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CONNECTION AMIDST PERSONAL INCOME TAX AND REVENUE GENERATION IN NORTH CENTRAL STATES, NIGERIA

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Hubungan antara Pajak Penghasilan Pribadi dan Penghasilan Pendapatan di Negara-Negara Tengah Utara, Nigeria

Abstrak

Penelitian ini bertujuan untuk mengetahui dampak dari pajak penghasilan pribadi pada pendapatan negara bagian North Central di Nigeria. Data seperti Pay As You Earned (PAYE) diperoleh langsung dari Badan Pusat Statistik, sedangkan Pinjaman Dana Skema Penjaminan Kredit Pertanian, dan Penduduk masing-masing bersumber dari buletin CBN. Analisis Data Panel, analisis tren, dan analisis deskriptif digunakan untuk menganalisis data yang bersumber dari Negara Bagian Kwara, Kogi, Niger, Benue, Plateau, dan Nasarawa. Dengan penilaian dan analisis menyeluruh, disimpulkan bahwa pajak penghasilan pribadi berdampak positif signifikan terhadap pendapatan yang dihasilkan secara internal di negara bagian tengah utara di Nigeria. Pajak penghasilan pribadi memberikan kontribusi signifikan terhadap pendapatan negara bagian yang dipilih. Pajak penghasilan pribadi adalah alat yang relevan dalam menghasilkan pendapatan di negara bagian tengah Utara di Nigeria. Berdasarkan temuan penelitian ini, direkomendasikan bahwa untuk memperluas penerimaan pajak negara melalui pajak penghasilan pribadi, prioritas harus diberikan pada otomatisasi pengiriman pajak untuk mencakup semua aspek pajak penghasilan pribadi (PAYE dan Direct Assessment) di negara bagian untuk mengaktifkan pengiriman cepat pajak penghasilan pribadi terutama negara bagian dengan IGR yang lebih rendah sehingga pada akhirnya meningkatkan pendapatan internal mereka.

Keywords: *Connection; PIT; Revenue; Direct Assessment; PAYE*

Abstract

The impact of personal income tax on North Central states revenue generation in Nigeria was examined in this work. Data such as Pay As You Earned (PAYE), direct assessment were from gotten from the National Bureau of Statistics, while Agricultural Credit Guarantee Scheme Fund Loan, and Population were sourced from CBN bulletin respectively. Panel Data Analysis, trend analysis and descriptive analysis were used to analyze the data sourced from Kwara, Kogi, Niger, Benue, Plateau, and Nasarawa States. With thorough assessment and analyses, it was concluded that personal income tax has positive significant impact on internally generated revenue in North central states in Nigeria. That is personal income tax contributed significantly to revenue generation of the selected states. Personal income tax is a pertinent tool in revenue generation of the North central states in Nigeria. Based on the findings of this study, it is recommended that in order to widen the states' tax revenue through personal income tax, priority should be given to automation of tax remittance to cover all aspect of personal income tax (PAYE and Direct Assessment) in the states in order to enable prompt remittance of personal income tax especially those states with lower IGR so as to boost their internally revenue generation ultimately.

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INTRODUCTION

Taxation is the foundation upon which the nation's structure is built. This divulged that effective collection and well-managed tax system with few or no avoidance, the state government with ample opportunities to providing basic infrastructure for the populace. (Samuel & Tyokoso 2014). Government raises income from taxes to finance her development, provide services, and eradicate countries' reliance internationally, fiscal stability, economic sustainability, progress, and poverty reduction in the state. It has been discovered by Bala, Enoch and Yakubu (2018) that strengthening of national resource mobilization and revenue generation are majorly depend on efficient structure of tax system in the country. The effective structure of tax system promotes inclusion, social fairness, good governance, wealth and income equalities. The ability of governments to successfully and responsively function in their respective state has been their daily mindset and plans as well as the tax structure to garner the income tax from personal income of both individual and private sectors. Personal income tax (PIT) among others has been considered among other taxes as the inward solution to the state paucity of resources to fulfill all the pertinent responsibilities in the state. This refers as tax imposed by government on employees' income, and individual (self-employed) income for effective fulfillment of the promises. This is widely recognized as an important tool for state progress and growth in most cultures. It is viewed as a major driver for lengthy infrastructure expansion and economic development of the state (Adegbite, 2020).

In recent years, the price of oil has fallen, lowering the volume of available monthly allocation from federal government to her monthly allocation dependents (States). This conceivably prompted the state government in searching for new sources and developing the available sources. As a result, the need for state government to generate enough revenue through domestic sources became a significant issue. PIT which has been developed and reformed inwardly is expected to replace dwindling monthly allocation and persistent bail out from federal government.

