing more taxpayers to the tax net (PWC, 2020). Section 36 of the Finance Act also repealed old section four on VAT. Under the new section, VAT increased from 5% to 7.5% with the aim of boosting revenue to settle the country's budget deficit. The e-payment system as practiced by other countries such as Germany, America, Malaysia and many other developed economics has helped to reduced time of compliance by tax payers in payment of taxes as well as provided reliable and accurate tax statistics (Adegbie & Akinyemi, 2020). The traditional system of tax payment has facilitated bribery by the taxpayers to the officials due to physical contact between the two groups which has led to reduction in the amount of tax to be paid. Consequently, the inability of the tax official to effectively collect enough revenue funds that would adequately cover budget expectations has led to huge revenue collection gap. These channels of electronic payment were developed to improve and provide a secured e-payment transaction that will facilitate the elimination of losses of revenue through corruption and simplify payments (Abor, 2004); while decreasing the percentage of cheque and cash transactions.

Ajayi and Yidiat (2021) opined that digital tax filing have a great impact on revenue generation. The potentials that are associated with this system are great and should be harnessed to improve tax revenue generation. They submitted that for taxes to be generated to finance some of the economic activities in the Nation that will bring about growth and development, then a possible way to achieve this is by exploring the electronic tax filing system which had not been given much attention to in the past. The problem of tax administration as well as collection can be said to be as a result of; Poor staffing system, dysfunctional legal framework (obsolete laws), absence of the necessary infrastructure to enhanced revenue generation by tax collectors as well as administrators, often

fraught with leakages, manual nature of tax collection processes (Hassan, 2014). The identified problems are responsible for low revenue generation to the country and it reduces the government's ability to provide infrastructure for the public. If these problems continue to exists, the standard of living in the country will continue to decrease. Tax evasion will become more prominent in the country and non-compliance from tax payers will reach a greater level. Furthermore, misused of tax collected, bribery and corruption, incompetent tax personnel and poor proper accounting record will increase noncompliance attitude and facilitate low tax return to the government. The situation led to an act of tax evasion as well as tax avoidance (Soyode & Kajola, 2006). Electronic tax management system is the use of computer systems and networks in the process of tax assessment, collection and administration. This systems allows tax payers to pay their taxes through their banks' online payment portals from the comfort of their homes or work environment since it is an online self-service system. This is a Federal Inland Revenue Service (FIRS) initiative in collaboration with the Nigerian Inter-bank Settlement System (Abdallah, 2006) as also supported by Olaoye & Atilola (2019). The IMF has long played a lead role in supporting developing countries' efforts to improve their revenue mobilization. Requirements for relieving poverty and improving infrastructure are substantial: achieving the Millennium Development Goals, for instance, may require low income countries to raise their tax-to-GDP ratios by around 4 percentage points. But the quality of measures also matters: increasing revenue by further taxing readily compliant taxpayers can worsen distortions and perceived inequities. Also, reducing reliance on trade taxes can bring real structural gains that outweigh short-term revenue difficulties. More fundamentally still, the centrality of taxation in the exercise of state power means that more efficient, fairer and less corrupt tax systems can spearhead improvement in wider governance relations (Daniel, Keen & McPherson, 2010). It has been observed that in most countries where tax revenues significantly constitute a major part of the economy's revenue, they have been using Electronic Tax system for years. E-taxation is an electronic self-service platform that enables taxpayers to file their tax returns and conduct other tax services online at their convenience irrespective of their locations once internet is available. According to the World Bank and PWC (2013), 66 economies had fully implemented electronic filing for payment of taxes as at 2010, 20 of them adopted the system in the past 7 years. World Bank and PWC (2015) Paying Taxes Survey in 2005 revealed that taxpayers are able to file tax returns electronically in about 45% of the countries that were surveyed. In 83% of the surveyed countries, taxpayers are able to complete at least one aspect of their tax compliance process electronically. In 2014, more than 24 countries instituted reforms that made it easier or less costly for firms to file returns and pay taxes and the most common feature of tax reforms globally was the introduction of, or enhancement of electronic filing system. Such changes were implemented in 18 countries including Costa Rica, Cyprus, Mozambique, Spain, Vietnam, Serbia, and Zambia, amongst others. Businesses in these countries now file returns electronically thus spending less time on compliance. The system also increased transparency and limited the opportunity for corruption and bribery (Ezomike, 2016). From the aforementioned the study seeks to investigate empirically the relationship between electronic tax management system and tax revenue collection efficiency

In Nigeria, extant studies such as (Mohammed, 2020; Adegbie & Akinyemi, 2020; Oyelami, Adebiyi & Adekunle, 2020; Okifo & Igbunu, 2015 and Afaha, 2019), investigated the impact of electronic payment system on the economic growth of Nigeria. This implies that the authors employed economic growth as the dependent variable in their studies. However, Adegbie & Akinyemi, (2020) in their study adopted revenue generation as the dependent variable, but the study was carried out only in Lagos State. The problem with this study is that it is too specific and its findings cannot be extrapolated for the explanation of e-payment system carried out in Nigeria generally so that policy and decision making will be better guided. Moreover, Mohammed (2020), also observed that there is dearth of empirical studies that provided quantitative evidence on the relationship between electronic payment and economic growth in Nigeria. Hence, there is need to carry out a study that will provide empirical evidence on the nature of the relationship between electronic payment system and tax revenue generation in Nigeria as a means of evaluating the extent to which e-payment has contributed to tax revenue generation in Nigeria. It is therefore against these backdrops that this study investigated digital accounting and tax revenue in Nigeria.

Statement of the Problem

Tax is a compulsory levy or financial charge imposed on a taxpayer or upon his property by the government to provide security, social amenities and other amenities for the well-being of the society. The main purpose of taxation is to raise funds to defray the expenses incurred for the common interest of the country without reference to special benefit conferred. The tax system usually involves a tripartite aspect, namely the policy, the tax laws, and the tax administration. Over the years however, the Nigerian tax system has faced so many challenges which have brought about inefficiency, increase in administrative cost and consistent low tax yield. The tax revenue derived from taxes has been very considerably low and no physical development actually took place, hence the impact on the poor is not being felt. Inadequate tax personnel, fraudulent activities of tax collectors and lack of understanding of the importance to pay tax by tax payers are some of the problems of this study. The aforementioned challenges may be unconnected to the traditional system of tax payment has facilitated bribery by the taxpayers to the officials due to physical contact between the two groups which has led to reduction in the amount of tax to be paid. Consequently, the inability of the tax official to effectively collect enough revenue funds that would adequately cover budget expectations has led to huge revenue collection gap. Accordingly, the amount of revenue to be derived from the taxation of any nation is completely dependent on the tax system that is put in place. In a Federal Inland Revenue press released through This Day newspaper, 2013 and Punch, 2015, it was reported that about 12 billion

naira traditionally vanishes into the pocket of individuals annually and this was believed to be due to manual system of tax administration characterized by low tax collection, unavailability of tax statistics and poor record keeping, complexity of payment and poor technological exposure on the part of both the taxpayers and tax authorities.

