



The Effect of Revenue from Taxation on Gross Domestic Product and Human Development Index in Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. Author OLI designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors OLI and OPA managed the analyses of the study. Author OD and DOM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: This study investigates the effect of revenue from taxation on gross domestic product and human development index in Nigeria. Secondary data is used from the Central Bank of Nigeria, the World Bank, and Federal Inland Revenue Service for this study.

Study Design: The Ex-post facto research design was used for the study.

Methodology: The study used secondary data and was conducted via the relevant econometric tests.

Result: The study reveals that revenues from taxation have effects on gross domestic product and human development index. Based on the result, the study concluded that taxation is an essential component of fiscal policy that the Nigerian government can use to stimulate economic development. Based on the conclusion, the study made the following recommendations amongst others that, government need to improve on the personal income tax collection process to enable more individuals disclose their income for tax assessment. This is because most self employed (skilled workers such as carpenters, bricklayers, welders, etc) Nigerians don't pay income tax

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voluntarily. There should be an improvement in the value added tax administration in Nigeria to reduce the lack of accountability of VAT by the agents. The tax officials and other agents of the relevant tax authorities need to reduce their fraudulent activities with tax payers to increase the amount of tax collected for the economic growth of Nigeria.

Keywords: Revenue from taxation; GDP; human development index; infrastructure.

1. INTRODUCTION

In a natural resources blessed country like Nigeria, with the operation of indigenous and foreign companies, the problem of underdevelopment should not be the topic of the day but the reverse is the case. Thus the emphasis on taxation by one and all cannot be overemphasized. Taxation is just one of the avenue open to the government to generate revenue. Taxation according to Ogbonna and Appah [1] is a compulsory contribution imposed by the government on its citizens. The political, economic and social development of any country depends on the amount of revenue generated, for the provision of infrastructure in that given country. However, one means of generating the amount of revenue for providing the needed infrastructure is through a well-structured tax system.

It has been observed over the years that income tax revenue has generally been grossly understated due to improper tax administration arising from under assessment and inefficient machinery for collection [2-3]

Taxation has been used as a tool by the government in fashioning various aspects of economic development. According to Tosun and Abizadeh [4] taxes are used as proxy for fiscal policy. It is known that reducing the distorting effects of the current tax structure would permanently increase development.

In practice, it is difficult to distinguish between the effects of tax policy on levels and on growth rates of GDP. This is because transitional development may be long-lasting and so it has not proved possible to distinguish impact on long-run growth from transitional growth. For instance, it is possible that tax changes that encourage innovation and entrepreneurship. Consequently, an efficient and effective tax administration results in increased revenue yield, but this is not possible because of the presence of evasion and avoidance due to loop holes in the tax laws. On the other hand, people do not expect that by sacrificing their private resources

to the state in the form of taxes, government is expected to reciprocate by spending public revenue in a way that will enhance their welfare [5]. The dwindling tax revenue as presently witnessed results from lack of encouragement to the taxpayers, due to the fact that there is very little evidence to show for taxes collected. This is also attributable to low tax compliance and many people see no reason for tax payment. The Nigerian government is equally unaccountable of the funds entrusted in their care [6]. Issues concerning what successive governments have done with tax payers' monies still remain unanswered. This study, therefore, examines the relationship between revenue from taxation and Gross domestic product and human development index in Nigeria.

2. TAXATION IN NIGERIA

Taxation is a tool of economic Development it can be used to stimulate investment and thus create jobs, prosperity, or reduce income inequality in the system and by so doing promote social justice. More importantly, they posit that "taxes are the price we pay for civilization ". Appah and Ogbonna [1] in his view asserted that taxation is the art or process of being taxed. It can also be defined as the transfer of resources from the private to the public sector in order to accomplish some economic Development and social goals. However, taxes are themselves burdensome since they reduce the economic power that would otherwise be possessed by individual or organization, but the activities that are financed from the tax proceeds will presumably bring benefits to individual and organizations. The Nigerian government is organized on three levels the federal, state and local Government. At any point in time, in any level, government may be actively seeking to maintain stability to foster change in particular area of Nigerian life. In this, the federal government has done much more than the other levels of government not only because it has the financial resources and power to initiate and implement far reaching programmes but also it provides the focal point for debating of national issues.