North central states among others state have found it difficult to implement their recurrent expenditure and capital expenditure due to limited resources which emanated from fluctuation of allocation. Some states are endowed with resources such as gold, mining, cash crops and other agricultural products while many states are deviated from this resources. This prompted all the North central states to concentrate majorly on the PIT which is bifurcated into pay as you earn (PAYE) and direct assessment. Is PIT reliable and sufficient to offsets all the responsibilities in the state? What is the significant level of PIT to revenue generation of North central state? These questions triggered the examination of the effectiveness of PIT on revenue generation in North central states, Nigeria. The extant and reviewed literatures on PIT in Nigeria did not extend their coverage to North central, and none of them had the current study as their motive. However, this is a unique study because it extends the coverage to North Central State, Nigeria on the examination of the influence of PIT on revenue generation which has not been existed in Nigeria, which serves as a contribution of this research to tax science

Taxation and Revenue Generation

The need to pay taxes is a global phenomenon since it impacts all economies regardless of geographical boundaries (Adegbite, Bojuwon &Mubaraq (2020). Rather than a direct exchange of products and/or services, taxation is a fraction part of resources and income transferred from the private sector and individual to government treasury for the achievement of nation's social and economic goals (Nnubia, Okafor, Chukwunwike, Asogwa, & Ogan 2020; Adegbite, & Bojuwon (2019)). Full employment, stable pricing, rapid GDP growth, a positive balance of payments position, free market economy supports, fulfillment of collective desires, equal income redistribution, creation of new industries, stimulation of balanced population increase, and economic development are the government initiatives aimed to improving people's economic and social well-being (Adegbite, 2020). Revenues are generated to fulfill the aforementioned initiatives of the responsible and variant government. Revenue generation is the process of earning funds by the government. According to Samuel & Tyokoso (2014), a tax system's pertinent

function is to produce revenue to fund government spending. PIT which a component of taxes generates revenue which is substantial to the revenue of the state. It is needed to cover spending that emanated from goods and services provision which are out of community capacity in the country such as defense and security, health care and education.

Personal Income Tax (PIT)

PIT is a tax charged on persons who are employed or owned and operated a small company under a corporate or partnership name, individuals (including family), sole proprietorship, trustees, executors, and agents (Adegbite & Shittu (2017); and Adebisi and Gbegi 2013). Personal income tax (PIT) collection is a federal matter, but it is often received from inhabitants of their respective states by state government apart from residential employees in each state. This tax is also collected by the federal Inland Revenue Service, but only from residents of the federal capital territory, foreign services' staff, and foreigners who earn income in Nigeria (non-residents), and foreigners employed but resident in Nigeria. PIT splits in to pay as you earned (PAYE) and direct assessment. PAYE are paid by the employees of the private organisation and the state which are collected by the respective state board of internal revenues. This is deductible from the salaries directly from source at the end of the month. It is progressive tax because the higher the salaries, the higher is tax paid to the state government, and vice versa. It is expected that PAYE that is generating monthly income for the states is contributed significantly to revenue of the states of North central.

HI_1: PAYE impacts revenue generation of the North Central States significantly

Direct Assessment

Direct assessment according to Fasina et al (2018) is one of the components of PIT which government cannot discard and underestimate for any other tax income generation in the country. It is income realized and charged through self-employed persons based on the income generated. Adegbite (2017) opined that government of the country cannot employ all the entire population. The left over who did not have the civic opportunity to be employed are employed by the government independently established employment for self- sustainability, and employment creation for others. This set of people pay tax in one way or the others for the development of country. The assessment on self-employed categories is done based on the income realized annually. It is expected that direct assessment has impact on revenue generation of the states.

HI_2: Direct assessment impacts revenue generation of the North Central States significantly

Population

The determinant of income in any country depends on the habitants' population of the country. The income of the employees who are the subset of the country determine the tax income realized from the income of employee of public and private organisation. Workers pay tax from the income realized from the employment in terms of PAYE. Those that are self-employed like informal sectors in the economy also pay tax as direct assessment. According to Adegbite (2019), the total income generated from tax absolutely depends on both the employees and self – employed people. A country tax income move according to the trend of the population. Also, the numbers of the employees (population subset) in the state determine the revenue the state government realize from PAYE in the state, and the numbers of the self-employed people (population component) also determine the revenue realizes from direct assessment. Therefore, it can be hypothesized as

HI_3: Population impacts revenue generation of the North Central States significantly

Agricultural Credit Guarantee Scheme Fund Loan (AGSFLOAN)

