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Research Article

Effectiveness of Digital Tax Reforms on Administrative Efficiency of The Nigerian Federal Inland Revenue Service: With Tax-Promax Inclusion

¹Ibilor, Aruoriwo Elo, ²Deshi, Nentawe Nengak

About Article

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About Author

¹ Department of Taxation, Anan University Kwall, Plateau State, Nigeria

² Department of Accounting, Faculty of Management Science, Plateau State University, Bokkos, Nigeria

Contact @ Deshi, Nentawe Nengak
deshinentawe@gmail.com

ABSTRACT

This paper examined the effect of digital tax reforms on the operational performance of the Nigerian Federal Inland Revenue Service in respect to Taxpayer Identification Number, Integrated Tax Administration System, Standard Integrated Government Tax Administration System and Tax-Pro-Max Solution. The research used a quantitative design. The study used a survey method design and primary data to evaluate how effective digital tools are in improving administrative efficiency. Stratified sampling was used in the research. The data collection plan involved closed ended questionnaires. Regression models and other analytical methods were used. Based on the findings, it is evident that the Taxpayer Identification, Integrated Tax Administration System as well as the Tax-Pro-Max Solution are very effective in improving the efficiency of the Nigerian FIRS with regard to tax management. On the contrary, the result revealed that the Standard Integrated Government Tax Administration System does not have significant impact on Tax Administrative Efficiency within the Nigerian FIRS. The analysis has concluded that the use of TIN, the Integrated Tax Administration System and Tax-Pro-Max has proved to be an effective way of automating and consolidating activities relating to the collection of tax. The research however concluded that the Standard Integrated Government Tax Administration System had no significant results to Tax Administrative Efficiency. It is recommended that FIRS should focus more on spreading the TIN system to cover all tax paying areas of Nigeria. The FIRS should continually invested in ITAS through improving the system, providing ease of access to users and increasing training of the staff. FIRS should re-evaluate implemented SIGTAS into its operations. It should be thoroughly assessed in terms of its functionality and areas where it can be improved should be determined. The FIRS ought to spread Tax-Pro-Max to additional tax-paying companies and individuals and make it the standard way of paying taxes and making transfers.

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1. INTRODUCTION

Inefficiencies associated with manual processes have Hindered tax administration in the past in Nigeria. Complexities like identification problems of the taxpayers, variation in the mode of collection across the banks, and difficulties in tracking the payments have made the situation worse. To correct these inefficiencies, the Federal Inland Revenue Service (FIRS) embarked on numerous programs to automate the collection and administration of tax. Project-FACT (Friendly, Accurate, Complete and Timely) enables real time monitoring of the process of tax collecting, and provides correct accounting of payments of taxes. In 2011, the FIRS also introduced the Taxpayer Identification Number (TIN) to allow them to monitor tax payments and boost compliance. The TIN system was commissioned in 2011, though the implementation of the system did not record any significant change until late 2012 (Nigerian Governors Forum, 2012). Before the Tax Identification Number (TIN), there existed an unsuccessful attempt to introduce the Unique Tax Identification Number (U-TIN) (Deloitte, 2015).

In this research, the researcher seeks to determine how digital reforms, namely TIN, Integrated Tax Administration System (ITAS), Standard Integrated Government Tax Administration System (SIGTAS) and TaxPro-Max solution have been effective in improving Tax Administrative Efficiency in Nigeria. The research question of this paper is the exploration of the relationship between the digital technologies and the effect on the tax collection to determine whether the reforms have brought forth the intended results. The results will provide important information that would be used in future policymaking aimed at improving the ability of Nigeria to achieve income generation and prolonged economic expansion. The technologies that are under study in this study (TIN, ITAS, SIGTAS and TaxPro-Max) share a common goal of increasing Tax Administrative Efficiency. The TIN is the foundation upon which the taxpayers have to be monitored and on the other hand ITAS and SIGTAS are meant to automate and standardize the tax processes hence leading to efficiency in tax administration. TaxPro-Max can be used to complement the current systems by offering a friendly platform where taxpayers can manage their tax obligations, therefore, boosting compliance and revenue collection. This paper is based on the need to understand the impact of digital technologies on the federal tax administration of the Federal Inland Revenue Service of Nigeria.

1.1 Statement of the problem

Nigerian economy is faced with low tax revenue and tax compliance. The total number of employed people is 69.5 million, with only 19 million paying tax, which means that almost 50.5 million people are not included in the tax system (FIRS, 2022). The total tax revenue generated by the 36 states and the Federal Capital Territory (FCT) in 2018 was only 669 billion naira which represents a significant gap in tax collection (NBS, 2019). The tax-to-GDP ratio is Also, of concern, is the poor level of tax compliance, which has a negative impact on the ratio. It got worse over the last few years, with tax revenue estimates continuously falling in 2020 and 2021 (NBS, 2022).

There is evidence to show that digital technology improves the global tax system. Despite the fact that the Federal Inland

Revenue Service (FIRS) has embarked on the digitalization of tax administration, the impact of digitalization on the effectiveness of tax collecting, especially under the auspices of the Nigerian FIRS, is little studied. Fewer literatures exist on the impacts of digitalization on tax administration. The research carried out by Martineza *et al.* (2022), Oreku (2021), Rosario and Chavali (2021), and Adu and Buabeng (2021), and Asamoah and Damoah (2019) was conducted outside Nigeria which presented a geographical gap. These papers failed to capture the implication of digitalization of tax administration in Nigeria.

Most of the past studies on digital taxation in Nigeria a conceptual gap, where most of the studies focused on electronic payment, filing and clearance certificates of tax (Okoye & Olayinka, 2021; Akpubi & Igbekoyi, 2019; Alade, 2018; Chijioke *et al.*, 2018; Olaoye & Atilola, 2018; Segun *et al.*, 2017), without considering the wholesome digital tax reforms like the Taxpayer Identification Number (TIN), Integrated Tax Administration System (ITAS), Standard Integrated Government Tax Administration System (SIGTAS) and TaxPro-Max solution. It is a gap in the understanding of the developments of the digital tax reforms in Nigeria and how they have affected the effectiveness of the tax administration process and tools especially through TIN, ITAS, SIGTAS, and Tax Pro-Max Solution. The core objective of the study is to determine how digital tax reforms have an impact in the quality of tax administration in the Nigerian Federal Inland Revenue Service (FIRS). The Specific Objectives are: to:

- i. Assess how much the introduction of the Taxpayer Identification Number (TIN) affect Tax Administrative Efficiency of the Nigerian Federal Inland Revenue Service (FIRS).
- ii. Evaluate the impact of the Integrated Tax Administration System (ITAS) on Tax Administrative Efficiency of the Nigerian Federal Inland Revenue Service (FIRS).
- iii. Examine the effect of the Standard Integrated Government Tax Administration System (SIGTAS) on Tax Administrative Efficiency of the Nigerian Federal Inland Revenue Service (FIRS).
- iv. Analyze the effect of the TaxPro-Max solution on Tax Administrative Efficiency of the Nigerian Federal Inland Revenue Service (FIRS).

2. LITERATURE REVIEW

2.1. Conceptual review

2.1.1. Administrative effectiveness

Tax administration, as the basis of building and realizing tax policies, is a key to the stability of the financial system of any country (Audu & Ishola, 2021). Essentially, tax administration encircles the functions and tasks, which the law entrusts tax authorities with. Equally important to the mere process of tax collection is the establishment of a system that enables the effective tax planning, ensures the precision of tax evaluations, and oversees both collections and expenses efficiently (Ogbonna & Appah, 2016). As a matter of fact, the tax administrative efficiency comprises diverse activities, including the setting of tax rates and rules, tax raising among individuals and businesses, and the distribution of raised funds to infrastructure and other public services (Oreku, 2021).



2.1.2. Digital taxation re reforms

Digital tax reforms have greatly transformed the tax environment, which concerns national and international tax administration as well as tax policy. Modern tax systems are becoming increasingly necessary as the world is getting more advanced and interconnected (Simeon *et al.*, 2017). Such ongoing transformation brings about the issue as to whether existing tax legislation is still suitable in a fast-evolving digital environment.