Federal government have fostered change in every expanding area including the provision of adequate healthcare for all and expanded educational opportunity, they have attempted to stimulate the economy to wipe out poverty. Thus, they have to do these through poverty alleviation programme, privatization, agricultural credit loan scheme, Niger Delta Development Commission etc all these developmental role of the federal government had played towards fostering a viable economic development.

The effort of government to initiate and guide change has not always been successful. They have usually met with mixed success. In Nigeria, few of such programmes have achieved goals, but no widespread popular support of tax-payers, whereas others have turned out to be such dismal failure that they have lost whatever support they originally had. It is now recognized that society has been changed not only by government effort to foster particular types of social change but also at least as much by government expansion. Government is the single largest employer. Alteration of its programmes or relocation of funds can affect the job of countless individuals. In areas, where large scale government programme of facilities open or close, boom or bursts occur. Government policies can also have a greater impact on individual tax bills and purchasing power, on some industries, on the economy of the country as a whole. In recent years these side effects of government expansion and policies have become matters of increasing public concern [5].

Tax in Nigeria is also used to Control Income and Employment. when the employment problem is viewed as one of over-all purchasing power flows, the tax system can be adjusted to remedy the situation. The motive here may be to provide incentive to save and invest which will then, through the multiplier process, accelerate income and thus increase employment. To Allocate Resources: Taxation is also aimed at allocating resources between, for example, private and public goods and between investment and consumption of goods. It may also be aimed at correcting deficiencies in the pricing mechanisms resulting [7].

3. ECONOMIC DEVELOPMENT

Nwosu [8] defined economic development as the process of augmenting the productive forces or expanding productive capacity which is accomplished through effective mobilization,

assemblage and management of human, material and financial resources. It is the process of sustained rise in material output so that the physiological or material needs of man can be continually met as these needs rise. It is more or less the increase in the output of goods and services. According to Dwinvedi [9], economic growth is a sustained increase in per capita national output or net national product over a long period of time. It implies that the rate of increase in total output must be greater than the rate of population growth. He further state that another quantification of economic development is that the national output should be composed of such goods and services which satisfy the maximum want of the maximum number of people. Economic development can be determined by four important determinants namely, human resources, national resources, capital formation and technological development.

Human Resources and its Quality: Human resource of a country is the most crucial factor in its economic growth. Human recourse is comprised of the available labour force and its quality. Quality of labour force depends on the level of education, training, skills, and its inventive and innovative abilities. Quality and quantity of manpower are both equally important. Natural Resources: Natural resources of a country include the area of usable land, and resources on the land surface and underground. Land surface resources include sources of natural water, forests, landscape, etc. underground resources include oil and gas and minerals. Favourable climate and environmental conditions add to the natural resources endowments of a country. Capital Formation: Capital is defined as man-made means of production [9]. It includes machinery, plants, and social overheads like roads, railways, schools, etc. Capital formation requires saving men and material resources from their use in consumer goods and transforming them into producer goods. Technology: Technology used in production is the fourth vital determinant of economic development. Technology refers to scientific methods and techniques of production. In effect, technology means the amount of machinery and technical equipment used with a given amount of labour. Capital – labour ratio is a broad measure of technology. Social and Political Factors: Social and political systems, organizations, institutions, social values etc. also play an important role in the development process of an economy. Social factors like customs, traditions, beliefs, institutions,

determine to a considerable extent the pace of economic development. Furthermore, political stability has always proved conducive to economic development by encouraging industrial behavior [10].