Agricultural Credit Guarantee Scheme Fund Loan has been seen as the loan collected by the state to finance agricultural activities in the state. The end products of the agricultural activities serve as the input for self-employed people to generate taxable income as direct assessment. The primary objective of agricultural financing policies in Nigeria is to establish an effective system of sustainable agricultural credit schemes loan which is the provision of macro and micro credit services for agricultural self –employed farmers (Adegbite & Bojuwon, 2019; and Adegbite & Shittu (2017)). However, this contributes enormously to revenue realized from direct assessment. It

also makes available the sufficient foods and raw materials needed by self –employed people and industrial sector which also serves as employment source for unemployed people. Lastly, it provides market for the output of industrial sector. The aforementioned disposition behind AGSFLOAN absolutely enhances the income realized from both the PAYE and direct assessment. This prompted the researchers to hypothesize that:

HI_4: AGSFLOAN impacts revenue generation of the North Central States significantly

Ibn Khaldun Theory

Ibn Khaldun's taxation theory is one that aids in the shaping of taxation as advocated in Adegbite (2021).This hypothesis was explained using the arithmetic effect and the economic effect of tax rates on revenues. If the rates are increased or decreased, the duo have different impacts on revenue implications. Tax revenue reduces according to the reduction of tax rates, and vice versa. According to the arithmetic effect, tax rate rise and effective monitoring have favourable impact on revenue generation. This also supported by economic effects hypothesis which advocated that a decreased tax rate reduces revenues generation from tax which invariably affect government spending on employment generation, economic development, education provision and other ingredients to stable standard of living in the state. The theory is effective for this study in the sense that if PIT is effectively collected and monitored by the state, it can generate the manageable revenue for the state to offset their responsibilities. Therefore, this study is anchored on this theory.

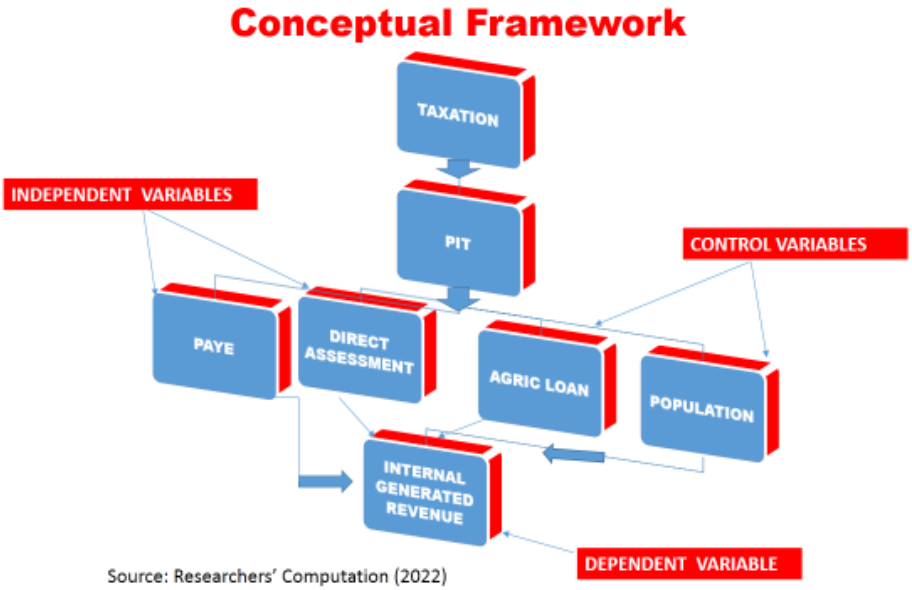

Fig 1. Conceptual Framework

Empirical Review of Related Study

Soetan (2017) surveyed tax administration effects on tax income generated in Nigeria with the involvement of survey research and questionnaire for 126 respondents in Nigeria. The data gathered from questionnaire were analyzed with regression. The study deduced that tax administration has imperative effects on income tax in Nigeria. However, the study of Soetan (2017) covered the whole country in Nigeria but absolutely differed from this current study which is majorly limited to North Central States in Nigeria.

Adegbite (2017) investigated the relationship between PIT and revenue generated in Oyo State. The data realized for the study was generated through the website and published data from internal revenue service board employees in Oyo state from 1990 to 2015. The results of the study deduced that PAYE and direct assessment are significant and positive to government income in Oyo state. The study suggested that Oyo state administration should further look inwardly on more additional tax income in order to fulfill the government responsibilities. Nevertheless, the study was focused on single state in southwestern states but the current study covers all six states in North central in Nigeria

Bala, Enoch and Yakubu (2019) examined personal income tax problems on Gombe revenue generation. Survey was adopted as research method to source for data from 150 respondents which comprised tax payers and internal revenue service board employees in Gombe state. The results that the researcher realized from chi square test was that information technology and tax evasion/ avoidance are the problems facing revenue realization in Gombe state. Therefore, the study recommended that severe punishment should be meted on tax evaders and avoiders. ICT should also be made available for the employees for effective outputs of Gombe internal revenue service board employees. This study was limited to Gombe state which is a single state in the North East of Nigeria but not extended to North Central of the country.