2.1.3. The modernization project

The Nigerian Federal Inland Revenue Service (FIRS) largely depended on manual procedures before the year 2005 in tasks such as filing of tax returns, processing of payments, generating receipts, tracking compliance and issuing of tax clearance certificates. The modernization project was viewed by many people as a massive success and it predetermined subsequent digital modifications in FIRS. It played a great role in enhancing service delivery in the agency and transforming its operations. However, this project faced critical challenges, particularly, the full support of all stakeholders, not to mention the legislative and executive branches (Premium Times, 2020). Despite such difficulties, the successful implementation of the project formed the basis of future digitization projects such as the introduction of the Taxpayer Identification Number (TIN) system in 2011.

2.1.4. Taxpayer identification number

The use of Taxpayer Identification Number (TIN) in Nigeria became effective on April 5, 2011 (Premium Times, 2020). Through enhancing the relationship between the taxpayers and the various tax authorities, this program was aimed at increasing the collaboration, sharing of information and the overall boost in the revenue collection at all levels of government (Sani *et al.*, 2023). Prior to the TIN, an electronic system known as the Unique Tax Identification Number (U-TIN) was proposed, which had the aim of registering the taxpayer information and sharing the data with each other. Unfortunately, the U-TIN project could be regarded as unsuccessful as it did not reach its objectives (Deloitte, 2015). The TIN assigned to the Nigerian individuals and businesses is a 10-digit unique number. It is very instrumental in creating a national taxpayer registry which in turn makes a centralized database that will help in tax assessment as well as tracking compliance.

2.1.5. Integrated tax administration system

In an effort to enhance and make tax administration in Nigeria automated, the Federal Inland Revenue Service (FIRS) introduced the Integrated Tax Administration System (ITAS) project in 2013. This project had an aim of applying technology in assisting the taxpayers to adhere to the tax legislation and simplification of the tax processes. As a way to address the issues associated with multiple Taxpayer Identification Numbers (TINs) and, consequently, contribute to the overall effectiveness of tax administration, among the primary objectives of ITAS was to ensure that each taxpayer received a unique TIN (Sani *et al.*, 2023).

2.1.6. The integrated government tax administration system standard

A recent advancement in the tax administration environment in Nigeria is the Standard Integrated Government Tax Administration System (SIGTAS) that was unveiled in 2014. SIGTAS can provide several benefits both to the tax authorities and the taxpayers automating and simplifying various aspects of revenues collection and tax evaluation. The system features error detection in processing of tax declaration, automatic issue of assessment notices, payment reminders, taxpayer letters, as well as automatic calculations of tax and penalties (The Nation, 2014).

2.1.7. Pro-max tax solution

The latest technology in tax administration in Nigeria is called TaxPro Max, and it was presented officially on June 7, 2021. Compared to the previous systems, such as SIGTAS and ITAS, this platform is distinguished by the greater number of available features and capabilities. It came to replace the Finance Act 2020, which mandated the Federal Inland Revenue Service (FIRS) to automate the process of filing and paying tax returns (FIRS, 2022). TaxPro Max is the comprehensive web-based tax administration system which offers several services facilitating the tax compliance. The portal allows registration, filing of returns, and remittance of taxes, withholding tax deductions, capital allowances and losses, and downloading of tax clearance certificates, and engagement with the FIRS.

2.2. Conceptual framework

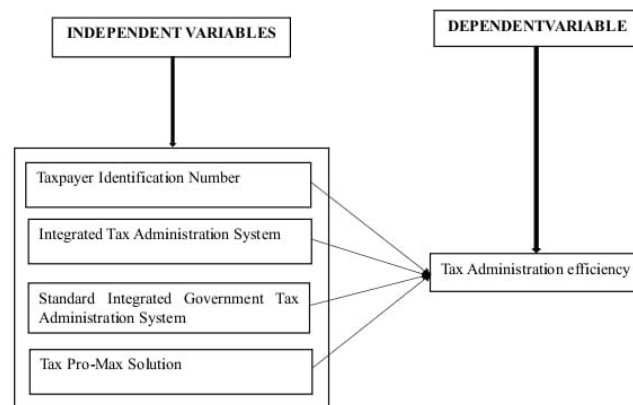


Figure 1. Conceptual framework

2.3 Empirical studies review

2.3.1 Taxpayer identification number and tax administrative efficiency

Tyokoso *et al.* (2021) studied the Tax Identification Number (TIN) and its impact on Tax Revenue Performance in Nigeria. The study used secondary data which was the annual statistical bulletin of the Central Bank of Nigeria on the analysis of the period between 1998 and 2017. The collected data was subject to regression analysis using paired sample t-test. The findings of the research proved that Tax Identification Number (TIN) as a digital identity in the tax digitization efforts in Nigeria has helped the government to collect more revenues. Nevertheless,



the research has a conceptual gap since it fails to address the bureaucratic and operational aspects of tax collecting. With the use of TIN, the government is able to increase collection of taxes and the process is made easier with the simplification of identification of the taxpayer, elimination of unnecessary processes and monitoring of compliance which is made easier. This paper looking at the impact of TIN on the effectiveness of operations of the Nigerian Federal Inland Revenue Service (FIRS) in terms of internal operations, delivery of service and general administrative enhancements and not necessarily the performance of the taxes in terms of revenue.

Hanga *et al.* (2020) conducted a study to analyze how TIN affected the Internally Generated Revenue (IGR) collection in Adamawa State, Nigeria. To accomplish the purpose of the study, secondary data that comprised of tax payments by individuals and companies that have TIN registration in Adamawa State between 2009 and 2015 was obtained at the Adamawa State Board of Internal Revenue Service. Descriptive statistics, Pearson correlation, multiple regression analysis, and paired sample t-tests were the data analysis tools of this research. Multiple regression analysis results showed that businesses having Tax Identification Number (TIN) had a huge impact on their ability to generate revenue. The research did not look into the influence of TIN on the administrative process involved in the tax collection process such as the improvement of the taxpayer identification, effectiveness in enforcement or better management of tax data. The analysis fails to consider the operational efficiencies that TIN might provide to Adamawa State tax authority as it focuses solely on the revenue results. In that way, this paper aims to fill the gap by examining how TIN can affect administrative efficiency on the federal level and specifically within FIRS by analyzing such factors as tax filling process, correctness of the records, and decrease in administrative expenses.

Akinleye *et al.* (2019) investigated how tax identification numbers impact the generation of revenue in southwestern Nigeria. Ex-post facto study design was used and the entire population of Southwest geopolitical zone of Nigeria was embraced. A simple random sampling technique was used to select three states Ekiti, Osun, and Ondo as the population. The secondary data used was quantitative and was obtained or sourced at the State Board of Internal Revenue of the chosen states, and it consists of the years between 2008 to 2017, which is further divided into Pre-TIN (2008-2012) and Post-TIN (2013-2017). The employed analysis employed mean and paired t-tests to depict that there was significant positive change in internally generated revenue of the states that were sampled before and after implementation of TIN. The research offers plenty of important information on the impact of TIN on the internally generated income (IGR) in Ekiti, Osun, and Ondo States; however, it demonstrates a conceptual gap as the research focused on revenue results only. Similar to other researches which concentrate on the growth of revenue after the implementation of TIN, it does not expand on the other administrative efficiencies which TIN is expected to bring to the tax administration, like easing of the process of registering a taxpayer, improving compliance monitoring, and increasing the quality of data. To fill the conceptual gap, this study changes the focus of profit generation to the administrative efficiency

brought by TIN in the Nigerian Federal Inland Revenue Service (FIRS).

In evaluating the impact of TIN on Lagos State internal tax revenue production after implementation, Salman *et al.* (2019) carried out a survey. Findings of the study prove that the effect of TIN on internal tax revenue generation in Lagos State is positive and significant. The research is very informative on the good side of TIN on revenue collection, but it manifests a limitation in its conceptualization because it only identified the revenue results and ignores the other wider aspects of administrative and operational enhancements that TIN aims to bring on tax systems. TIN aims to improve the tax administration system through the ease of identifying the taxpayers, inspiring the regulation conformity and minimizing the tax evasion situations. The research also overlooks the fact that TIN can also be used to increase efficiency in operations of the tax bodies in terms of accuracy of data, decreasing duplication and quickening the tax processing time. It attempts to fill this knowledge gap by examining the effects of TIN on the administrative efficiency of the Nigerian Federal Inland Revenue Service (FIRS) not only in the context of revenue but also by examining its effects on internal operations.