In a rapidly evolving digital age, staying up-to-date with the latest financial technologies and tax management strategies is crucial. One such innovation that's been making waves in the global ecosystem, is the digital tax accounting. A digital tax accounts is a personalized online portal provided by the government and tax authority. for tax management. It allows individuals and businesses to manage their taxes conveniently and efficiently. This digital platform has transformed the way taxpayers interact with the tax authority and government of many nations. Thus, making tax compliance and financial planning more accessible than ever before. In a bid to improve tax compliance, the Federal Inland Revenue Service (FIRS) decided to go online, hence, introducing the Integrated Tax Administration System (ITAS) which is also known digital tax accounting or Electronic-Tax pay system as an online self-service tax payment system that gives taxpayers the opportunity to pay their taxes through their banks' online payment portals. It is an initiative of FIRS in collaboration with the (NIBSS) Nigerian Interbank Settlement System Abdallah, (2006). It is meant to facilitate payments of taxes from the comfort of taxpayers' offices or homes. The role of digital tax accounting system is to enhance revenue generation and to find out whether the system is functioning as intended. The E-tax system as practiced by other countries such as Germany, America, Malaysia and many others has helped to reduce time of compliance by taxpayers in payment of taxes as well as provided reliable and accurate tax statistics, therefore, the Joint Tax Board, State Internal Revenue Service and the Federal Inland Revenue Service should adopt the full implementation of electronic taxation in their respective levels so as to eliminate revenue leakages, increase financial collection, avail services to the taxpayers all the time from anywhere, reduce cost of compliance and improve tax compliance through the application of electronic tax registration, electronic filling of tax returns and electronic tax payment. Consequently, if electronic tax system is properly administered in Nigeria can undoubtedly be a lasting solution to the irregular tax system that is in practice in Nigeria. In this way the study reveals the efforts of successive governments towards digital tax accounting as a panacea for tax revenue leakages in Nigeria which consistent with emerging global best practice of enhancing tax administration. It is therefore against these backdrops that this study investigated digital accounting and tax revenue in Nigeria.

Aim and Objectives of the Study

The broad aim of this study is to examine the relationship between digital accounting and tax revenue in Nigeria with the specific objectives as follows:

AO1: Examine the relationship between pre digitalization period and oil taxes in Nigeria.
AO2: Explore the relationship between post digitalization period and non-oil taxes in Nigeria

Research Questions

In line with the above aim and objectives, the study asked the following research questions;

RQ1: What is the relationship between pre digitalization period and oil taxes in Nigeria?
RQ2: Post digitalization period does not relate to non-oil taxes in Nigeria.

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance in this study:

Ho_1 There is no significant relationship between pre digitalization period and oil taxes in Nigeria.
Ho_2 There is no significant relationship between post digitalization period and non-oil taxes in Nigeria

The remainder of this study examined the literature review, methodology, results and discussion, conclusion and recommendations.

Literature Review

This segment reviewed relevant literature on digital accounting and tax revenue in Nigeria which consist of theoretical framework, conceptual review and empirical review as discussed below.

Theoretical Framework

The two theoretical frameworks adopted for this study are the Technology Acceptance Model and Expediency theory of Taxation. This is because tax authority rely upon the technological advancement and interactions with taxpayers for efficient tax revenue generation in Nigeria.

Technology Acceptance Model

Technology Acceptance Model was developed by Fred Davis in 1986. This is an information systems model that shows how users come to accept and use a new technology. The assumption of this model is that the acceptability of an information system is determined by two factors, being perceived usefulness (PU) and perceived Ease of use (PEOU). Perceived usefulness is the extent

to which a person believes that using a particular system would enhance his/her job performance, while PEOU is the degree to which a person believes that using a particular system would be free from effort. The relevance of the model to this study is based on the assumption of its perceived usefulness which provided the basis for the adoption and implementation of electronic tax system by FIRS in Nigeria; that is for the enhancement and improved tax revenue.

Expediency Theory of Taxation

Expediency theory of taxation was also adopted since the first model did not touch any concept in taxation. This theory was propounded by Buehler in 1936 and contracted by Bhartia (2009). The theory stated that any tax proposal should pass the practicality test. The expediency theory majorly focused on how to direct governments and other tax collection agencies to provide state's economic and social goals. The expediency theory assumes that country as an economy should charge taxes to the members of the society to provide economic activities and services, wellbeing and continuous economic growth of populace. The ideology of the anchored theory is that populace must pay taxes, thus position these taxes for funding economic activities. This theory explains an economy's effectiveness and efficiency in tax collection instrument for enhanced economic growth. Bhartia (2009) and Egbuhuzor and Tomquin (2021) argued that the theory depicted the link between tax liability and state activities. This theory is appropriate for this study because it enable us to assess the extent to which indirect taxes must enhance macroeconomic stability measure with RGDP in Nigeria. Thus, the theory is relevant to this study in that electronic tax system is expected by FIRS to enhance revenue collection by creating an enabling technological environment that facilitate efficient tax administration that boost revenue collection efficiency in Nigeria.

Conceptual Framework

The conceptual framework for this study was developed to explain the relationship between the predictor variable; digital accounting (taxpayers identification numbers, integrated tax administration system, & standard integrated government tax administration system) and criterion variable; tax revenue (total tax revenue) in Nigeria.

Tax Revenue

Taxation is one of the most important sources of revenue for governments all around the world. This tax money was used to carry out government tasks such as maintaining law and order, preventing foreign threats, and protecting enterprises in order to maintain social and economic stability. Enhancing government spending and functions geared toward favorable macroeconomic stability through economic growth and development, as well as reimbursing public debt, is one of the basic agenda items for collecting tax revenue. The primary objective of a modern tax system is generation of revenue to help the government to finance the ever-increasing public sector expenditure (Eneojo & Gabriel, 2014). Similarly, Afuberoh & Okoye (2014), explained that the classical function of a tax system is the raising of the revenue required to meet the expenditure which are either the provision of goods and services which members of the public cannot provide such as defense, law and order; or the provision of goods and services which the federal and state governments feel are better provided by themselves such as health services and education (Afuberoh & Okoye, 2014). Tax revenue is an integral part of government total revenue that is derived from the payment of taxes imposed on the legal activities and incomes of entities of a country (Lin & Jia, 2019). Tax revenue in Nigeria refers to the funds collected by the government through various taxes imposed on individuals, businesses, and other entities within the country. These taxes include income tax, value-added tax (VAT), corporate tax, customs duty, excise duty, and other levies. The tax revenue generated by the Nigerian government is a crucial source of funding for public services such as healthcare, education, infrastructure development, and social welfare programs. It also helps to finance government operations and reduce budget deficits. However, tax revenue in Nigeria has been relatively low compared to other countries, with tax evasion, avoidance, and non-compliance being significant challenges. The government has taken steps to improve tax collection by implementing reforms, increasing enforcement measures, and encouraging voluntary compliance. Efforts to increase tax revenue in Nigeria have included expanding the tax base, simplifying tax administration, enhancing tax compliance, and combating corruption. The government has also introduced tax incentives and relief measures to encourage investment and economic growth. Overall, tax revenue plays a critical role in the development and sustainability of Nigeria's economy, and efforts to strengthen tax collection and enforcement are essential for achieving fiscal sustainability and funding essential public services.