Kyari, Ahmed, Ogu (2018) empirically analyzed Personal Income Tax (PIT) impact on Kaduna State Internally Generated Revenue (IGR) from 1988 to 2015 adopting time series data which was obtained from Internal Revenue Service in Kaduna State. Co-integration and Error Correction Mechanism (ECM) were employed to estimate the effects of PIT on Kaduna state IGR. It was revealed from the outcome of ECM that positive significant impact existed from PIT on Kaduna State IGR. The study recommended that Government should make available the mechanism whereby taxes would be remitted by institutions promptly. However, Kyari, Ahmed, Ogu (2018) confined their study to Kaduna state in North East of the country.

Tyoakosu,and Awuhe (2017) assessed PIT impacts on the Benue State IGR. The study adopted ex-post facto research design, and data was sourced from Board of Internal Revenue Service of Benue State from 2007 to 2016. The results from descriptive statistics, OLS and correlation unanimously found that PAYE has positive and significant contribution to Benue state IGR while direct assessment possessed negative and insignificant contribution to IGR. The study recommended strongly that Benue state government and tax authority should conduct full registration and thorough census of self-employed individuals in the state so that PIT evaders would be dragged into tax net. But Tyoakosu,and Awuhe (2017) was constrained to a single state in North central of Nigeria.

Adedeji and Akindele (2018) examined PIT contributions on Ondo State revenue generation from 2006 to 2015. Data realized from Board of Internal Revenue of Ondo State were analyzed with mean, simple percentage, standard deviation, Spearman rank and trend analysis. Trend analysis showed that PIT movement improved IGR upwardly and positively. The results further indicated that IGR was triggered by PIT with positive correlation. The study acclaimed that PIT should be pursued vigorously and as a source of revenue generation internally so as to execute financial obligations in the state, all the PIT leakages should be blocked in order to increase state IGR. the study of Adedeji and Akindele (2018) was limited to Ondo state in Southwestern state in Nigeria which made their disposition ineffective in North central state of Nigeria.

Omodero, Okafor and Nmesirionye (2021) examined PIT contribution on gross national income from 2011 to 2020 employing OLS. The study considered inflation and corruption as control variables. Findings revealed that PIT impacted gross national income significantly and positively. But control variables were not significant. The study recommended that improvement should be made on the administration of PIT in order to enhance remittances and tax revenue collections into government treasury. Nevertheless, the study was for the entire country but was not segmented to North central.

The literatures on ground reviewed were limited to a single state in Nigeria, for instance, Adegbite (2017) study was only limited to Oyo state but recognized the effect of personal income tax on revenue generation, Bala, Enoch and Yakubu (2019) limited their study to Gombe revenue generation, Kyari, Ahmed, Ogu (2018) to Kaduna State, Tyoakosu, and Awuhe (2017) to Benue State IGR, while Adedeji and Akindele (2018) study was limited to Ondo State but none of the extant and reviewed literatures extend their coverage to North central. However, this is unique study because it extends the coverage to North Central State in Nigeria which has not been existed in Nigeria. Also, the Pedroni's Cointegration Test as econometric instrument involved in the study makes it stand out among the existing literatures.

METHODOLOGY

The quantitative technique was employed in this research for testing the impacts and correlations among variables, and the study was assisted by expo facto research design to study the effect of independent variable (PIT) on the dependent variable (IGR). Data such as PAYE, and direct assessment were from gotten from the National Bureau of Statistics, while Agricultural Credit Guarantee Scheme Fund Loan, and Population were sourced from CBN bulletin respectively. The sample size was obtained from the North central states (Kwara, Kogi, Niger, Benue, Plateau, and Nasarawa states). In order to examine the effects of the independent variables on the dependent variables, the panel data analysis, trend analysis and descriptive analysis were used in this study. This consists multiple units of analysis such as fixed, effects, random effect, and Hausman as well as Im, Pesaran and Shin Unit-Root Test, and Pedroni's Cointegration Test Results

Model Specification

Using the multiple regression model, the general form of the statistical relationship among all variables which included PIT and revenue generation are represented below. However, IGR is dependent variable, PAYE and DIRASSM are the independent variables while AGSFLOAN and Population in each state (POP) are control variables.

$$IGR = f(PIT, AGSFLOAN, POP, \mu) \quad (1)$$

$$IGR = f(PAYE, DIRASSM, AGSFLOAN, POP, \mu) \quad (2)$$

$$IGR = a_0 + \beta_1 PAYE + \beta_2 DIRASSM + \beta_3 AGSFLOAN + \beta_4 POP + \mu \quad (3)$$