Iheduru and Ajaero (2018) evaluated the impact of TIN adoption on the non-oil tax revenue in Nigeria between 2000 and 2015, with the adoption of a comparative technique and the paired sample t-test as the method of analyzing the data. The findings illustrate that there were significant increases in total non-oil tax revenue, corporate income tax revenue, and tertiary education tax revenue following the implementation of TIN in Nigeria. The paper contributes significantly to the knowledge of the revenue consequences of TIN; however, it has a conceptual weakness since it only studies the impact of TIN on non-oil tax revenues, but not its impact on administrative efficiency. The objective of introducing TIN was to streamline the tax administration system through ease in registering taxpayers, improving tax compliance follow-up and monitoring of the tax obligation. Nevertheless, the analysis provided by Iheduru and Ajaero fails to capture these changes in operations, which are essential to be considered to understand the full effect of TIN on the tax administration in Nigeria. The given study aims at bridging this conceptual gap by performing the analysis of how TIN has helped to improve the level of administrative efficiency within the Nigerian Federal Inland Revenue Service (FIRS), comparing the effects that it had on the improvement of taxpayer data management, compliance monitoring, and the efficiency of the overall workflow within the tax system. This hypothesis was established to guide the research:

H01: The introduction of the Taxpayer Identification Number (TIN) does not substantially affect Tax Administrative Efficiency inside the Nigerian Federal Inland Revenue Service (FIRS).

2.3.2. Integrated tax administration system and tax administrative efficiency

Martínez *et al.* (2022) examined how decentralization, simplification, digitalization, and education may boost the efficiency of tax collection in 28 countries of the OECD. The paper measures the performance of tax administration and proves the relationship between fiscal decentralization and



tax structure with the technical efficiency of the tax-collecting activity. The sample used was a group of 28 OECD countries in the period between 2004 and 2017, and the Technical Efficiency estimates data was obtained using Data Envelopment Analysis (DEA). The findings of the study revealed that the efficiency brought by the digitalization of tax administration in the collection of taxes is desirable. Their results provide valuable information on how digitalization can improve the effectiveness of tax collection; nevertheless, there is a sharp demographic imbalance in the case of projecting their findings into the Nigerian setting. The focus of the study on OECD countries which are already developed economies and have established digital systems brings down its relevance to the developing countries such as Nigeria, where the tax administration system faces different problems, such as lower levels of digitalization and infrastructural constraints.

Oreku (2021) focused on how digital technology could enhance the collection of tax revenues in Tanzania micro enterprises. The main idea of the research was to explore how digital technology has the chance of enhancing tax revenue collection and management among the micro businesses in Tanzania. In a bid to obtain quantitative data that would be used in the study, 137 employees and owners of micro businesses in the capital city of Tanzania, Dar es Salaam, in different sectors were given questionnaires. The study qualitative data was gathered based on the semi-structured interviews conducted on 24 Tanzania Revenue Authority (TRA) officers. Analysis of the qualitative data collected was done using the thematic approach and quantitative data using descriptive statistics using Statistical Package for the Social Sciences (SPSS). Based on the results of the study, it was observed that the current practice in taxes imposition on MBs is not consistent with theories that propose low administrative cost, wide tax base and simplification of taxation procedures. The digital technology applied, however, can evade the issues and increase the amount of taxes. The article under research examined the role of digital technology in improving tax revenue collection by the micro businesses (MBs) in Tanzania, but there exists a specific population gap when assessing the situation of the Federal Inland Revenue Service (FIRS) in Nigeria. The findings of the study cannot be easily generalised to the tax context in Nigeria, particularly in its application to the FIRS, which deals with a wider range of taxpayers, including large companies, individuals and small businesses.

Adu *et al.* (2019) evaluated the digitalization of local revenue collection in the Accra Metropolitan Assembly (AMA), which is the political and administrative stakeholder of the city of Accra, Ghana. The analysis involved the impact of the point-of-sale digital devices on the collection rate between 2012 and 2016 after the introduction of the device in 2012. In order to achieve the study objective, primary and secondary data were collected during the study period. Primary data was obtained by deep interviewing method conducted on 17 AMA employees and secondary data was obtained by use of AMA annual reports and composite budgets between the study period. These documents were analyzed and seven sources of revenues were identified, namely rates, fees and fines, licenses, land, rent, investments and miscellaneous items. Interviewed staff members unanimously

said that the rates collection surged up after the introduction of the digital device. It also rendered things more answerable and transparent. This was supported by the quantitative outcome, in which the set of rates exceeded the fees and fines, which used to be the most significant source of income. The research paper has some important findings on how to improve revenue collection and transparency at the local government level, but when it comes to its generalizability to the case of the Nigerian Federal Inland Revenue Service (FIRS), a gap is revealed. The paper of Adu *et al.* pertains merely to a local authority and examines only the local taxes, such as rates and fines. This is in sharp contrast to the national-level taxes which are handled by the FIRS such as corporate taxes, value-added tax (VAT) and custom duties.

Chijioke *et al.* (2018) inquired about the impacts of E-Taxation on the Nigerian revenue and economic growth. Statistical and economic reports were every three months, between the second quarter of 2013 and fourth quarter of 2016. The data have been divided into two categories; pre and post e-tax. The findings of the study indicated that electronic taxation has not boosted tax revenue, the federally collected revenue, or tax-to-GDP ratio in Nigeria. Their results indicate that the introduction of electronic taxation has not improved the tax revenue and tax to GDP ratio; though there is a substantial demographic bias in the object of the study. The study on federal tax collection and economic growth does not take into consideration the administrative efficiency aspects of tax administration which is needed to understand the overall implication of e-taxation. The study does not focus on the possible e-taxation impact on the procedures of operation, taxpayer compliance, and efficiency of the Nigerian Federal Inland Revenue Service (FIRS). It fails to demonstrate how the tax administration mechanisms may be enhanced since it only considers revenue results. By investigating the changes brought about by the Integrated Tax Administration System (ITAS) on the administrative effectiveness of the FIRS, this work seeks to fill this gap by noting the contributions of the latter to both revenue collection and the operational efficiency that digital systems may provide in the administration of taxpayer services and supervision of compliance.

Olaoje and Atilola (2018) determined the effects of e-tax payment on revenue generation in Nigeria. The research time was 6 years and 3 quarters, First quarter of 2012 to second quarter of 2018. The pre-e-taxation period constituted thirteen quarters, namely, the first quarter of 2012 to the first quarter of 2015, whereas the post-e-taxation period consisted of thirteen quarters, namely, the second quarter of 2015 to the second quarter of 2018. The analysis used was trend analysis, mean and standard deviation descriptive statistics and paired sampled t test. The outcome showed that the positive change in the value added tax revenue was insignificant with t-statistics and p-value of 0.520 and 0.612 respectively. This implies that the online payment of taxes does not make much impact on the value-added tax collection in Nigeria. The impact of e-tax payment on the Value added tax (VAT) revenue is insignificant and negative. The paper has illustrated a conceptual gap since most of the study has focused on revenue gains without looking into the broader impact of e-tax payment on the



administrative efficiency of the tax system. The analysis fails to consider how e-taxation can enhance the effectiveness of the Federal Inland Revenue Service (FIRS) in the collection of the VAT, taxpayer compliance and how the FIRS administers the collection of VAT. The fact that the study only dwells on revenue outcomes forgets possible improvements on the part of administrative practices that could be achieved through e-tax payment systems. Conversely, the current research attempts to fill this demographic gap by analysing the impact of Integrated Tax Administration System (ITAS) on administrative efficiency of the FIRS. This hypothesis was posited to direct the research:

H02: The Integrated Tax Administration System (ITAS) does not significantly affect Tax Administrative Efficiency in the Nigerian Federal Inland Revenue Service (FIRS).