Financing the infrastructural facilities of any nation depends on the tax system in relation to effective assessment, collection and remittance for proper accountability by the designated agencies (Nwarogu & Nwabueze, 2018). According to Holban (2007), taxation is expected to play three significant roles: generation of sufficient fund for financing public services and other social transfer; provision of incentives for more employment and efficient use of natural resources and reallocation of income. As so much is expected of from taxation, Nigeria, like other economics of the world follows the path of continuous tax reform to cope with the global economic realities. However, in developing economies such as Nigeria, inadequate tax systems and tax gaps, particularly in indirect taxes, pose obstacles in raising revenue to improve macroeconomic stability by increasing the RGDP rate (Muhammad, 2020). Tax collection and administration can be improved through measures such as; shifting towards an electronic taxpayer registration system where a uniform Tax Identification Number (TIN) would apply regardless of whether a tax payer is registering for Personal Income Tax (PIT), Company Income Tax (CIT) or Value Added Tax (VAT), simplify the tax code, since CIT and VAT

rates are punitive and lack in-built mechanisms that would enhance self-assessment, there is need to simplify tax laws, forms and procedures developing systems that can enhance access to third party sources of information (Flossy, Elizabeth &Gregory, 2017). Effective and efficient utilization of the collected revenue from the taxes will allowed the government to provide adequate infrastructure that may boost and improved the life quality of its citizen. Tax administration and collection should be efficient and supported to safeguard required tax collection via creating awareness and enlightenment campaign on the important of paying tax, training and retraining of tax personnel and computerization of tax process. Over the years, operations of FIRS in managing tax system such as tax returns filling, payments, generation of receipts, compliance tracking and tax clearance certification were mainly carried out through manual procedures up to 2005. These procedures provided ample room for interactions between staff and taxpayers thereby increasing chances for fraud, reducing compliance and overall tax collection. Similarly, there are inherent lapses in the collection, skimming of revenue and fraudulent tax clearances among other problems associated with the manual procedures. To overcome these and other challenges, FIRS adopted digital technology for its operations, hence, digital tax accounting.

Digital Accounting

Digital accounting refers to the use of digital tools and software to track, record, manage, and analyze financial transactions and information. It involves the use of accounting software, cloud-based platforms, and automation techniques to streamline and improve the accounting process, saving time and reducing errors. Digital accounting allows for real-time access to financial data, improved data accuracy, better organization and storage of financial documents, and easier collaboration between team members and clients. The advancement in information technology has facilitated the use of online tools in all domains and branches of accounting including taxation to process accounting tasks and operations seamlessly in real-time. This development has prompted the digitalization of tax accounting.

Digital Tax Accounting

Digital tax accounting refers to the use of digital technologies and software for managing and processing tax-related tasks and data. This includes the automation of tax calculations, filing tax returns online, and tracking tax liabilities and deductions. Digital tax accounting can help businesses and individuals streamline their tax processes, improve accuracy, and ensure compliance with tax laws and regulations. It is also known as electronic tax system which refers to a computerized tax administration system that is specially designed to handle tax administration starting from the registration of taxpayers to processing of payments through filing of tax returns. Therefore, the adoption of information technology in the enforcement of core tax process such as online registration, online filing of tax returns, online payments and general maintenance of database brought about what is today called electronic tax system. It involves is a process where tax documents are submitted through the internet, usually without the need to submit any paper return. The system encompasses the use of internet technology, worldwide Web and software for a wide range of tax administration and compliance purposes (Muturi and Kiarie, 2015). Electronic tax system differs among countries; hence the name differs from one country to the other. In Nigeria, for instance, it is called Integrated Tax Administration System (ITAS). ITAS was created mainly to enhance convenience of paying taxes and ultimately incorporate a transparent and efficient tax system that optimizes tax revenue collection and voluntary compliance. The process is relatively easy, cost effective, convenient and flexible, reducing the burden and stress usually involved in the filing of tax manually. The ease and convenience observed in e-tax (electronic tax) encourages high compliance from taxpayers. The accountability guaranteed by the system is also an encouraging factor and gives taxpayers a sense of safety and security when remitting taxes. The system also makes it possible to maintain a database which helps is checking for compliance and in turn helps government in capturing more payers into the tax net.

Digital Tax System in Nigeria

In Nigeria, the Federal Inland Revenue Service adopted the tax automation process in 2013 with the introduction of the Integrated Tax Administration system (ITAS). The system comprises of a set of programs that would enhance simplification of tax administration and encourage voluntary compliance while ensuring linkages with other stakeholders through the use of IT. The software is generally designed to meet the needs of developing countries who wish to increase their control over state revenue by equipping themselves with computerized systems. In summary of the FIRS press releases through Vanguard 2015, This Day Live 2013 and Punch 2015, the objectives underlying the adoption of electronic taxation into the tax system are: to provide a solution to the problems of the traditional manual system of taxation in Nigeria; to provide streamlined, efficient processes that makes it easier for taxpayers and other stakeholders to interact with service and in turn make the FIRS more responsive to taxpayers needs; to improve voluntary tax compliance and create a more welcoming environment for taxpayers in Nigeria; to ensure better transparency in the actions and practice of authorities for the sake of accountability and good stewardship; to reengineer tax administration service delivery, eliminate gaps and redundancies in the current administrative systems and increasing contribution to national development; to minimize the general cost of administration in the midst of higher tax returns; to provide consistent quality service to all taxpayer across all the FIRS offices in Nigeria; to provide a comprehensive repository of taxpayers information that makes it easier for FIRS to support and monitor the taxpayers base throughout the lifecycle of each taxpayer. The system operates in three different languages which makes it possible for tax agents to perform operations in the language of their choice and facilitate correspondence with taxpayers. The type of taxes supported by ITAS include income tax, VAT, sales tax, licenses and permit (Alchohol, etc), pay as you

earn, excise duty, driving license and other motor vehicle registration, general income, property taxes, withholding taxes and others. With this reform, the government aims at capturing more companies and individuals into the tax net so as to increase revenue derived from taxes and also curb leakages in the Nigerian tax system.

Types of Digital Tax Accounting

There are several types of digital tax accounting software and tools available to businesses and individuals to streamline their tax-related processes. Some common types of digital tax accounting solutions include:

Tax preparation software: This type of software helps individuals and businesses prepare and file their tax returns electronically. Examples include TurboTax, H&R Block, and TaxAct.

Accounting software: Accounting software such as QuickBooks, Xero, and FreshBooks often include features for tax tracking, reporting, and compliance.

Cloud-based tax software: Cloud-based solutions like Avalara, TaxJar, and Vertex allow businesses to automate their tax calculations, compliance, and reporting in real-time.