Where:

IGR	-	Internally Generated Revenue
PIT	-	Personal income tax
PAYE	-	Pay As you earn
DIRASSM	-	Direct Assessment
AGSFLOAN	-	Agricultural Credit Guarantee Scheme Fund Loan
POP	-	Population

RESULTS AND DISCUSSION

Table 1. Descriptive Statistics

Variables		Mean	Standard Deviation	Minimum	Maximum	Observations	
IGR	Overall	9.37e+09	5.58e+09	1.85e+09	3.06e+10	N =	66
	Between		3.49e+09	5.73e+09	1.56e+10	n =	6
	Within		4.56e+09	9.86e+08	2.45e+10	T =	11
PAYE	Overall	5.13e+09	2.52e+09	1.33e+09	1.15e+10	N =	66
	Between		1.00e+09	3.53e+09	6.36e+09	n =	6
	Within		2.35e+09	1.19e+09	1.12e+10	T =	11
DIRASSM	Overall	2.38e+08	2.84e+08	4318111	1.09e+09	N =	66
	Between		2.66e+08	3.33e+07	6.54e+08	n =	6
	Within		1.43e+08	-1.50e+08	6.77e+08	T =	11
AGSFLOAN	Overall	1.53e+08	1.57e+08	0	7.47e+08	N =	66
	Between		9.87e+07	5.22e+07	3.13e+08	n =	6
	Within		1.28e+08	-1.16e+08	5.87e+08	T =	11
POP	Overall	3695396	1062145	1869377	5741815	N =	66
	Between		1081138	2181693	4964295	n =	6
	Within		372984.5	2935416	4536891	T =	11

Source: Researchers' computation (2022)

Table 1 shows the summary of statistical and descriptive properties of the dependent and the independent variables such as mean, standard deviation, maximum and minimum values of the 66 observations related to 6 states and a period of eleven (11) years as comprised in the study. The mean and standard deviation values of overall IGR are 9.37e+09 and 5.58e+09 respectively. This means that the IGR deviates from the value by 5.58e+09, meaning the standard deviation value of 5.58e+09 indicates that the IGR clusters around its mean value. The IGR has maximum value of 3.06e+10 and minimum value of 1.85e+09. This shows that from the observation, the highest and lowest IGR collected from 2010 to 2020 are 3.06e+10 and 1.85e+09 respectively. Also, the mean of overall PAYE during the period of the study was 5.13e+09 with overall standard deviation of 2.52e+09. This implies that PAYE of the states deviate from the mean by 2.52e+09 implying that PAYE is averagely deviates from its mean value. The highest and the lowest value of PAYE are 1.15e+10 and 1.33e+09 meaning that the highest and lowest PAYE received in the observations are 1.15e+10 and 1.33e+09 respectively.

Moreover, the mean and the standard deviation values of overall DIRASSM are 2.38e+08 and 2.84e+08 respectively. This indicates that DIRASSM slightly spread from its mean value meaning that the income realized from DIRASSM slightly greater than its mean. The maximum value of DIRASSM was 1.09e+09 with minimum value of 4318111. This shows that the highest income relapsed from DIRASSM was 1.09e+09 with the lowest income of 4,318,111 per annual. Furthermore, the AGSFLOAN has the highest value of 7.47e+08 and a minimum value 0, meaning that the highest loan giving out to citizen of the state for investment or small scale business is 7.47e+08, but the lowest is zero, meaning that state government gives out loan annually to their inhabitants. Overall Mean value of 1.53e+08 and standard deviation value of 1.57e+08. AGSFLOAN are widely spread and justified by the state for the purpose of establishment. Lastly the mean value of the overall POP was 3695396, with a standard deviation value of 1062145 which that the POP widely deviate from its mean value. The highest and lowest population that are liable to tax in the state are 5741815 and 1869377 respectively according to the observations.

Trend of PAYE and Internally Generated Revenue in North Central states in Nigeria