2.3.3 Standard integrated government tax administration system and tax administrative efficiency

Okoye and Olayinka (2021) determined the effect of electronic taxation on revenue collection in Lagos State. The study employed ex-post facto research design and was based on the data of annual reports of internally produced revenue at the state level. Data analysis was then used with the help of the Linear Regression model and analysis of variance (ANOVA) using Statistical Package for Social Sciences (SPSS 20). It was shown in the investigation that e-tax payment and the e-tax clearing certificate issue have significant influence on the generation of revenues in Lagos State, though e-tax filing did not have a significant effect on tax collections in the area. The findings revealed that, the interaction among the electronic tax payment, electronic tax filing, and the issuance of the electronic tax clearance certificates have significant influence on revenue production in Lagos State. The research piece is an informative contribution to the understanding of outcomes of the digital tax systems on the receipt of state revenues; however, a significant demographic imbalance in the scope and subject matter is evident in the study. The research is also confined to Lagos State which is a commercial center and might not really reflect the situation and reality of tax administration in other parts of Nigeria, especially with different economic conditions and administrative set ups. By evaluating the impact of ITAS on the administrative efficiency of the federal tax system in Nigeria, this study seeks to correct the demographic imbalance by looking at the issue not only through the prism of a specific state or revenue generation.

The study by Rosario and Chavali (2021) addressed the topic of digitalization of taxation in the context of the changing business environment with references to Base Erosion and Profit Shifting (BEPS) in India. The Reserve Bank of India (RBI) provided us with secondary data on tax digitization efforts, direct taxes, and direct taxes ratio to Gross Domestic Product (GDP) between the years 1988 to 2017. Qualitative information on the steps towards the digitalization of the government that started in 1982 was presented, whereas the quantitative information on the direct taxes and their effects on the GDP was demonstrated with the help of the descriptive statistic tools in the form of charts. The results of the study have shown that Indian governments that followed each other since 1982 have contributed to the digitalization of taxation by implementing numerous acts that

gradually enhanced the digitalization process. They cover a significant time span, between 1988 and 2017, in analysing the input of direct taxes and digital tax initiatives with the use of secondary data provided by the Reserve Bank of India (RBI). The study provides plenty of information concerning the tax digitization process in India; however, it rather emphasizes how direct taxes influence the GDP and how this influence changes over time. A demographic dissimilarity is stressed in the study, as the only aspect of India that is examined is its environment, which greatly differs upon comparison with the federal tax system of Nigeria and its inefficiency in administration. This paper is concerned with the Nigerian Federal Inland Revenue Service (FIRS) and aims to address this gap by examining the impact of ITAS on administrative efficiency within Nigeria to present a more pertinent and holistic study of tax administration in Nigeria.

Akpabi and Igbekoyi (2019) established the implications of the cost of the electronic tax filing system on tax compliance by the SMEs in Lagos State. The study used a survey design. Primary sources were used by means of administering a standardized questionnaire to the SMEs in their locations. The population of the study had been nine hundred and fifty (950) small and medium-sized firms in Lagos State, especially those in the fast-food restaurant sector. A sample size of 281 was obtained by using the Taro Yamane formula. Descriptive statistics, structural equation modeling, and regression analysis were used to analyse the collected data. The correlation of the data obtained indicated that awareness had significant positive correlation with tax compliance. The cost of tax compliance had a small negative effect on the compliance with tax requirement, but it was not found to be significant. According to the study, the awareness of taxpayers on the electronic tax filing system will be the determinant factor of the compliance rate and a high cost of compliance can discourage the taxpayers to avoid the system. The study utilizes the extensive survey design and focuses on 950 small and medium sized companies that belong to the fast-food industry. The study employed structural equation modeling and regression analysis in a sample of 281 individuals in investigating the role of awareness and compliance cost in tax behavior. In this research, there is a huge population bias as the researcher concentrated on only SMEs in a specific sub-sector in Lagos State and ignored other sectors or regions in Nigeria. This study is also limited in scope, thereby limiting the generalisations that can be made with the results, since the dynamics of tax compliance among fast-food businesses might not be representative of other industries or jurisdictions, especially when it comes to the efficiency of larger tax-collecting governments agencies like the Federal Inland Revenue Service (FIRS).

Alade (2018) analyzed the impacts of implementing E-taxation on revenue collection in Nigeria. The study particularly examined impacts of E-taxation on Company Income Tax (CIT) as well as on Value Added Tax (VAT). We adopted ex post facto research design and got our data at the Federal Inland Revenue Service. The period of the study amounted to six years and three quarters, beginning in the first quarter of 2012 and ending in the second quarter of 2018. It was conducted on a quarterly basis and therefore, the period before E-taxation



(13 quarters) was between Q1 2012 and Q1 2015, whereas, the period after E-taxation (13 quarters) was between Q2 2015 and Q2 2018. The paired sample t-test model indicated a positive but insignificant change in the corporate income tax revenue pre-and post- with t-statistics and p-value of 0.833 and 0.421, respectively. Similarly, the change in value-added tax revenue before and after was positively affected, although the effect was not statistically significant, where the t-statistics and p-value were 0.520 and 0.612, respectively. A conclusion is made that E-taxation had not greatly enhanced revenue collection in Nigeria. The study adopted ex-post facto research design, in which six years and three quarters of data provided by the Federal Inland Revenue Service were used. The research is strong in terms of contrasting pre and post e-taxation era through paired sample t-tests but the limitation can be seen in the area of the population coverage and time. The comparison is singled out to two particular types of taxes, CIT and VAT, and does not consider any other sources of revenues or taxes that could be impacted by the implementation of e-taxation. The comparative study is limited to six years, perhaps ignoring the impact of implementing e-taxation in the generation of overall revenues in the long term. The gap in population in the study conducted by Alade can be realized when compared with the current study on the effects of the Integrated Standard Government Tax Administration System (ITAS) on the administrative efficiency of the Nigerian Federal Inland Revenue Service (FIRS). The work by Alade fails to consider the larger picture of an increase in administrative efficiency or possible consequences regarding different types of taxes in dissimilar fields. The impact of digital tax systems such as ITAS could be more finely evaluated through the FIRS-focus of this study, as Tax Administrative Efficiency can be considered in its entirety.

The article by Olurankinse and Oladeji (2018) investigated self-assessment, e-tax payment system, and revenue generation in Nigeria. The respondents included 30 tax officers of 30 publicly traded companies at Rivers State, Nigeria. Within the quasi-experimental research design, a cross-sectional surveys approach was used. The surveys were distributed to thirty CEOs of thirty organizations that were selected in Nigeria. We used SPSS version 20.0 to test the hypotheses with the help of Pearson product-moment correlation coefficient and the regression analysis. According to the results, there is a considerable positive correlation between self-assessment, electronic modes of payment of taxation and revenue generation. According to the study, e-taxation is an online system of tax payment and management, that receives taxes payable by all eligible taxpayers according to the rules of law, in order to determine tax returns in the economy. There is strong positive correlation of self-assessment, e-taxation and profit generation as indicated in the study; however, the sample size and the geographical coverage is inadequate. The individual results of the study based on only 30 executives in one state (Rivers) restrain the external validity of the study in drawing inference about the entire tax administration drive in Nigeria. The executive nature of the study on the publicly traded company excludes a significant size of the taxpayers, including SMEs, unlisted corporate organizations, and personal

taxpayers. This research on Integrated Standard Government Tax Administration System (ITAS) aims at evaluating the administrative effectiveness of FIRS at the national level, to provide a detailed report on the effect of e-taxation systems on revenue collection and administrative efficacy in Nigeria. This hypothesis was established to guide the research:

H03: The Standard Integrated Government Tax Administration System (SIGTAS) does not have a significant impact on the Tax Administrative Efficiency of the Nigerian Federal Inland Revenue Service (FIRS).

2.3.4 Tax pro-max solution and tax administrative efficiency

In their pre-and-post evaluation, Ofurum and Amaefule (2018) evaluated the consequences of e-taxation on the revenue and economic development of Nigeria. They used secondary data in order to determine a pre-post methodology referred to as a paired sample t-test. They have found out that e-taxation introduction has not improved tax revenue, federally collected revenue, and tax to GDP ratio in Nigeria. Their recommendations were that the FIRS of the federal government should conduct more educative seminars across all the 36 states of the nation to educate the people on how to utilise all the electronic services on their platform. They did their study by focusing on the general national indicators like tax revenue and tax to GDP ratio without looking into the details of the tax administrative efficiency and the operations of Federal Inland Revenue Service (FIRS). One of the biggest weaknesses of their study is that they merely examine national totals, and this may conceal discrepancies across regions or sectors in the way taxes are managed. In addition, they do not explicitly analyze the administrative procedures or operational performances in the FIRS and so they fail to analyze how the e-taxation tool, in this case, the Tax Pro-Max Solution, affects internal revenue service procedures. The proposed research, which will focus on the Tax Pro-Max Solution, will help to eliminate this gap by carrying out a specific evaluation of the administrative effectiveness of the FIRS.