Tax compliance software: These tools help businesses stay up-to-date with changing tax laws and regulations, ensuring they remain compliant with tax obligations.

Electronic filing systems: These systems enable businesses and individuals to submit tax returns and documents electronically to tax authorities.

Tax planning software: Some software tools help businesses and individuals forecast their tax liabilities, identify potential deductions, and optimize their tax strategies.

Overall, digital tax accounting solutions can help businesses and individuals save time, reduce errors, and ensure compliance with tax laws and regulations.

Dimensions of Digital Tax Accounting

Different countries have divergent software and tools available to handle tax related issues. In the context of Nigeria and for the purposes of this study, proxies of digital tax accounting are discussed below:

Taxpayer identification number (TIN)

Tax collection was identified as one of the major weaknesses of the manual procedures operated by FIRS as it is prone with problems such as difficulty in identifying taxpayers, lack of standardized collection systems by banks leading to ease of manipulations, differences in timing between payment and remittance to FIRS thereby making it difficult to track defaulters and offshore tax payments. To overcome these, FIRS initiated an automated collection solution known as Project-FACT (Friendly, Accurate, Complete and Timely) making it possible to track online real time what tax was collected, who made the payment, where it was paid, when it was paid, who received the payment, how much was paid, and where the funds were. Furthermore, to assure taxpayers that collected taxes are properly accounted for and have reached the expected destination for the development of Nigeria, the Taxpayer Identification Number (TIN) was officially launched on 5th April 2011 (Premium Times, 2020). However, it appears significant implementation of TIN was not achieved up to towards the end of 2012 (Nigerian Governors Forum, 2012). Before TIN, the Unique Tax Identification Number (U-TIN) was launched as an electronic system meant to store the information of tax payers and facilitate information sharing among tax authorities and other stakeholders. But the project was not successful (Deloitte, 2015). TIN is a 10-digit unique number given to tax payers in Nigeria with the aim of creating closer linkage between tax payers and the various tax authorities in Nigeria. This in turn is expected to aid in achieving cooperation, information sharing and closer working relationship among relevant tax authorities and increase revenue generation accruing to all tiers of the governments (The Act, 1998). Therefore, TIN created a national platform for the registration and allocation of an identification number to all taxpayers, which in turn created reliable and centralized data of all taxpayers in the country, widen the tax bases; enhance tax assessments, determination of appropriate tax liabilities of individuals and corporate organizations and assist in checkmating tax compliance through the computerized system (Ezegwu & Agbaji, 2014). TIN has resulted in increasing the number of taxpayers in Nigeria from 10million in 2015 to 14million in 2017 to 19million in 2018 and about 45million in 2019 and over 3million registered companies as at 2019 (The Cable, 2019). The major challenge of TIN is multiplicity of TIN for tax payers as federal and state tax authorities could issue different numbers to a single taxpayer (The Nation, 2014) and perhaps the reason for slow registration by taxpayers (Ezegwu & Agbaji, 2014).

Despite these, the launching and successful implementation of TIN could be contended as having moved the digitalization process forward from its modernization stage. Therefore, the issuance of TIN in 2011 is considered the beginning of digitalization tax administration in Nigeria within the context of this study. Succeeding TIN in the digitalization efforts is the Integrated Tax Administration System (ITAS).

Integrated Tax Administration System (ITAS) To further strengthen and automate tax administration in Nigeria, FIRS embarked on an Integrated Tax Administration System (ITAS) project in 2013 aimed at enhancing tax administration and simplifying tax compliance process by leveraging on technology. The implementation of ITAS was to ensure to ensure assigning of one unique TIN (The Nation, 2014). In this way ITAS will result in re-engineering and automating tax administration processes by FIRS including registration, assessment, payment, debt management, audit and investigation, case management and returns filing. Similarly, implementation of ITAS will assist in achieving the goals of improving revenue collection, transparency in tax administration, enhance voluntary compliance and improve the overall efficiency of tax administration. With ITAS, taxpayers will be able to file their tax returns electronically, pay their taxes online, get instant credit for withholding taxes deducted on their income, generate tax clearance certificates, automatic imposition of late filing penalties and interests, and communicate with the FIRS. Thus, ITAS will assist in delivering a seamless integrated solution which incorporates international good practices for revenue administration in Nigeria (PriceWaterCoopers, 2015). The ITAS project team has trained about 5,000 staff service wide on the usage of the operational modules deployed so far. As at November, 2020, over 721,000 assessments have been raised on
the system cutting across the different types of tax with over 66,000 being e-filed. ITAS has improved Nigeria's ranking in ease of doing business through e-filing up to 39 places moving from 146 in 2016 to 131 in 2019. It has also set up online support team which has resolved over 5,700 issues received from users across the service. The challenges of ITAS among others include deployment of parallel initiatives that could do similar work such as SIGTAS, delay in approval of planned project activities and unavailability of resident project management and technical support by the contractor (Unpublished, 2018). Arguably, ITAS has further moved forward the efforts of digitalization of tax administration in Nigeria. However, soon after the launch of ITAS in 2013, FIRS launched another digitalization effort in 2014 perhaps to strengthen ITAS known as Standard Integrated Government Tax Administration System (SIGTAS).

Standard Integrated Government Tax Administration System (SIGTAS)
This is a software utilized by the recipient for assessing and collecting revenues launched in 2014 with the aim of providing taxpayers with wide range of benefits. These include automatic calculation of tax and penalty, identification of errors or omissions by taxpayer through tax declaration processing. Generation of assessment notices, payment reminders and taxpayer correspondences automatically, automated payment posting and receipt generation, provision of an integrated view of taxpayer affairs across all tax types and reduced cost of compliance (The Nation, 2014). Under SIGTAS, when a payer remits Withholding Tax (WHT) deducted from a
contracting party, the system credits the accounts of all the beneficiaries directly, making the credit automatically available for utilization (Deloitte, 2018). Over 5,704 SIGTAS and 943 e-filing user accounts have been created for staff, the system has over 32,255 taxpayers registered on the e-filing platform out of which about 6,453 have filed their returns online. A total of 1,826,508 corporate taxpayers are currently registered in ITAS system (SIGTAS); and about 120;000 additional records are being processed for upload (Unpublished, 2018). From the foregoing, SIGTAS has built on ITAS to strengthen the digitalization of tax administration in Nigeria. To further strengthen the tax administration digitalization efforts of FIRS, the service scrapped ITAS and SIGTAS in 2022 on introducing TaxPro-Max solution (The Dream Daily, 2022)

Taxpro-max Solution
TaxPro Max is the latest automated tax administration solution from FIRS with its portal opened on 7th of June 2021 displaying more features and capabilities compared to earlier modules such as SIGTAS and ITAS. The application was launched following the provisions of the Finance Act 2020 that empowers FIRS to automate tax return filing and payment processes. It is adjudged as a one-stop online tax administration platform offering taxpayers the opportunity to register, file returns, remit taxes, carry out assessments and keep track of tax obligations. Taxpayers will also manage withholding tax deductions, manage capital allowance and loss, download tax clearance certificate, and communicate with the FIRS on tax issues among other services. Taxpayers can access the portal by registering which allow them to get log-in details subsequently required for filling returns. On filing the returns, a Document Identity Number (DIN) will be generated which will then be used to remit taxes via the portal. Filling of tax returns can be executed by taxpayers or their approved agents via the portal and for those tax payers that may want to file their returns in hard copy, they can visit any FIRS office where their documents will be upload to the portal (The Chartered Institute of Taxation, 2022). It could be contended that the launching of TaxPro-Max has enhanced the digitalization of tax administration by FIRS.