4. ECONOMIC DEVELOPMENT MODELS

The emergence of economic development theories can be traced back to Adams Smith's Wealth of Nations. In Smith's view, economic development of a nation strictly speaking, 'wealth of Nations' depends on the division of labour and is limited by the limits of division of labour. The Smithian view was later suggested by these great economists are collectively called classical theory of economic development, and then, during the nineteen thirties and forties, R.F. Harrod and Dumar developed a path breaking theory of economic development-the capital accumulation theory of economic development, popularly called Harrod-Domar growth model. The following theories of economic development would be discussed:

Harrod-Domar Theory of Development: The Harrod-Domar models are based on economic development on the experiences of advanced economists. They are primarily addressed to an advanced capitalist economy and attempt to analyse the requirements of steady growth in such an economy. Harrod-Domar assign a key role to investment in the process of economic development. But they lay emphasis on the dual character of investment. Firstly, it creates, and secondly, it augments the productive capacity of the economy by increasing its capital stock. The former may be regarded as the demand effect and the later the supply effect of investment. Hence so long as net investment is taking place, real income and output will continue to expand. However, for maintaining a full employment equilibrium level of income from year to year, it is necessary that both real income and output should expand at the same rate at which productive capacity of the capital stock is expanding. Ultimately, it will adversely affect the economy by lowering incomes and employment in the subsequent periods and moving the economy into equilibrium path of steady growth.

Kaldor Model of Distribution: The Kaldor model is an attempt to make the saving-income ratio variable in the growth process. It is based on the classical saving function which implies that saving equals the ratio of profits to national income, i.e. $S = P/Y$.

Pasinetti Model of Profit and Growth: The Pasinetti model is based on the Kaldor model of distribution by incorporating workers profits as returns on their savings. It shows that there exists a distribution of income between profits and wages which keeps the system in a long-run equilibrium.

Joan Robinson's Model of Capital Accumulation: Mrs Joan Robinson in her book "The Accumulation of Capital" build a simple model of economic development based on the capital rules of the game. The model is where net national income is the sum of the total wage bill plus total profits which may be shown as: $Y = wN + pK$.

Meade's Neo Classical Model of Economic Development: Professor J.E. Meade has constructed a neo-classical model of economic development which is designed to show the way in which the simplest form of economic system behave during a process of equilibrium development. In the model, the net output produced depends upon four factors: (i) the net stock of capital available in the form of machines, (ii) the amount of available labour force; (iii) the availability of land and natural resources; (iv) the state of technological knowledge which continues to improve through time.

Solow Model of Long-Run Development: Solow postulates, a continues production function linking output to the inputs of capital and labour which are sustainable. He shows in his model that with variable technical efficient there would be a tendency for capital - labour ratio to adjust itself through time in the direction of equilibrium ratio [7].

Human Capital Development Index The 2010 HDR, the original 1990 Human Development Report defined development concisely as a process of "enlarging people's choices," while emphasizing that this objective depended on the freedom to be healthy, educated, and enjoy a decent standard of living. It also stressed that "human development and well-being went far beyond these dimensions to encompass a much broader range of capabilities, including political freedoms and human rights" For 2010, the HDR proposes and evolved vision of human development as the "expansion of people's freedoms to live long, healthy and creative lives; to advanced other goals they have reason to value; and to engage actively in shaping development equitably and sustainably on a

shared planet. People are both the beneficiaries and the drivers of human development, as individuals and in groups.”

Among the most impressive findings of the 2010 UNDP Human Development Report are the magnitude and reach of improvements in the Human Development Index from 1980 to 2010. More than 3.376 billion people in 16 different countries, accounting for more than 49 percent of the world’s population, benefited from development improvements of 50 percent or more. A total of 45 countries saw their HDI’s improve by more than 25 percent. At the top of the list, Nepal’s HDI more than doubled from 0.210 to 0.428. The HDI’s of China and India, or roughly one-third of the world’s people, grew by 80 and 62 percent, respectively. Moreover, the gains of the top 45 countries have been distributed around the world, including Africa, Asia, Europe, Latin America, and the Middle East.