Rodger *et al.* (2018) carried out research on the effects of e-taxation filing on tax passivity. A structured questionnaire was used to get the data of the study. Correlation analysis was applied to the collected data. In the study, it was established that ease of doing business is greatly influenced by electronic filing since the statistical value of 0.533 shows that there is accurate determination of the tax liability when using e-taxation. The study on the effect of e-tax filing on tax passivity and business facilitation is insightful; still its generalized approach and reliance on self-reported questionnaire data may not disclose the complexities of institutional compliance or Tax Administrative Efficiency. The general focus on tax passivity in the study also overlooks more subtle aspects through which some tax systems or instruments may influence administrative efficiency. This brings a huge disparity between the number of people researched and the current research on the Tax Pro-Max Solution and its influence on the ability of the Nigerian Federal Inland Revenue Service (FIRS) to perform its job properly.

The study by Ofurum *et al.* (2018) presents the empirical examination of the impacts of E-taxation on the revenue and



economic growth in Nigeria. The question that the study was aimed to answer was the effect of the introduction of E-taxation in 2015 on the tax revenue. The Federal Inland Revenue Service and CBN statistical economic reports were used as the secondary sources of data, which were collected quarterly since the second quarter of 2013 to the fourth quarter of 2016. We examined the data by paired sample t-test and simple regression. The review revealed that the employment of electronic taxation has failed to boost tax revenue. The focus of study is primarily the impact of e-taxation on the overall economy rather than how it can positively impact tax authorities such as the Nigerian Federal Inland Revenue Service (FIRS) operate more efficiently. This makes the current investigation on the Tax Pro-Max Solution, to study its effect on the administrative efficiency of FIRS, have a serious population gap. The research concentrated on the general revenue impacts and did not give attention to how e-tax systems could affect the internal processes of tax administration as well as their ability to enhance efficiency. By correcting this oversight, this study is able to focus on the particular improvements that tax technologies have on management, compliance and operations procedure of tax collecting bodies and thus is able to offer a more all-encompassing study that would complement the revenue focused findings of the earlier study.

Ajape *et al.* (2017) conducted an empirical study to review the effects of the E-tax system on tax administration and revenue collection in Lagos State Internal Revenue Service. This paper sought to evaluate how an electronic taxation system would affect Tax Administrative Efficiency and tax revenue generation in Lagos State. The research design adopted was survey with the data being collected using a structured five-point likert scale questionnaire. Descriptive statistics were used to analyze the obtained data, and multivariate analysis of variance (ANOVA) helped to test the hypotheses with the help of SPSS. The findings indicated that the majority of the respondents supported the idea that e-tax system has assisted Lagos State to earn more funds. Nonetheless, reliance on subjective answers can be a source of bias in the study as it failed to dig deep into operation efficiencies, or administrative improvements that come with implementation of e-tax systems. This leaves a potential population gap in the continuing research on the Tax Pro-Max Solution that intends to measure the revenue generation and the specific aspects of administrative efficiency of the Nigerian Federal Inland Revenue Service (FIRS).

Olatunji and Ayodele (2017) performed research that explored the impact of information technology on the tax administration in South West Nigeria with a focus on how information technology has affected the tax implementation and planning. The authors employed the use of structured questionnaires in the collection of data and employed the multiple regression analysis and Pearson product-moment correlation to analyze the connection between information technology and tax productivity. The findings revealed that information technology enhances tax productivity and administration in a great way. It implies that technological advances and tax process efficiency have a positive correlation. The paper clearly outlines the benefits of integrating information technology in tax collection, but unfortunately it mostly dealt with the general productivity

rates, without dwelling into the particular mechanisms or structures, through which such improvements are facilitated. This leaves a population vacuum in the research that needs to be continuously conducted on the Tax Pro-Max Solution and its effects on the administrative efficiency of the Nigerian Federal Inland Revenue Service (FIRS). Olatunji and Ayodele provide helpful data concerning advantages of information technology in general. Nevertheless, the given work is aimed at analyzing how the particular functions and capabilities of the Tax Pro-Max Solution can enhance the efficiency of operations, compliance monitoring, and interaction between taxpayers in the FIRS system. This hypothesis was put forth to direct the research:

H04: The TaxPro-Max solution does not have a significant impact on tax payment processes or on the speed of payments to the Nigerian Federal Inland Revenue Service (FIRS).

2.4. Theoretical review

2.4.1. Theory of innovation

In his classic work *Diffusion of Innovations* (1962), sociologist Everett Rogers developed Innovation Theory. This theory can assist us in realizing the way new ideas and technologies are diffused across societies. The theory of Rogers is pegged on the notion that the innovation adoption entails the dissemination of novel practices or things that individuals believe are novel. The theory places a lot of emphasis on the fact that the perception of the newness of an idea to the people is highly crucial to adoption. The individuals tend to be aware of, became interested in, judge, experiment, and ultimately accept new notions. The perceived benefits, compatibility with existing operations and ease of use ascertain the adoption rate and scope (Rogers, 1995). Theory Innovation Rogers is of particular concern to the present study, which considers the impact of digital tax reforms on Tax Administrative Efficiency of the Nigerian Federal Inland Revenue Service. Federal Inland Revenue Service (FIRS) has implemented digital reforms, such as TaxPro Max and the Integrated Tax Administration System (ITAS) as well as the Standard Integrated Government Tax Administration System (SIGTAS). This is perfectly alright because these are some examples of technological innovations that are intended to streamline tax administration. According to Rogers, these digital tools are novel concepts since they alter the manner in which tax procedures are handled. The perception of these new systems by the tax administrators and taxpayers will determine whether they are going to be used or not. As an illustration, they must observe the advantages, the compatibility with their present mode of operation and usability.

3. METHODOLOGY

3.1. Research design

The paper applied a quantitative survey research method in reviewing the impacts of digital tax reforms on Tax Administrative Efficiency in the Nigerian Federal Inland Revenue Service (FIRS). The quantitative methodology is preferred due to the provision of objective and systematic indicators of numerical data, which are instrumental in evaluating the effectiveness of the digital reforms implemented by FIRS. The focus group or the population of the study was



composed of all the personnel and stakeholders involved in the tax administration activities within the Nigerian Federal Inland Revenue Service (FIRS). The population was comprised of

diverse group of employees of different divisions of FIRS, such as tax assessment, revenue collection, IT support and customer service.

Table 1. Population of this study

State (Region)	Staff Population	Departments Represented
Lagos (South-West)	2,557	Tax Assessment, Revenue Collection, IT Support, Customer Service
FCT (North-Central)	2,078	Tax Assessment, Revenue Collection, IT Support, Customer Service
Rivers (South-South)	1,175	Tax Assessment, Revenue Collection, IT Support, Customer Service
Ogun (South-West)	923	Tax Assessment, Revenue Collection, IT Support, Customer Service
Delta (South-South)	715	Tax Assessment, Revenue Collection, IT Support, Customer Service
Kano (North-West)	776	Tax Assessment, Revenue Collection, IT Support, Customer Service
Anambra (South-East)	505	Tax Assessment, Revenue Collection, Customer Service
Kwara (North-Central)	472	Tax Assessment, Revenue Collection, Customer Service
Total	9,201	

Source: Federal Inland Revenue Service (FIRS) Annual Reports on Tax Administration, (2025)

A sample size of 383 participants was established for this study. The sample size is considered sufficient to offer a thorough analysis of the impact of digital tax reforms on Tax Administrative Efficiency, while remaining feasible within the study's parameters and resources. The sample comprises employees from various hierarchical levels within the chosen departments of the Nigerian FIRS to guarantee a range of perspectives and insights. The research utilized Yaro Yamane's formula to determine the sample size, as illustrated below.