Empirical Review
Martíneza, Arzozb, and Arreguic (2022) examined whether tax collection efficiency in 28 countries of Organization for Economic Cooperation and Development (OECD) improves via decentralization, simplification, digitalization and education. The study offers

an assessment of tax administration performance and provides evidence of the relationship between fiscal decentralization and tax structure and the technical efficiency of tax collection. Data on technical efficiency estimates was obtained for sampled 28 OECD countries over the period 2004-2017 by means of Data Envelopment Analysis (DEA). This is followed by an exploration of how technical efficiency is affected by fiscal decentralization and tax structure variables. Results from the study revealed that technical efficiency in form of digitalization of tax administration has a positive and significant impact on the efficiency of tax collection.

Oreku (2021) conducted a study on the application of digital technology in enhancing tax revenue collection from micro businesses in Tanzania. The main aim of the study was to explores the potentials of digital technology to enhance tax revenue collection and its administration on Micro Businesses in Tanzanian. To achieve the aim of the study, data on tax administration, challenges impeding tax administration to MBs and the potential of digital technology in tax administration were collected by means of administering questionnaires and conducting interviews. To obtain quantitative data for the study, questionnaires were administered to 137 employees and owners of Micro Business from various business sectors in Dar es Salaam the capital of Tanzania. Qualitative data for the study was obtained by conducting semi-structured interviews with 24 officers of the Tanzania Revenue Authority (TRA). Thematic approach was used to analyze collected qualitative data while descriptive statistics was used to analyze quantitative data by means of Statistical Package for Social Scientists (SPSS). Findings from the study revealed that current tax practices to MBs are inconsistent with theories of low administration cost, wide tax base, and simple to administer tax procedure. However, the employed digital technology is found capable of overcoming the challenges and enhancing tax revenue.

Rosario and Chavali (2021) investigated digitalization of taxation in changing business environment, Base Erosion and Profit Shifting (BEPS) in the context of India. Secondary data on tax digitalization efforts, direct taxes and percentage of direct taxes to Gross Domestic Product (GDP) were collected from the Reserve Bank of India (RBI) 1988-2017. Collected qualitative data on government digitalization efforts starting 1982 were described while quantitative data on direct taxes and its contribution to GDP were presented using descriptive statistical tools of charts. Results from the study revealed that successive Indian governments have been making their contributions to the digitalization of taxation since 1982 as various measures were put in place towards progressive strengthening of the digitalization. Results from the quantitative data revealed growing trends in direct tax collections from $1.26billion in 1988 to $121.01billion in 2017 while the contribution of the direct taxes to GDP showed fluctuating trends from 0.73% in 1988 to 8.01 in 2007 decreasing to 7.57% in 2017.

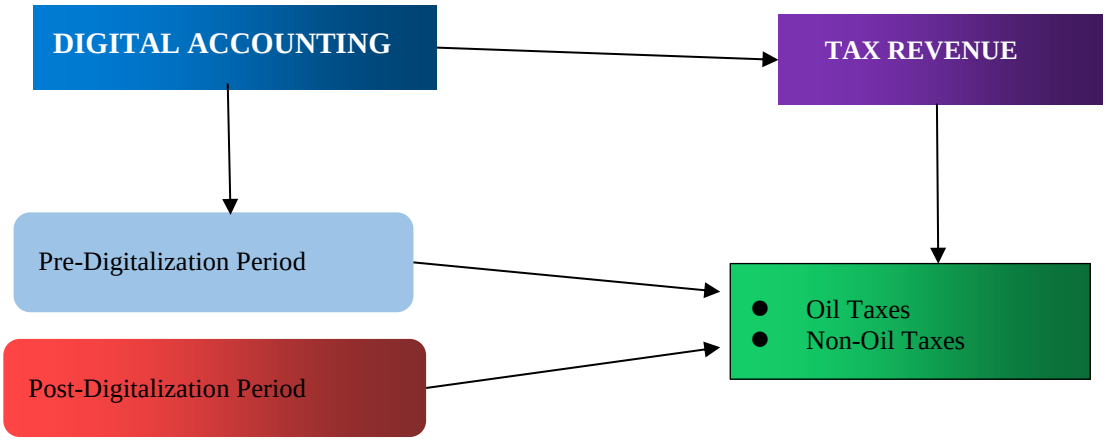
Adu, Buabeng, Asamoah and Damoah (2019) evaluated the digitalization of local revenue collection in Accra Metropolitan Assembly (AMA) which is the political and administrative authority for the city of Accra, Ghana. The study evaluated the impact of the use of point of sale digital devices on collection of rates 2012-2016 with the introduction of the device in 2012. To achieve the aim of the study, primary and secondary data were collected over the period of the study. The primary data was obtained by conducting an in-depth interview with 17 staff of AMA while secondary data was sourced from the annual reports and annual composite budgets of AMA over the period of the study. Analysis of these documents revealed seven sources of revenue which are rates, fees and fines, licenses, land, rent, investment and miscellaneous. Interviewed staff agreed that there was significant increase in rates collection after the introduction of the digital device as it has also enhanced accountability and transparency. Quantitative result confirmed this, as collection of rates overtook fees and fines that used to be the highest contributor of revenue.

Tyokoso, Onho and Musa (2021) examined Tax Identification Number (TIN) and Tax Revenue Performance in Nigeria focusing on the effect of TIN on tax revenues from Valued Added Tax (VAT), Company Income Tax (CIT), Custom and Excise Duties (CED) and Petroleum Profit Tax (PPT) generation. Data for the study was secondary data obtained from the annual statistical bulletin of the Central Bank of Nigeria (CBN) 1998-2017. Collected data was analyzed by means of regression analysis in form of paired sample t-test. Findings from the study revealed significant positive difference in the means of VAT, CIT, CED, and PPT after the introduction of TIN. Thus, there is empirical evidence indicating that TIN as a digital identification in the tax digitalization efforts of Nigerian tax administration has enhanced tax revenue collection.