5. THEORETICAL REVIEW

The study is underpinned on the Benefits-Received Theory: This theory proceeds on the assumption that there is basically an exchange or contractual relationship between tax payers and the state. The state provides certain goods and services to the members of the society and they contribute to the cost of these supplies in proportion to the benefits received. In this quid pro quo set up, there is no place for issues like equitable distribution of income and wealth. Instead, the benefits received are taken to represent the basis for distributing the tax burden in a specific manner.

6. EMPIRICAL REVIEW

Tomljanocich [11] have tested empirically whether tax revenue has transitory or permanent impact on the growth rate of output dealing with only developed economies. Tosun and Abizaher [4] in their study of economic growth of tax changes in OECD countries from 1980 to 1999 reveal that economic growth measured by GDP per capita has a significant effect on the tax mix of the OECD countries. The analysis reveals that different taxes respond to the growth of the GDP per capita. It is shown that while the shares of personal and property taxes have responded positively to economic growth, shares of the payroll and goods and services taxes have shown a relative decline.

Ogbonna and Appah [1] studied the Impact of Tax Reforms on Nigeria’s Economic Growth, using relevant descriptive statistics and econometric analysis. They concluded, based on the test results, that tax reforms are positively and significantly related to economic growth, suggesting that tax reforms can stimulate economic growth in Nigeria. The study also shows that tax reforms can improve revenue generation machinery of the government and generate more revenue to undertake socially desirable expenditure that will translate to economic growth in real output and per capita income. Worlu and Nkoro [12] investigated the impact of tax revenue on economic growth in Nigeria, taking cognizance of its impact on infrastructural development from 1980 to 2007. They collected relevant secondary data from the Central Bank of Nigeria (CBN) Statistical Bulletin, the Federal Inland Revenue Service (FIRS), and some previous works by scholars. The data collected were analyzed using the three-stage least square estimation technique. The study reveals that tax revenues stimulate economic growth when efficiently channeled to critical infrastructural development. The position of the paper is that it is only when tax revenues are appropriately channeled that it will impact on Nigeria’s economic growth and development. The study further reveals that tax revenue has no independent effect on Nigeria’s economic growth.

Ojewole [13] opines that the need for human capital development as an essential component of nation-building is getting wider attention with increasing globalization in the world economy and the increasing wave of unemployment among the youths, especially in African countries due to the downturn in the various economies. One identifiable solution to the challenges facing nation-building in Africa is human capital development. The study, therefore, looked at the direct impacts human capital development has on nation-building from various critical perspectives to make the necessary policy recommendations. The study also examined why a highly developed human capital will be a source of comparative advantage in the twenty-first-century global economy and nation-building. The paper concludes by arguing that the Nigerian educational system should adopt rigorous academic standards, benchmarked against standards in developed countries as a strategic intervention that would permeate the entire human capital development system.

Onwuka and Abonyi [14], in their work, examine revenue generation as a tool for infrastructural development in Nigeria. The objective of the study was to determine the impact of revenue generated on infrastructural development in Nigeria and to determine the relationship between the revenue generated and economic growth in Nigeria. Time-series data were applied in carrying out the research work, and the data were sourced from the Federal Ministry of Finance, the Office of the Accountant General of the Federation, Federal Republic of Nigeria Official Gazettes and the various States' Official Gazettes, Central Bank of Nigeria (CBN), and Nigeria Bureau of Statistics (NBS). The authors employed the Ordinary least square regression analysis and the STATA 13 economic package for data analysis. The scope of the study is Nigeria's total revenue generated, infrastructural development, and economic growth from 1981 to 2018. The work reveals that revenue generated has a significant effect on infrastructural development in Nigeria.