Formula: Sample Size (n) = $N / (1 + N(e)^2)$

Where;

N = population (9,201);

n = sample size (unknown);

e = level of significant and

1 = constant.

Therefore, sample size (n) = $9,201 / (1 + 9,201 (0.05)^2) = 9,201 / 24 = 383$

The sample was selected using stratified random sampling technique. The technique ensures that the sample has a relative distribution of the different subgroups in the FIRS population.

The main source of data in the study was the Federal Inland Revenue Service (FIRS) in Nigeria. The respondents consisted of FIRS employees, particularly those who were directly responsible in the management and implementation of the digitalization projects of the organization. These individuals were selected based on their positions, experience in tax administration, and knowledge of the digital systems in consideration. The primary instrument of collecting data was a structured questionnaire. This questionnaire was developed after a close review of relevant literature and it was tailored to suit the specific objectives of the study. The questions in the questionnaire were closed-ended hence it could have standardized answers and therefore it could easily be analyzed quantitatively. The design of the questionnaire was to enable collection of detailed information on the adoption and effectiveness of digital systems (TIN, ITAS, SIGTAS and TXPMS) and the manner in which they were perceived to impact

efficiency in tax administration.

A considerable number of the questions consisted of Likert scales, which allowed the respondents to express the level of their disagreement or agreement with the statements referring to the digitalization systems. The scale, that offered a quantitative measure of the attitudes and perceptions, usually ranged 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). The challenges experienced in the implementation of these digital systems in addition to their overall impact on the effectiveness of tax administration were also addressed in the questionnaire.

The reliability of the questionnaire was further assessed using cronbach alpha coefficient, a statistical test commonly utilized in the assessment of inner consistency. When the measures in each section are always measuring the same construct then a Cronbachs Alpha of 0.7 or above is normally acceptable. The following values were obtained from this study's Cronbach's Alpha test results:

Table 2. Cronbach's alpha result

Variables	Cronbach's Alpha
Administrative (ADMEFF)	0.88
Taxpayer Identification Number (TIN)	0.82
Integrated Tax Administration System (ITAS)	0.79
Standard Integrated Government Tax Administration System (SIGTAS)	0.85
Tax Pro-Max Solution (TXPMS)	0.81

Source: SPSS Version 27.0 (2025)

The Cronbach Alpha of each part of the questionnaire was much above the cutoff point of 0.7, indicating that the instrument had a high internal consistency and reliability.



In undertaking the research, several statistical analyses and diagnostic procedures were employed to ensure validity and reliability of the results, being research that aimed at studying the impact of digitization on tax administration in the Federal Inland Revenue Service (FIRS). The primary source data was subject to the following diagnosis and analysis processes. This was done through multiple regression analysis, correlation analysis and descriptive statistics which assessed the effects that the independent variables had on the dependent variable.

3.2. Specification of model

The model specification is meant to quantify the impact of these systems to the efficiency of tax administration:

$$ADMEFF = \beta_0 + \beta_1 TIN + \beta_2 ITAS + \beta_3 SIGTAS + \beta_4 TXPMS + \varepsilon$$

Where,

β_0 = Constant term;

$\beta_1, \beta_2, \beta_3$, and β_4 = Coefficients of the independent variables;

ε = Error term;

ADMEFF = Administrative Efficiency of the Federal Inland Revenue Service;

TIN = Taxpayer Identification Number system effectiveness;
= Integrated Tax Administration System;

SIGTAS = Standard Integrated Government Tax Administration System's effectiveness; and

TXPMS = Tax Pro-Max Solution.

4. RESULTS AND DISCUSSION

4.1. Data presentation

The research will provide detailed presentation and discussion of the data collected on the topic of Effect of Digital Tax Reforms on the Administrative Efficiency of the Nigerian Federal Inland Revenue Service (FIRS) with the view of shedding light on how recent reforms have impacted the efficiency of the agency. The responses were expected to be 395 and the numbers of responses obtained were 391 which is nearly all of them. This implies that the data has got good coverage and response bias is minimal. This minor deficit of four responses is not statistically significant, which allows making reliable conclusions and useful findings concerning the managerial improvements or challenges experienced by the FIRS in the implementation of digital tax reforms. A summary of key findings in this data presentation is contained in appendix I.

4.1.1. Descriptive statistics

Table 3. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
TIN	391	1.00	5.00	4.1959	.58070
ITAS	391	1.00	5.00	3.7816	.72880
SIGTAS	391	1.00	5.00	3.9708	.68588
TXPMS	391	1.00	5.00	4.1581	.70854
ADMEFF	391	1.00	5.00	4.1896	.57015

Source: SPSS version 27.0 output, (2025)

The variable of Taxpayer Identification Number (TIN) has a mean of 4.1959 which means that the respondents generally view this system positively with regard to its effects on administrative efficiency. The high mean implies that TIN is seen as an effective system of uniquely identifying taxpayers, thus making it easier to collect tax and improve taxpayer monitoring. The standard deviation value of 0.58070 shows that there is a somewhat uniform distribution of opinions with a moderate scatter of responses. The standard deviation of 0.84 indicates that despite most of the respondents scoring TIN highly, some gave it the least possible score, probably due to the implementation challenges or individual experiences with its use.

The variable Integrated Tax Administration System (ITAS) has a mean of 3.7816, which is moderately positive, showing how the respondents perceived it. ITAS aims at integrating tax information, enhancing tax transparency and limiting human error, thus promoting efficient tax administration. The comparatively low mean when compared with other variables indicates that respondents believe that there can be improvement in the performance of ITAS. Standard deviation value of 0.72880 depicts a low level of variability in responses, which implies

that some users might have varied experience or perception with regard to its efficacy. The answers ranged between 1.00 and 5.00, indicating that although some respondents view ITAS as very efficient, others might have been restricted.

The Standard Integrated Government Tax Administration System (SIGTAS) has a mean score of 3.9708 which means that the responses of the respondents towards its effectiveness on the administrative efficiency are mostly positive. SIGTAS is meant to unify tax administration processes across different governmental bodies, causing uniformity and easing the data sharing process. Standard deviation of 0.68588 is moderate, which means there is reasonable amount of agreement among the respondents as to its effectiveness even though there is some variation. The standard deviation of 1.00 to 5.00 shows that most users find SIGTAS to be beneficial, but a small group of users evaluated it negatively, which could be caused by personal experience with SIGTAS or the inability to use it in specific situations.

The Tax Pro-Max Solution (TXPMS) shows the mean of 4.1581, which is rather high and means that this digital tool is perceived mainly positively. It can be assumed that TXPMS leads to a convenient process of interaction and filing taxes,



possibly streamlining the work of both the taxpayer and the administrator. The high standard deviation indicates that many respondents believe that TXPMS is an efficient component in the enhancement of administrative efficiency. The standard deviation value of 0.70854 shows that the responses are fairly consistent but with a small variability most likely caused by the individual experiences with the system. The range of responses (1.00-5.00) with the majority of positive views and the minority with possible troubles (as it might have been usability- or accessibility-related) gives cause to move forward with the idea. The dependent variable, Tax Administrative Efficiency (ADMEFF), averages 4.1896 indicating that most respondents

feel that the digital tax reforms are associated with efficiency creation in tax administration. The high average score implies that these digital solutions lead to increased effectiveness of administration, and FIRS can administer tax processes more efficiently. The standard deviation value of 0.57015 shows that there was a strong agreement among the respondents with minimal dispersion of opinions. With outliers present, however, the mean rating of the efficiency by the largest number of respondents is high, proving the beneficial nature of reforms, with minimum and maximum ratings equal to 1.00 and 5.00.

4.2. Analyses and results

Table 4. Correlations

TABLE 4. Correlations						
		ADMEFF	TIN	ITAS	SIGTAS	TXPMS
Pearson Correlation	ADMEFF	1.000				
	TIN	.406	1.000			
	ITAS	.776	.401	1.000		
	SIGTAS	.709	.364	.873	1.000	
	TXPMS	.616	.271	.679	.809	1.000

Source: SPSS version 27.0 output, (2025)

Table 4 below depicts the Pearson correlation coefficients of Tax Administrative Efficiency (ADMEFF) with the subsequent independent variables: Tax Pro-Max Solution (TXPMS), Integrated Tax Administration System (ITAS), Standard Integrated Government Tax Administration System (SIGTAS), and Taxpayer Identification Number (TIN). These correlations provided insights on the association between each digital tax reform and the perceived efficiency of tax administration by the Federal Inland Revenue Service (FIRS).