Hanga, Mohammed, Dandago and Musa (2020) conducted a study with the aim of examining the impact of TIN on Internally Generated Revenue (IGR) collection in Adamawa State, Nigeria. To achieve the aim of the study, secondary data on tax payments by individuals and non-individuals with TIN registration in Adamawa State 2009-2015 was collected from the Adamawa State Board of Internal Revenue Service. Collected data was analysed using descriptive statistics, Pearson correlation, multiple regression analyses and paired sample t-test. Results from these analyses revealed that Pearson correlation showed individuals (IND) with TIN have responded positively to the payment of Pay As You Earn and other taxes than those without TIN. Non-Individuals (NIND) also have more positive and significant response towards remittance of their employees' PAYE and Non-PAYE taxes than businesses without TIN. Multiple regression analysis results indicated significant impact on businesses revenues collection for businesses with TIN. Paired sample t-test result also showed significant difference between the scores of pre-TIN and post-TIN IGR collection in Adamawa State.

Adegbie & Akinyemi (2020), examined the effect of electronic payment system on revenue generation in Lagos State. The main objective of the study was to ascertain the effect of electronic payment system on revenue generation in Lagos State. Data were sourced with the aid of questionnaire distributed to 366 staff among the six (6) selected revenue generating agencies in Lagos State. Analysis of data was done with the use of descriptive statistics, while hypotheses were tested using multiple regression model at 5% level of significance. The result of the analysis revealed that electronic payment variables (automated teller machine and electronic

fund transfer) have significant and positive effect on personal income tax. The study concluded that e-payment influenced revenue generation in Lagos State. They therefore recommended amongst others that for government organization to seek to achieve revenue optimization, its leadership style should be transparent and flexible enough so as to further positive changes.



Sources: Sani, Abdulsalam, Yusuf, Muhammad, Aishatu & Bashir (2023); and Adegbie, Enerson, & Olaoye (2022)

Fig. 1: Conceptual Framework on Digital Accounting and Tax Revenue in Nigeria.

Gap in Literature.

From the foregoing, there are existing literature on digitalization and tax revenue. Studies by Martíneza, Arzozb, and Arreguic (2022), Oreku (2021), Rosario and Chavali (2021) and Adu, Buabeng, Asamoah and Damoah (2019) are conducted outside Nigeria; thus, there is literature gap of settings. However, the studies by Tyokoso, Onho and Musa (2021) and Hanga, Mohammed, Dandago and Musa (2020) conducted within the context of Nigeria. This notwithstanding, in both the context of studies conducted outside Nigeria and in Nigeria there are literature gaps of location, time period, theoretical framework, type of data, its collection and method of analyses thereby justifying the conduct of this study. This results into obtaining an updated knowledge on the area in the context of Nigeria. It is against the above backdrop that prompted an empirical investigation to examine the relationship between digital accounting and tax revenue in Nigeria.

Methodology

The study examined the relationship between digital accounting and tax revenue in Nigeria. This study adopted an ex-post facto design in other to address the problem of the study. This type of research design is suitable in this study, because the data is already in existence. The study employed secondary data which were obtained from Central Bank of Nigeria (CBN) Statistical Bulletins, Federal Inland Revenue Service (FIRS) Publications OECD and World Bank documents for the years under consideration. The study period the study considers 2011 as pre-digitalization year; thus, 2002-2010 a period of 10 years is designed as pre-digitalization period while 2012-2021 another 10 years is considered as post-digitalization era. The appropriateness of this method can be justified from the fact that each variable was grouped into two observations (before e-tax payment system adoption and after e -tax payment system adoption). Collected qualitative data on various digitalization efforts by FIRS is descriptively presented in section 2 while descriptive statistical tools of charts are used to present quantitative data on tax revenue collections over the period of the study 2002-2021. The data was analyzed with the aid of SPSS 27.

Model Specification

Based on the conceptual framework and hypotheses stated earlier, the model for this study was specified as follows:

Functional Expression of Model:

TR = f(DA)……1
PRDE =f(TIN, ITAS, SIGTAS, TPMS)……..…2
PODE =f(TIN, ITAS, SIGTAS, TPMS)……..…3

Mathematical Expression of Model:

PRDP = $\alpha 0 + \alpha 1TIN + \alpha 2ITAS + \alpha 3SIGTAS + \alpha 4TPMS$……..…4
PODP = $\beta 0 + \beta 1TIN + \beta 2ITAS + \beta 3SIGTAS + \beta 4TPMS$……..…5

The above equation 1 is trans-modified into econometric form by adding constant term ($\alpha 0$, $\beta 0$) and error term (ε, U) in the model below:

Econometric Expression of Model:

PRDE = $\alpha 0 + \alpha 1TIN + \alpha 2ITAS + \alpha 3SIGTAS + \alpha 4TPMS + \varepsilon$……..…5
PODE = $\beta 0 + \beta 1TIN + \beta 2ITAS + \beta 3SIGTAS + \beta 4TPMS + U$……..…6

Where:
TR = Tax Revenue
DA = Digital Accounting
TIN = Taxpayer Identification Number
ITAS = Integrated Tax Administration System
SIGTAS = Standard integrated government tax administration system
TPMS = Taxpro-max solution
αo, β0 = Constant
α1- α4, β1-β1 = Regression Slope
ε ,U = error terms

RESULTS AND DISCUSSION

This chapter presents the data collected through structured questionnaire and the data was analyzed with the aid of Statistical Package for Social Science version 27, interpretation and discussion of the results.

Data Presentation and Analysis

Table 1: Collected Taxes 2002-2021 broken into Pre and Post Digitalization Period

Pre-Digital Taxes			Pre-Digital Taxes		
	Collected Taxes (₦)			Collected Taxes (₦)	
Year	Oil Taxes (₦trillion)	Non-Oil Taxes (₦trillion)	Year	Oil Taxes (₦trillion)	Non-Oil Taxes (₦trillion)
2002	204.40	224.40	2012	3,201.32	1,806.33
2003	438.00	255.40	2013	2,666.37	2,139.28
2004	878.60	316.20	2014	2,453.95	2,260.61
2005	1,522.00	389.20	2015	1,157.81	2,149.65
2006	1,353.00	513.70	2016	1,157.81	2,149.65
2007	1,132.00	716.30	2017	1,520.48	2,507.65
2008	2,061.00	911.30	2018	2,469.58	2,853.31
2009	939.40	1,147.00	2019	2,114.27	3,147.65
2010	141.00	1,359.00	2020	1,516.99	3,435.23
2011	307.59	5,832.50	2021	2,008.45	4,395.25
Total	**8,976.99**	**11,665.00**	**Total**	**20,267.03**	**26,844.61**

Sources: Central Bank of Nigeria (CBN) Statistical Bulletins, Federal Inland Revenue Service (FIRS) Publications OECD and World Bank Documents , 2023

From table 1, total collected tax over the pre-digitalization period 2002-2011 for oil and non-oil taxes were ₦8.98trillion and ₦11.67trillion respectively, while collected tax post digitalization period 2012-2021 were ₦20.27trillion and ₦26.84trillion. Therefore, post digitalization collected taxes exceeded pre-digitalization collections by ₦11,290.04trillion and ₦15,179.61trillion respectively thereby signifying the positive impact of digitalization of tax administration in enhancing tax revenue collections. Pre and post digitalization collections were further subjected to paired sample t-test to statistically determine existence of difference in the means of collected taxes over the two periods and the level of statistical significance of the difference. A paired t-test was used to compare two population means in which observations in one sample are paired with observations in another sample such as in case of before and after observations such as in this study (Shier, 2004) with the aid of SPSS 27.