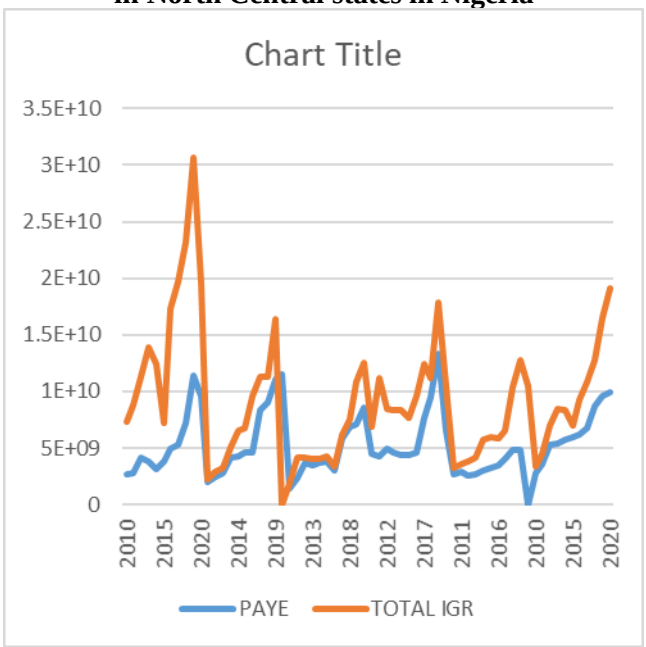

Fig. 2. Trend of PAYE and IGR in North Central states in Nigeria
Source: Researchers' computation (2022)

In order to examine the trend of PAYE and IGR in North central states (Benue, Niger, Nasarawa, Plateau, Kogi and Kwara)) from 2010 to 2020, trend analysis was employed and the result is presented in Fig 2. In 2010, PIT contributes less than 50% to Benue state IGR which later rise a little from 2012 to 2014 and later fall in 2015. In 2016, a progressive upward movement was

observed in Benue PIT and IGR which later fall in 2020. This could be as a result of covid'19 pandemic. In Niger state, a progressive and upward movement in PIT and IGR was discovered which later fall in 2020 as a covid'19 pandemic. More so, from 2010 to 2016, there was a dwell and proportionate movement between PIT and IGR of Nasarawa state which later rise from 2017 to 2020. However, both PIT and IGR moves together from 2010 to 2016 implying that PIT contributes significantly to the state IGR. In Plateau state, PIT contributes nearly 50% to the state IGR from 2010 to 2016. A progressive upward movement between PIT and IGR was discovered as PIT rise significantly in line with the state IGR. In Kogi state, a dawdling upward movement between PIT and IGR was noticed from 2010 to 2017 which remain constant in 2018 and later rise in 2019 then fall in 2020. In Kwara state, an upward movement was seen between PIT and IGR from 2010 to 2012, which later fall slightly from 2013 to 2016 then rise from 2017 to 2020. This invariably displayed positive and upward significant trend between IGR and PIT in all observed states in Nigeria.

Table 2. Pooled effect result on the effect of PIT on revenue generation in North Central States in Nigeria

Dependent Variable	Independent Variable	Coefficient	Standard Error	t	P>|t|	[95% Conf. Interval]	
IGR	PAYE	1.209329	0.133161	9.08	0.000	0.9430568	1.475601
	DIRASSM	12.23409	1.303576	9.39	0.000	9.627434	14.84075
	AGSFLOAN	-4.795667	2.289099	-2.10	0.040	-9.373003	0.2183311
	POP	14.71927	307.0133	0.05	0.962	-599.1918	628.6303
	CONSTANT	9.37e+08	1.26e+09	0.74	0.460	-1.58e+09	3.45e+09
	R- Square = 0.8005	Adj R-Square = 0.7875		Prob >F = 0.0000		F(4, 61) = 61.20	

Source: Researchers' computation (2022)

The result in Table 2 shows the effect of PAYE, DIRASSM, AGSFLOAN and POP on IGR. It was revealed that personal income tax accounted for 78.7% (Adj R-square) of variations in the internally generated revenue (IGR) of North Central states in Nigeria during the study while the remaining 21% is accounted for other factors or variables not included in the model. Furthermore, the F-value of 61.20, and the significance level of 0.0000 indicates the goodness of fit of the model. The coefficient of the constant is 9.37e+08, which determines the value of IGR given a unit increase or decrease in any of the independent variables, while all others are rendered zero. PAYE has positive and significant effects on IGR (β=1.209329, P=0.000). This implies that 1% increase in PAYE increases IGR by 1.21%. Also, DIRASSM has positive and significant effect on IGR (β=12.23409, P=0.000) implying that 1% increase in DIRASSM increases IGR by 12.23%. In addition, AGSFLOAN has negative and significant effect on IGR as 1% increase in AGSFLOAN decreases IGR by 4.80% (β=-4.795667, P=0.040) . More so, POP has positive and insignificant effect on IGR (β=14.71927, P= 0.962).