7. METHODOLOGY

The time-series data for the study were sourced from the Federal Inland Revenue Service (FIRS) and the Central Bank of Nigeria (CBN) Statistical Bulletin - taxation and economic development indicators. Excel software was used in transforming the variables into a format suitable for data analysis. This is premised on the longitudinal nature of the data set. The econometric view (E-view) was used to analyze the transformed data. The ordinary least square was adopted for hypothesis testing. The following linear model guided the ordinary least square:

$$GDP/HDI = f(X_1, X_2, X_3, X_4) \text{ -----} \quad 1$$

$$GDP = \alpha + \beta_1 Pitr_1t + \beta_2 Citr_2t + \beta_3 Pptr_3t + \beta_4 Vatr_4t + \epsilon \quad 2$$

$$HDI = \alpha + \beta_1 Pitr_1t + \beta_2 Citr_2t + \beta_3 Pptr_3t + \beta_4 Vatr_4t + \epsilon \text{ -----} \quad 3$$

This is $B_1 - \beta_4 > 0$ for equation 2; $B_1 - \beta_4 < 0$; for equation 3; Where:

GDP/HDI = Gross Domestic Product/Human Development Index, Pitr = Personal Income Tax

Revenue, Citr = Companies Income Tax Revenue, Vatr, Value Added Tax Revenue, Pptr = Petroleum Profit Tax Revenue, α is the intercept of the regression, $\beta_1, \beta_2, \beta_3,$ and $\beta_4,$ are the coefficients of the regression. At the same time, ϵ is the error term capturing other explanatory variables and explicitly included in the model. Nevertheless, the model was tested using the diagnostic tests of heteroskedasticity, serial correlation, normality, and misspecification [15,16] For the stationarity of data, Augmented Dickey-Fuller was used in the study. Specifically, the hypothesis of the study is as stated as follow:

H_{01} : There is no significant relationship between tax revenue and GDP of Nigeria.

8. DATA PRESENTATION

This section is devoted to the presentation of the data used in estimating gross domestic product, human development index and taxation revenue. The data were sourced mainly from secondary sources thus: The Central Bank of Nigeria (CBN) publication; The Federal Office of Statistics and Federal Inland Revenue Service.

9. RESULTS AND DISCUSSION

$$MODEL \quad LnGDP = \alpha + \beta_1 LnPitr_1t + \beta_2 LnCitr_2t + \beta_3 LnPptr_3t + \beta_4 LnVatr_5t + \epsilon \text{ -----} \quad 2$$

Diagnostic Tests:

Table 1 shows the Breusch – Godfrey Serial Correlation LM test for the presence of auto correlation. The result reveals that the probability values of 0.12 (12%) and 0.10 (10%) is greater than the critical value of 0.05 (5%). This implies that there is no evidence for the presence of serial correlation.

Table 2 shows the White Heteroskedasticity test for the presence of heteroskedasticity. The econometric result reveals that the probability values of 0.496 (50%) and 0.483 (48%) are considerably in excess of 0.05 (5%). Therefore, there is no evidence for the presence of heteroskedasticity in the model.

Table 1. Breusch-godfrey serial correlation lm test

F-statistic	6.929189	Probability	0.121336
Obs*R-squared	13.34731	Probability	0.101264

Output

Table 3 shows the Ramsey RESET test for misspecification. The econometric result suggests that the probability values of 0.794 (79%) and 0.789 (79%) are in excess of the critical value of 0.05 (5%). Therefore, it can be seen that there is no apparent non-linearity in the regression equation and so it would be concluded that the linear model for the accounting services is appropriate.

Table 4 shows the multiple regression analysis for tax revenue and economic growth of Nigeria using gross domestic product as a proxy for the period 2005 to 2017. The result suggests that PITR (Personal Income Tax Revenue), PPTR (Petroleum Profit Tax Revenue), CITR (Companies Income Tax Revenue) with p-values of 0.0160, 0.0420, 0.0261, and 0.0176 is less than the critical value of 0.05. Hence, we deduce that there is a significant relationship between tax revenue and economic growth in Nigeria for the period 2005 - 2017. The R² (coefficient of determination) of 0.435165 and adjusted R² of 0.362887 shows that the variables combined determines about 44% and 36% of economic growth of Nigeria. The F-statistics and its probability shows that the regression equation is well formulated explaining that the relationship between the variables combined are statistically significant (F-stat = 5.567008; F-pro. = 0.000100). This result is consistent with the findings of Ogbonna and Appah [17] Ogbonna and Appah [1], Chigbu, Akujuobi and Appah [18] that taxation affects the economic growth of countries positively and significantly.