Table 2: Descriptive Statistics of Tax Revenue before and After the Advent of Digital Tax Accounting

Variables	Number of Observation	Mean	Std. Deviation	Minimum	Maximum
Paired1	10	8.6985	60.297	116.507	556.27
Paired2	10	41.132	1.7806	65.29	501.66

Source: SPSS 27 Output of Research Data, 2024

From the result, it could be clearly seen that the mean and standard deviation values of pre tax revenue (before the advent of e-taxation) were The outcome also revealed that pair 1 has a mean value of 8.6985 billion and a standard deviation of 60.297. respectively while that of post tax revenue (after the adoption of e-taxation) were In the same vein, it could be deduced from the table above that pair 2 has a mean value of 41.132 billion and a standard deviation of 1.7806. respectively. Similarly, the pre minimum and maximum values of oil taxes were 116.50 billion 556.27 billion respectively for the periods covered. In the same vein, it was gathered that the post minimum and maximum values of non-oil taxes were 65.29 billion 501.66 billion respectively for the periods covered.

Paired Sampled T-Test

Table 3: Result of Paired Samples Test

Variables		Paired Difference				
		Tax Revenue	Std. Deviation	T-Statistic	DF	Sig-Value
Paired 1	PostDig Oil Taxes - PreDig Oil Taxes	11,290.04	60.297	1.52	12	0.010
Paired 2	PostDig Non-Oil Taxes - PreDig Non-Oil Taxes	15,179.61	41.132	1.833	12	0.001

Source: SPSS 27 Output of Research Data, 2024

Based on the table above, it implies that the value of post digitalization of oil tax revenue (after the advent of e-taxation) was ₦11,290.04trillion higher than pre digitalization of oil tax revenue (before the advent of e-taxation) for the periods this study. The t-statistics and p-value reported 1.520 and 0.010 respectively implies that there is a positive significant difference between post and pre digitalization of oil tax revenue. Put differently, this connotes that digital tax accounting has a positive and significant on tax revenue in Nigeria.

Similarly, the post post digitalization of non-oil tax revenue (after the advent of e-taxation) was 41.132 higher than pre digitalization of oil tax revenue (before the advent of e-taxation) for the periods this study covered. The t-statistics and p-value reported to be 1.833 and 0.001 respectively implies that there is a positive significant difference between post and pre non-oil tax revenue meaning that digital tax accounting has a positive and significant relationship with tax revenue in Nigeria in the period of this study. This is further confirming the impacts of digitalization of tax administration on tax revenue collections 2012-2021.

Discussion of Findings

The main goal of tax administration is to ensure compliance by tax payers and this entails making the system simple for taxpayers, minimize compliance costs for taxpayers, minimize costs of collections by the tax authority and ensuring accountability of collected tax revenues among others (Jacobs, 2013). Therefore, modernization of tax administration is meant to achieve these and other goals of tax administration. From the preceding on digitalization efforts of FIRS, it could be argued that the digitalization efforts are succeeding in achieving the goals of tax administration by moving from manual to electronic procedures of tax assessments and collections. The electronic procedures of tax administration have reduced risks of corruption, eased filling of tax returns, enhanced accountability in the tax collection, increased tax payers trust and confidence in the administration and brought in more tax payers into the tax net. Thus, efforts by FIRS to digitize its tax administration has positively impacted on administration of taxes administered by the service in Nigeria. This finding indicating positive impact of the digitalization efforts of tax administration is consistent with (Rosario & Chavali, 2021). Indeed, the score of 0.20 on global innovation 2021 signified improvements in adoption of technology in the country at large though coming slowly (UNCTAD, 2005; UNCTAD, 2021).

A critical look at the trends of collected taxes, decreased collections in 2007 could be attributed to general elections that took place in the year as elections in Nigeria are characterized by instability and violence which could be pre or post elections (Ashindorbe, 2018). There is strong established relationship between political stability and economic growth (Acar, 2019; Alesina & Ozler, 1996); thus, election instability in the election year of 2007 perhaps affected economic performances resulting in to decreased tax revenue.

Significant increase in tax revenue collections in 2008 could be linked to international oil price that peaked at $145.75 per barrel (Hamilton, 2009) making Nigeria to realize significant tax revenue from oil and non-oil taxes. The significant decrease in tax revenue collections in 2009 perhaps, is related to the global financial crisis considered the most serious financial crisis since the great depression of 1929 (Blankenburg & Palma, 2009). This crisis affected virtually all global economic activities including oil prices which was as low as $36 end of 2008 (Hamilton, 2009) which affected tax revenue collections in 2009. Significant increase in collected revenue 2011-2013 is also attributable to international oil prices as prices increased in these years which although fluctuated but better than what was witnessed end of 2008 to early 2009. International oil prices decrease in 2014 through 2015 and 2016 (Ellwanger, Sawatzky & Zmitrowicz, 2017); perhaps, accounted for the low tax collections of 2014 compared with 2013 and 2015 compared with 2014 while 2016 collections remained constant with 2015. Decreased collections in 2020 are equally attributable to low collections from oil taxes as it is the lowest compared with 2018 and 2019.

On the overall, increased tax collections are consistent with (Martíneza, Arzozb & Arreguic, 2022) that found digitalization of tax administration having positive and significant impact on the efficiency of tax collection. It is also consistent with (Rosario & Chavali, 2021) that reported digitalization of tax has increased tax revenue collection and (Tyokoso, Onho & Musa, 2021) and that found issuance of Taxpayer Identification Number (TIN) which is a component of the digitalization has enhanced tax revenue collections. Digitalization of tax administration is said to have five levels of e-filing, e-accounting, e-match, e-auditing and e-assessment. Nigeria's FIRS is placed at the first level of e-filling capabilities in 2017 (EY, 2017); thus, FIRS arguably has established data base of taxpayers and ensured compliance by the level of attained digitalization. This may be an explanation to enhanced tax revenue collections especially from 2011 when TIN was issued to taxpayers followed by further strengthening of the digitalization up to 2021 when TaxPro Max was launched. Thus, it could be contended that increased tax revenue witnessed 2011-2021 was sequel to digitalization of tax administration by FIRS. From preceding discussions, policy analysis analytical framework better explains these findings as digitalization of tax administration is found useful in enhancing tax revenues. Practically, whenever, automated checks are established in a system, compliance and efficiency tends to be high.

Conclusion

Literature affirmed that over the years tax compliance levels remain low and tax collections are below the targets set by most revenue collection authorities. The introduction of electronic tax systems in most countries across the global divide, developing countries like Nigeria, still face the challenges of low tax compliance and tax administration. It was argued that online tax systems are rapidly replacing paper-based tax reporting systems. Promising many advantages over the traditional method of hard copy tax filing, these systems promise faster processing, lower cost and increased efficiency. This was the basis on which this research work which examined digital accounting and tax revenue in Nigeria. Based on the outcome of the analysis carried out, it was concluded that:

i. There is a positive and significant difference between pre and post digital oil taxes and tax revenue in Nigeria during the period of this study.
ii. There is a positive and significant difference between pre and post digital non-oil taxes and tax revenue in Nigeria during the period of this study.