Table 3. Fixed Effect result on the effect of PIT on revenue generation in North Central states in Nigeria

Dependent Variable	Independent Variable	Coefficient	Standard Error	t	P>|t|	[95% Conf. Interval]	
IGR	PAYE	0.9022456	0.1692202	5.33	0.000	0.5632568	1.241234
	DIRASSM	9.422601	2.35411	4.00	0.000	4.706752	14.13845
	AGSFLOAN	-2.493671	2.245446	-1.11	0.272	-6.99184	2.004498
	POP	35.13403	1076.518	3.26	0.002	1356.88	5669.927
	CONSTANT	-1.01e+10	3.44e+09	-2.94	0.005	-1.70e+10	-3.21e+09
R-Square:			F(4,56)=	50.93			
Within=	0.7844		Prob> F=	0.0000			
Between=	0.1982						
Overall=	0.4753						

Source: Researchers' computation (2022)

Table 3 shows the fixed effect results of PAYE, DIRASSM, AGSFLOAN and POP on IGR of selected North central states. PAYE has positive and significant effect on IGR as 1% increase in PAYE increases IGR by 0.90% (β=0.9022456, P=0.000). Also, DIRASSM has positive and significant effect on IGR (β=9.422601, P=0.000). This implies that 1% increase in DIRASSM increases IGR by 9.42%. Furthermore, there is negative and insignificant effect of AGSFLOAN on IGR implying that 1% increase in AGSFLOAN decreases IGR by 2.49% (β=2.493671, P=0.272). More so, POP has positive and significant effect on IGR (β=35.13403, P=0.002). This indicates that 1% increase in POP increases IGR by 35.13%. The coefficient of the constant is-1.01e+10 which determine the value of IGR given a unit increase or decrease in any of the independent variables, while all others are rendered zero. Furthermore, the overall R^2 of 0.4753 indicates that the independent variables jointly accounted for 48% of the variation in dependent variable. Also, F-statistics and F-probability values are 50.93 and 0.0000 indicates the goodness of fit of the model.

Table 4. Random Effect result on the effect of PIT on revenue generation in North Central States in Nigeria

Dependent Variable	Independent Variable	Coefficient	Standard Error	t	P>|t|	[95% Conf. Interval]	
IGR	PAYE	1.147067	0.1459359	7.86	0.000	0.8610376	1.433096
	DIRASSM	11.34492	1.901685	5.97	0.000	7.617684	15.07215
	AGSFLOAN	-3.350918	2.291244	-1.46	0.144	-7.841673	1.139837
	POP	79.56344	592.7864	1.34	0.180	-366.2056	1957.474
	CONSTANT	-1.64e+09	2.12e+09	-0.77	0.439	-5.79e+09	2.51e+09
R-square		Wald chi2	197.13				
Within=	0.7596	Prob> chi2	0.0000				
Between=	0.8108						
Overall=	0.7766						

Source: Researchers' computation (2022)

Table 4 shows the random effect results of PAYE, DIRASSM, AGSFLOAN and POP on IGR of selected North central states. From the table, PAYE has positive and significant effect on IGR (β=1.147067, P=0.000) which implies that 1% increase in PAYE increases IGR by 1.15%. Similarly, DIRASSM has positive and significant effect on IGR as 1% increase in DIRASSM increases IGR by 11.34% (β=11.34492, P= 0.000). Also, AGSFLOAN has negative and insignificant effect on IGR (β=-3.350918, P=0.144) implying that 1% increase in AGSFLOAN decreases IGR by 3.35%. Furthermore, POP has positive and insignificant effect on IGR (β=79.56344, P=0.180). This implies that 1% increase in POP increases IGR by 79.56%.The constant has the coefficient of -1.64e+09which determine the value of IGR given a unit increase or decrease in any of the independent variables, while all others are rendered zero. Furthermore, the overall R^2 of 0.7766 indicates that the independent variables jointly accounted for 77.6% of the variation in dependent variable. Also, the Wald chi2 197.13 value of and F-probability values are 50.93 and 0.0000 indicates that the model is statistically significance.

Table 5. Hausman Test result on the Effect of Personal Income Tax on Revenue Generation in North Central States in Nigeria

Dependent Variables	**Independent Variables**	**Coefficients**		**(b-B) Difference**	**Sqrt(diag(V_b-V_B) S.E.**
		(b)	**(B)**		
IGR	PAYEE	.9022456	1.147067	-.2448211	.0856632
	DIRASSM	9.422601	11.34492	-1.922319	1.387597
	AGSFLOAN	-2.493671	-3.350918	0.857247	0.000
	POP	35.13403	79.56344	-44.4294	898.6069
		Prob>chi2 = 0.0319	chi2(3) = 8.81		

Source: Researchers' computation (2022)

In order to determine the suitable model, Hausman test was done in Table 5. The null hypothesis displayed that random effect model is appropriate. If the |Prob >chi2| > 0.05, then the null hypothesis is preferable. On the other hand, if the |Prob >chi2| < 0.05, fixed effect model is appropriate. The chi2 probability is less than 0.05 (0.000) which implies that fixed effect model is appropriate.