Table 5 shows granger causality tests results for the impact of taxation (PIT, CIT, PPT and VAT) on economic growth in Nigeria for the period 2005-2017. From the test results, the probability value of 0.65191 and 0.01967 of (LnPIT) and (LnGDP) of the F-statistics is greater than the critical values of 1%, 5%, 10%. This implies that personal income tax granger cause (impact) on

economic growth (GDP) in Nigeria for the period under review and (LnGDP) does not granger cause (impact) on (LnPIT). The probability value of 0.07771 of (LnCIT) and (LnGDP) F-statistics is greater than the critical values of 1%, 5% and 10%. This means that companies income tax granger cause economic growth and also 0.02764 is less than the critical value of 5% and 10%, which implies that economic growth does not granger cause companies income tax. The probability value of the F statistics of 0.06024 is greater than the critical value of 1%, and 5% of petroleum profit tax does granger cause economic growth. But 0.03590 is less than 5% and 10%, which implies economic growth does not granger cause petroleum profit tax;. Finally, the probability statistics of 0.53227 is greater than the critical value of 1%, and 5% respectively. This means that value added tax granger cause economic growth. But the F statistics of 0.03276 is less than the critical value of 5% and 10%, which implies that economic growth does not granger value added tax. The granger causality analysis shows that there exists an impact of taxation variables on economic growth in Nigeria for the period 2005 - 2017. This result is consistent with the multiple regression result that there is a significant relationship between taxation and economic growth.

$$\text{MODEL } \text{LnHDI} = \alpha + \beta_1 \text{LnPITR1t} + \beta_2 \text{LnCITR2t} + \beta_3 \text{LnPPTR3t} + \beta_4 \text{LnVATR5t} + \varepsilon - 3$$

Diagnostic Tests: 2

Table 6 shows the Breusch – Godfrey Serial Correlation LM test for the presence of auto correlation. The result reveals that the probability values of 0.12 (12%) and 0.10 (10%) is greater than the critical value of 0.05 (5%). This implies that there is no evidence for the presence of serial correlation.

Table 2. White heteroskedasticity test

F-statistic	0.942165	Probability	0.496821
Obs*R-squared	9.519861	Probability	0.483577

Output

Table 3. Ramsey reset test

F-statistic	0.067894	Probability	0.794795
Log likelihood ratio	0.071133	Probability	0.789695

Output

Table 4. Multiple regression results/output for all hypothesis

Dependent Variable: LnGDP				
Method: Least Squares				
Date: 06/03/21 Time: 07:00				
Sample(adjusted): 2005 2017				
Included observations: 13 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	286327.4	80872.94	3.540459	0.0041
LnPITR	977.4957	349.0664	2.800314	0.0160
LnCITR	1.771444	0.239146	2.407364	0.0420
LnPPTR	3.006314	4.086981	2.035583	0.0261
LnVATR	5.124505	1.864347	2.748686	0.0176
R-squared	0.435165	Mean dependent var		466619.5
Adjusted R-squared	0.362887	S.D. dependent var		176186.7
S.E. of regression	32060.78	Akaike info criterion		23.82858
Sum squared resid	1.23E+10	Schwarz criterion		24.07365
Log likelihood	-197.5430	F-statistic		117.7975
Durbin-Watson stat	2.105089	Prob(F-statistic)		0.000100

Output

Table 5. Pairwise granger causality tests

Date: 06/3/21 Time: 22:56			
Sample: 2005 2017			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
LnPITR does not Granger Cause LnGDP	13	5.43344	0.65191
LnGDP does not Granger Cause LnPITR		0.43698	0.01967
LnCITR does not Granger Cause LnGDP	13	4.56926	0.07771
LnGDP does not Granger Cause LnCITR		0.00236	0.02764
LnPPTR does not Granger Cause LnGDP	13	3.54714	0.06024
LnGDP does not Granger Cause LnPPTR		0.01421	0.03590
LnVATR does not Granger Cause LnGDP	13	5.04352	0.53227
LnGDP does not Granger Cause LnVATR		0.46406	0.03276