Generally digital tax accounting has positively contributed to the generation of tax revenue in Nigeria. FIRS has been proactive in implementing various digitalization efforts to digitizing tax administration in Nigeria. Similarly, it could be concluded that the digitalization efforts are enhancing tax revenue collections even on fluctuating trends.

Recommendations

The following recommendations were made in line with the findings of the study:
i. The Federal government through Federal Inland Revenue Services should work out modalities on how to sensitize companies on the nitty-gritty of E-tax payment so as to further maximize the expected positive impact of the initiative.
ii. Federal Inland Revenue Services should come up with measures to ensure that defaulters are brought to book and dealt with according to the provisions of the laws.
iii. Federal Inland Revenue Services must ensure that the website is of good quality and accessible to all and sundry.
iv. To ease accessibility by taxpayers, mobile version of electronic tax portal should be created. This will no doubt increase the adoption rate by tax payers as mobile phones are being increasingly used
v. There should be a collaborative work between the government, Federal Inland Revenue Services and taxpayers in Nigeria. This will reveal the shortcomings besetting the effectiveness of the system.

References

Acar, A. (2019). The effects of political stability on economic growth of the presidential government system. *International Journal of Economics and Politics Sciences Academic Researches*, 3(9), 18-31.

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.

Akinmurele, L. (2022). Nigeria's revenue problem lingers as tax reforms stall.

Alesina, A., & Ozler, S. (1996). Political Instability and Economic Growth. *Journal of Economic Growth*, 1(), 189-211. https://www.jstor.org/stable/40215915.

Amadi, L., & Obutte, P. C. (2018). The treasury single account and the search for effective revenue management in Nigeria's oil and gas sector. *Journal of Sustainable Development Law and Policy*, 9(2), 101 – 124. DOI: https://dx.doi.org/10.4314/jsdlp.v9i2.7.

Ashindorbe, K. (2018). Electoral Violence and the Challenge of Democratic Consolidation in Nigeria. India Quarterly: *A Journal of International Affairs*, 74(1), 92–105.

Bennet, R. (2012). A change agent in the Tax Office: Nigeria's Federal Inland Revenue Service 2004 – 2009.

Blankenburg, S., & Palma, J. G. (2009). The global financial crisis. *Cambridge Journal of Economics*, 33(4), 531-538. doi:10.1093/cje/bep038.

Bromley, D.W. (1990). The ideology of efficiency: searching for a theory of policy analysis. *Journal of Environmental Economics and Management*, 19(1), 86-107.

Deloitte (2015). Tax Administration in Nigeria & the Challenge of IT: When is the bold play?

Deloitte (2018). Automation of the withholding tax system.

Ellwanger, R., Sawatzky, B., & Zmitrowicz, K. (2017). Factors Behind the 2014 Oil Price Decline. Bank of Canada Review, 2(2), 1-13.

EY (2017). Tax technology and transformation tax functions 'go digital

Ezegwu C.I. & Agbaji J. (2014). Assessment of Application of Taxpayer Identification Number (TIN) on Internally Generated Revenue (IGR) in Kogi State for the period of (2003-2012), *Mediterranean Journal of social sciences*, 5(20), 38-48.

Federal Inland Revenue Service (2022a). Profile. Retrieved from https://www.firs.gov.ng/firsprofile/.

Federal Inland Revenue Service (2022b).

Hanga, B. Y., Mohammed, S. D., Dandago, K. I., & Musa, H. (2020). The Impact of Tax Identification Number on Internally Generated Revenue of Adamawa State, Nigeria.

Federal University Wukari Journal of Accounting and Finance, 1(2), 74-93.

Institute of Chartered Accountants in England and Welsh (2022). Digitization of Tax: international perspectives.

Jacobs, A. (2013). United States Agency for International Development: detailed guidelines for Improved Tax Administration in Latin America and the Caribbean.

Martíneza, Y. U., Arzozb, P. P., & Arreguic, I. Z. (2022). Tax collection efficiency in OECD countries improves via decentralization, simplification, digitalization and education. *Journal of Policy Modeling*, 44(2), 298 - 318.

Nigerian Governors Forum (2012). The TIN program update. *Journal of Accounting and Taxation* e-ISSN 2808-7127

Ogbonna, G. N., & Ebimobowei, A. (2013). Rent Seeking and Group Interest on Petroleum Revenue in the Nigerian Economy: A Causality Approach. *Asian Journal of Business Management* 5(2), 213-228. http://dx.doi.org/10.19026/ajbm.5.5697.

Oreku, G. S. (2021). Application of digital technology in enhancing tax revenue collection: the case of micro businesses in Tanzania. *Journal of Tax Reform*, 7(2), 173–192.

Organization for Economic Cooperation and Development (2021b). Revenue Statistics in Africa 2021.

Patton, Q. M. (1987), How to use qualitative methods in evaluation. Newsbury Park, London, New Dehli: Sage Publications.

Premium Times (2020). How we reformed FIRS, grew Nigeria's revenues – Former Chairman.

PriceWaterCoopers (2015). FIRS introduce electronic filing of tax returns and online payment of taxes.

Rosario, S., Chavali, K. (2021). Digitization of Taxation in the Changing Business Environment& Base Erosion& Profit Shifting (BEPS) Special Reference to India. *European Scientific Journal*, 16(1), 61 – 74.

Shier, R. (2004). Statistics: Paired t-tests.

Simeon, E. D., Simeon, E. I. & Roberts, I. A. (2017). Issues and Challenges Inherent in the Nigerian Tax System. *American Journal of Management Science and Engineering, 2(4), 52-57.*

The Cable (2019). From 10m in 2015, Nigerian taxpayers 'soon to hit 45m.

The Chartered Institute of Taxation (2022). FIRS Taxpromax solution: filing requirements and procedures.

The Dream Daily (2022). FIRS scraps SIGTAS-ITAS tax payment system.

The Nation (2014). Standard Integrated Government Tax Administration System (SIGTAS).

Tiamiyu, M. A. (2000a). Information technology in Nigerian federal agencies: problems, impact and strategies. *Journal of Information Science*, 26(4), 227–237.

Tiamiyu, M. A. (2000b). Availability, accessibility and use of information technologies in Nigerian federal agencies: a preliminary survey. Information Technology for Development, 9 (2000), 91–104.

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.

United Nations Conference on Trade and Development (2005). World investment report transnational corporations and the internationalization of research and development.
United Nations Conference on Trade and Development (2021). Technology and innovation report: catching technological waves innovation with equity
Unpublished document (2018). Synopsis of ITAS Project Implementation. An internal document of Federal Inland Revenue Service
World Bank (2022). Taxes & Government Revenue. .
World Bank (2022b). Population, total – Nigeria.