Table 6. Im, Pesaran and Shin Unit-Root Test

Variables	Z-t-tilde-bar/p-value	Z-t-tilde-bar/p-value	Order of Integration
PAYE	2.3290 (0.9901)	-2.7711 (0.0028)	I(1)
DIRASSM	-1.5410 (0.0617)	-3.6114 (0.0002)	I(1)
AGSFLOAN	-2.5513 (0.0054)	-3.7835 (0.0001)	I(1)
IGR	3.4721 (0.9997)	2.6249 (0.0043)	I(1)
POP	13.9218(1.0000)	2.4121 (0.0021)	I(1)

Source: Researchers' computation (2022)

The tests for the data stability conditions largely suggest that the variables are non-unit-root at levels. To achieve this, Z-t-tilde-bar value was compared with critical values. If the Z-t-tilde-bar is lower than the critical values (1%, 5% and 10%) and its probability is significant, then it is concluded that panel contain no unit roots thereby accepting the alternative hypothesis. With the use of Im, Pesaran and Shin (IPS) tests of unit-root, it is evident from Table 6 that the direct inclusion of these variables in model estimations would not result in spurious regressions. All the variables are stationary at the first order level that is first order of integration. This prompted the researchers to conduct Pedroni's Cointegration Test Results to gauge the variables level of cointegration.

Table 7. Pedroni's Cointegration Test Results

Test Stats.	Panel	Group
V	0.3299	.
Rho	1.277	2.331
T	-1.151	-1.138
Adf	-.2299	.1322

Source: Researchers' computation (2022)

Table 7 shows the cointegration analysis on the effect of PIT on IGR of the North central state in Nigeria. It is advocated by the analysis that all variables employed are cointegrated because there are four statistics (V, rho, t and ADF). Four (4) test showed that null hypothesis of no cointegration is rejected even at 1% level because in absolute term four test out of six test are greater than v = 0.3299. Therefore there is cointegration among the variables employed.

Discussion

The impact of PIT on revenue generation in North Central states in Nigeria was investigated in this study. It was discovered that PAYE has positive significant influence on North central revenue generation in Nigeria, the implication is that PAYE which was sourced from the employees in the states is very important to revenue generation (IGR). This is in consonant with the study of Adegbite (2017), Bala, Enoch and Yakubu (2019), Kyari, Ahmed, Ogu (2018), Odoemelam, (2018), Tyoakosu, and Awuhe (2017), and Adedeji and Akindele (2018). This invariably supported the hypothesis (HI_1) which postulated that PAYE impacts revenue generation of the North Central States significantly.

Direct assessment (DIRASSM) divulged positive effects on IGR, this showed that tax realized from the self-employed businesses are also counted extensively in IGR, this negated the view of Tyoakosu,and Awuhe (2017); and Onuselogu, and Onuora, (2021) but supported

Adegbite (2017); Fasina et al (2018), Adedeji and Akindele (2018); Bala, Enoch and Yakubu (2019); Kyari, Ahmed, and Ogu (2018); and Okonkwo, and Chukwu (2019). This outcome in line with hypothesis (HI_2) on the assumption that direct assessment impacts revenue generation of the North Central States significantly

Population (POP) has been seen having positive significance on IGR, this showed that ordinarily the more the population, the better is the IGR of the state if they fulfill their civil responsibilities extensively. The more the employees, the more is PAYE paid into state purse, and the more is direct assessment on self-employed people in the state which ultimately yielded positive influence on IGR of the states. But Agricultural Credit Guarantee Scheme Fund Loan (AGSFLOAN) which is a control variable has negative effect on IGR. The policy implication is that AGSFLOAN has not yielded income to the respective state. This outcome rejected the hypothesis (HI_4) that stated that AGSFLOAN impacts revenue generation of the North Central States significantly.

CONCLUSION

The impact of personal income tax on revenue generation in North Central states in Nigeria was investigated in this study. Data such as PAYE, and direct assessment were gotten from the National Bureau of Statistics, while Agricultural Credit Guarantee Scheme Fund Loan, and Population were sourced from CBN bulletin respectively. Panel Data Analysis, trend analysis and descriptive analysis were used to analyze the data sourced from Kwara, Kogi, Niger, Benue, Plateau, and Nasarawa States. With thorough assessment and analyses, it was concluded that PIT has positive significant influence on IGR in North central states in Nigeria. That is personal income tax contributed significantly to revenue generation of the selected states. PIT has been seen as a pertinent tool to revenue generation of the North central states in Nigeria. Based on the findings of this study, it is recommended that in order to widen the states' tax revenue through PIT, priority should be given to automation of tax remittance to cover all aspect of PIT (PAYE and Direct Assessment) in the states in order to enable prompt remittance of PIT especially those states with lower IGR so as to will boost their IGR ultimately.

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