The TIN system and ADMEFF are moderately positively correlated (0.406), even though not as strong as with other variables, indicating that the better the TIN system, the higher the Tax Administrative Efficiency. Whereas, TIN comes in handy to track taxpayers and assign a unique identifier to them, this moderate correlation demonstrates that it could be more of a back-end instrument that silently facilitates efficiency by establishing a reliable database upon which other systems can be operated. The moderate value indicates that whereas TIN is useful in terms of administrative efficiency, it does not have quite as much impact as more operational systems.

The Integrated Tax Administration System (ITAS) and ADMEFF are strongly and positively correlated at 0.776. This high correlation leads to the suggestion that ITAS is the key to enhancing the efficiency of tax administration because of its capacity to automate key processes in tax administration and integrate tax information. Since ITAS is a system that is likely to bring about more transparency and reduction in manual errors, the fact that it is closely correlated with ADMEFF means that the use of ITAS has a direct significant impact on the performance of the administrative tasks of FIRS. Also, this high correlation indicates the possibility that with more expansions or improvements of ITAS, even greater improvements in Tax Administrative Efficiency can be achieved.

SIGTAS and ADMEFF also have a high correlation of 0.709. This positive and strong relationship indicates that SIGTAS, as an initiative to harmonize tax collection among government agencies, plays a greater role in the efficiency of the administration in general. Since the correlation is high, there is a possibility that the ability of SIGTAS to standardize and streamline the processes will enhance interoperability among different organizations administering taxation issues, reducing the chances of duplication of efforts and ensuring a high degree of consistency in data management. Judging by the tightness of this relationship, it can be stated that SIGTAS is regarded as an important component of the digital reform plan of the FIRS, as it will operate alongside ITAS to boost the effectiveness and reliability of tax administration.

The Tax Pro-Max Solution (TXPMS) also has a positive correlation with ADMEFF with a coefficient of 0.616. This has a slightly positive correlation which implies that though TXPMS enhances efficiency in administrative processes its impact is not as significant as SIGTAS and ITAS. The TXPMS

Table 5. Multicollinearity test

Model	Collinearity Statistics	
	Tolerance	VIF
TIN	.838	1.194
ITAS	.229	4.369
SIGTAS	.152	6.598
TXPMS	.342	2.921
Mean VIF		3.7705

Source: SPSS version 27.0 output, (2025)



is likely to focus on user-friendly features such as online tax filing and enhanced taxpayer interaction that help to achieve administrative efficiency through minimizing taxpayer compliance costs and reducing manual processing. TXPMS may not be as successful when applied solely as compared to when combined with other systems despite its significant contribution to efficiency, which is indicated by the moderate to high correlation.

All these systems have varying levels of multicollinearity as shown by the values of Variance Inflation Factor (VIF) and Tolerance. Having VIF ratings of 1.194 and 2.921, respectively,

TIN and TXPMS may provide distinct information on Tax Administrative Efficiency and do not influence the problem of multicollinearity. ITAS displays moderate multicollinearity ($VIF = 4.369$), meaning that it has explanatory strength autonomous within the model although it can be related to other variables. SIGTAS, however, has a high VIF of 6.598 indicating that there is high multicollinearity, thus overlap or redundancy with other systems. This duplication may be because SIGTAS and ITAS or TXPMS are doing similar functions and therefore it may be hard to apportion efficiency improvement to each system individually.

Table 6. Regression coefficients result

Model	Unstandardized Coef.		Standardized Coef.	t	Sig.
	B	Std. Err.	Beta		
(Constant)	1.345	.148		9.074	.000
TIN	.112	.033	.114	3.372	.001
ITAS	.500	.051	.640	9.855	.000
SIGTAS	-.029	.066	-.035	-.442	.659
TXPMS	.144	.043	.179	3.366	.001
R ²					0.62
Durbin-Watson					1.826
ANOVA					0.000

Source: SPSS version 27.0 output, (2025)

4.3. Testing hypotheses and discussing results

The R² (R-squared) statistic is 0.628 implying that these four digital tax reforms can justify approximately 62.8 percent of the variations in Tax Administrative Efficiency (ADMEFF). This percentage suggests that the model is effective in demonstrating the impact of these changes on the efficiency of administration, whereby over half of the efficiency gains have been as a result of the new digital technologies. This large value of R² indicates that this model fits well to demonstrate the influence of these independent variables on ADMEFF. This is to say that the digital reforms of FIRS play a significant role in the simplification of things. The value of Durbin-Watson approximate equal to 2 indicates that the residuals are predominantly independent, and thus the model can be more effective in predicting the administrative efficiency with limited bias.

The outcome of the ANOVA test indicates that the model is significant (p-value of 0.000) in explaining Tax Administrative Efficiency. The reason behind this is that, the digital tax reforms contribute a significant proportion of the change in ADMEFF. This study confirms the findings of previous tables, in that such gains are very important in determining the effectiveness of tax administration activities.

4.3.1. Taxpayer identification number (TIN) and the effectiveness of tax administration

The regression model indicates that the coefficient of TIN is 0.112, the t-value of 3.372, and the p-value of 0.001. The null hypothesis (H01) is rejected because the value of p is below the

traditional significance level (0.05). This study means that the use of the TIN positively affects Tax Administrative Efficiency in FIRS in Nigeria and the effect is statistically significant. The result shows that introduction of Taxpayer Identification Number (TIN) positively affects Tax Administrative Efficiency in the Federal Inland Revenue Service (FIRS) in Nigeria and the effect is statistically significant. The finding that implementation of the Taxpayer Identification Number (TIN) has had a statistically significant positive effect on Tax Administrative Efficiency in the Federal Inland Revenue Service (FIRS) in Nigeria is supported by many studies. Indicatively, Tyokoso *et al.* (2021), Hanga *et al.* (2020) and Akinleye *et al.* (2019) reported significant improvements in revenue collection after the implementation of TIN.

Other empirical studies have presented results, which do not correspond with one another. As examples, Salman *et al.* (2019) and Iheduru and Ajaero (2018) found that the implementation of TIN did not lead to the significant enhancement of certain types of revenues, such as Value Added Tax, indicating the limited administrative impacts. These disparities can be attributed to dissimilarities in the extent of methodology, which predominantly examines how TIN generates finances but not how it benefits the administration generally. In addition, data consistency issue and multiple TIN registration challenge has also been cited as a roadblock to achieving universal efficiency. The Innovation Theory presents a complete framework that can be used to explain the positive effects recorded in the researches that insist on the use of TIN. This argumentation states that,



the application of new tools such as TIN, is a technology innovation which alters the conventional way of doing taxes. It helps to streamline the system by reducing unnecessary manual processes and accelerating integration of data and promoting compliance with automatic tracking systems. It is through such new ideas that the FIRS has simplified its administrative work. This has resulted in improved service delivery, increase in compliance rate and efficient collection of tax. Innovation Theory explains that digital transformation can alter things on a grand scale, and these advantages of technology prove it.

4.3.2. Integrated tax administration system (ITAS) and effectiveness of tax administration

The coefficient of ITAS is 0.500, t-value is equal to 9.855, and p-value is 0.000. The analysis indicates that the null hypothesis (H02) can be rejected because the p-value is much less than 0.05. This demonstrates that the ITAS influences Tax Administrative Efficiency within the Nigerian FIRS in a large and affirmative way. The finding implies that Integrated Tax Administration System (ITAS) has a significant and positive effect on Tax Administrative Efficiency within the Nigerian Federal Inland Revenue Service (FIRS). Numerous studies allow concluding that the Integrated Tax Administration System (ITAS) has boosted Tax Administrative Efficiency within the Federal Inland Revenue Service (FIRS) in Nigeria. To illustrate, Chijioke *et al.* (2018), Martinez *et al.* (2022), and Oreku (2021) all discussed the possibility of ITAS contributing to the better coordination of the administration, which would result in more truthful data and more individuals paying their taxes. A combination of these studies helps to corroborate the claim that ITAS has improved tax activities and increased administrative effectiveness through digitalization.

Conversely, a number of studies have questioned the effectiveness of ITAS in the management of taxes citing various issues. Adu *et al.* (2019), Alade (2018), and Chijioke *et al.* (2018) all had mixed findings, stating that systems that interacted with each other, technological issues, and slow policy coordination led to inefficiencies. These conflicts demonstrate the significance of the good infrastructure, training, and the complete integration of the system to ITAS so that it can achieve its potential.

The Innovation Theory assists us in viewing how ITAS can enhance the effectiveness of tax management. It emphasizes the relevance of fresh technology in transforming ancient procedures. By digitizing essential activities, such as paying taxes and making payments or monitoring compliance, ITAS eliminates duplicates and reduces errors and makes things more transparent. It is easy to conduct business and the integration of the system makes people more responsible which is consistent with the assumption that the new technology can lead to significant enhancement of performance in the well-established process. Thus, ITAS is a decent illustration of how new concepts can alter the manner of operation of organizations to turn them into more fruitful and productive.

4.3.3. Standard integrated government tax administration system (SIGTAS) and effectiveness of tax administration

The SIGTAS coefficient is -0.029, t-value is -0.442, and the

p-value is 0.659. This implies that the study failed to reject the null hypothesis (H03) since the p-value was greater than 0.05 and this indicates that SIGTAS does not portray a statistically significant effect on Tax Administrative Efficiency within FIRS. The outcome implies that Standard Integrated Government Tax Administration System (SIGTAS) has no significant effect on Tax Administrative Efficiency in the Nigerian Federal Inland Revenue Service (FIRS). Various literatures support the finding that SIGTAS has not had any significant impact on Tax Administrative Efficiency within the Nigerian Federal Inland Revenue Service (FIRS). Indicatively, Olaoye and Awe (2018), Chijioke *et al.* (2018) and Alade (2018) found out that installing SIGTAS did not lead to significant improvement in tax income or compliance, which they attribute to persisting challenges that included poor user training and limited system integration. Contrasting findings SIGTAS might therefore present benefits, but it faces systematic challenges. The experience of Sani *et al.* (2023) and Okoye and Olayinka (2021) in Lagos State demonstrated that SIGTAS could enhance processes but could not do the same at the federal level due to the insufficiently developed support infrastructure. These varied observations lead to the consideration that the limited effectiveness of SIGTAS could be due to the gaps in its implementation instead of its fundamental inefficiency as a system.

Innovation Theory can explain the challenges faced by SIGTAS to realize significant improvement in Tax Administrative Efficiency. The theory states that innovative systems to effectively interact and work together, require an environment that supports them e.g. good infrastructure, training and support by all involved parties. In the case of Nigeria, these conditions were not perfectly achievable and this translates to Nigeria not getting the best of outcomes. The potential of SIGTAS is not utilized to a full extent due to the unwillingness of people to change, the malfunctioning of systems, and the lack of technological resources. This demonstrates the significance of exercising a wide focus as regards the embracement of new technologies. This conforms to what the theory states regarding the fact that technology adoption is a systemic process that brings forth efficiency.

4.3.4. Taxpro-max solution and the effectiveness of tax administration

In the regression result of Tax-Pro-Max, the coefficient is 0.144, t-value is 3.366, and the p-value is 0.001. It is based on the analysis that the null hypothesis (H04) is rejected because the p-value is below 0.05. This fact implies that the Tax-Pro-Max solution significantly enhances the process of paying taxes and reduces the delays in remitting money to FIRS. The result implies that the TaxPro-Max Solution has a positive and substantial effect on Tax Administrative Efficiency within the Nigerian Federal Inland Revenue Service (FIRS). The TaxPro-Max Solution has been empirically validated as positive and significant contribution to Tax Administrative Efficiency within the Nigerian Federal Inland Revenue Service (FIRS). According to studies by Sani *et al.* (2023), Chijioke *et al.* (2018), and Olaoye and Atilola (2018), TaxPro-Max extremely boosted the effectiveness and accuracy of managing tax data leading to better experiences of taxpayers and increased revenue



generation. These articles put emphasis on how TaxPro-Max helps in enhancing operational effectiveness and reduction of administration log jams.

The majority of the studies demonstrate that TaxPro-Max is good, and the minority demonstrates that it may not be. Alade (2018) and Adu *et al.* (2019) found out that in some locations, the lack of digital infrastructure and power supply issues hampered the full realization of the potential of TaxPro-Max. These variations demonstrate that the system is inherently effective, yet such factors as infrastructure and the effectiveness of user adaptation to it also play an extremely significant role in determining its effectiveness.

The positive impact of TaxPro-Max is consistent with Innovation Theory, which explains that new technologies complement systems by addressing the issues with the previous method of doing things. A good example of this concept is TaxPro-Max since it automates certain key functions such as filing and remittance, reducing the number of errors that can be caused by human beings and making compliance tracking a breeze. The platform architecture is such that it can integrate easily with other tax systems, simplifying and transparent tax administration. Innovation Theory also places a big emphasis on the significance of being able to adapt so as to maximize new technology. This is evident in the way TaxPro-Max can develop and evolve to fit the requirements of FIRS.

5. CONCLUSION

This paper looked at how digital tax reforms have affected the effectiveness of the Nigerian Federal Inland Revenue Service (FIRS) in carrying out its operations. It concludes that the identification of the taxpayers has become easier using TIN, ITAS and TaxPro-Max Solution, more accurate and reduced the administrative delays within the Nigerian FIRS. The research however concluded that the Standard Integrated Government Tax Administration System (SIGTAS) did not make a large difference in Tax Administrative Efficiency. The reasons behind this inability to have an effect could be either implementation or integration issues with the existing systems of FIRS.

RECOMMENDATIONS

In this study, several recommendations were given concerning what can be done to ensure that the Nigerian Federal Inland Revenue Service (FIRS) operates smoother through the further application of digital technologies. The recommendations are the following:

First, the research indicates that Taxpayer Identification Number (TIN) poses a large positive impact on Tax Administrative Efficiency. In order to improve on this achievement, FIRS must ensure that expanding the TIN system to other tax-paying sectors in Nigeria is a priority. In the interest of enhancing accuracy and reducing administrative delays, this would imply ensuring that the system is closely compatible with other government databases, such as those maintained by the National Identity Management Commission (NIMC). FIRS, NIMC, and the Ministry of Finance will be forced to collaborate in order to ensure that TIN emerges as a common method of identifying taxpayers. Workshops and training on the use of the technology ought to be conducted regularly on both the

tax officials and the taxpayers to ensure the technology is used properly and it is fully incorporated in the day-to-day operation of tax administration.

Secondly, It is recommended that FIRS needs to further invest in ITAS by upgrading the system, making it more accessible to the users and training of personnel. One of these ways is by developing the technical capacity of ITAS through collaboration with the National Information Technology Development Agency (NITDA). This will ensure that ITAS remains abreast with the best practices globally. In order to make best use of ITAS, it must be more integrated with other government systems and banks. Public awareness campaigns should also be prioritized by FIRS and taxpayers should be sensitized on the use of ITAS platform.

Third, FIRS ought to reconsider the role of SIGTAS in its activities by conducting a complete overview of its functions and identifying the methods of improving them. In the event that SIGTAS is not up to standard, FIRS ought to seek alternative digital tax administration systems or alternatively, make SIGTAS properly fit the requirement of FIRS. FIRS, NITDA, and the Ministry of Finance must collaborate to investigate alternatives or modifications to the tax system to identify more efficient methods of operating the tax system.

Fourth, FIRS needs to offer TaxPro-Max to every tax-paying business and individual to ensure that it becomes the normal process of paying taxes and remitting funds. And to make the process of collecting taxes even easier, the platform should constantly acquire new functions, such as the possibility to integrate with e-filing and reporting systems. FIRS is also supposed to collaborate closely with NITDA and the Ministry of Finance to ensure that TaxPro-Max receives ideal technical support and is effectively incorporated into the tax regime in Nigeria. The frequent training of both the tax officials and the taxpayers should also be there to ensure that the platform is utilized appropriately.

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