Output

Table 6. Breusch-godfrey serial correlation LM test

F-statistic	6.929189	Probability	0.121336
Obs*R-squared	13.34731	Probability	0.101264

Output

Table 7 shows the White Heteroskedasticity test for the presence of heteroskedasticity. The econometric result reveals that the probability values of 0.496 (50%) and 0.483 (48%) are considerably in excess of 0.05 (5%). Therefore, there is no evidence for the presence of heteroskedasticity in the model.

Table 8, shows the Ramsey RESET test for misspecification. The econometric result suggests that the probability values of 0.794 (79%) and 0.789 (79%) are in excess of the critical value of 0.05 (5%). Therefore, it can be seen that there is no apparent non-linearity in the

regression equation and so it would be concluded that the linear model for the accounting services is appropriate.

Table 9, shows the multiple regression analysis for tax revenue and human development index for the period 2005 to 2017. The result suggests that PITR (Personal Income Tax Revenue), PPTR (Petroleum Profit Tax Revenue), CITR (Companies Income Tax Revenue) with p-values of 0.0160, 0.0420, 0.0261, and 0.0176 is less than the critical value of 0.05. Hence, we deduce that there is a significant relationship between tax revenue and poverty (human development index)

in Nigeria for the period 2005 - 2017. The R² (coefficient of determination) of 0.235165 and adjusted R² of 0.207362 shows that the variables combined determines about 24% and 21% of economic growth of Nigeria. The F-statistics and its probability shows that the regression equation is well formulated explaining that the relationship between the variables combined of poverty (human development index) are statistically significant (F-stat = 5.567008; F-pro. = 0.000100).

Table 10 shows granger causality tests results for the impact of taxation (PIT, CIT, PPT and VAT) on human development index in Nigeria for the period 2005-2017. From the test results, the probability value of 0.65191 and 0.01967 of (LnPIT) and (LnHDI) of the F-statistics is greater than the critical values of 1%, 5%, 10%. This implies that personal income tax granger cause (impact) on human development index (LnHDI) in Nigeria for the period under review and (LnHDI) does not granger cause (impact) on (LnPIT). The probability value of 0.07771 of (LnCIT) and

(LnHDI) F-statistics is greater than the critical values of 1%, 5% and 10%. This means that companies income tax granger cause human development index and also 0.02764 is less than the critical value of 5% and 10%, which implies that human development index does not granger cause companies income tax. The probability value of the F statistics of 0.06024 is greater than the critical value of 1%, and 5% of petroleum profit tax does granger cause human development index. But 0.03590 is less than 5% and 10%, which implies human development index does not granger cause petroleum profit tax. Finally, the probability statistics of 0.53227 is greater than the critical value of 1%, and 5% respectively. This means that value added tax granger cause human development index. But the F statistics of 0.03276 is less than the critical value of 5% and 10%, which implies that human development index does not granger value added tax. The granger causality analysis shows that there exists an impact of taxation variables on human development index (poverty) in Nigeria for the period 2005 -2017.

Table 7. White heteroskedasticity test

F-statistic	0.942165	Probability	0.496821
Obs*R-squared	9.519861	Probability	0.483577

Output

Table 8. Ramsey RESET test

F-statistic	0.067894	Probability	0.794795
Log likelihood ratio	0.071133	Probability	0.789695

Output

Table 9. Multiple regression results

Dependent Variable: LnHDI				
Method: Least Squares				
Date: 06/03/21 Time: 07:00				
Sample(adjusted): 2005 2017				
Included observations: 13 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
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R-squared	0.235165	Mean dependent var		466619.5
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Sum squared resid	1.23E+10	Schwarz criterion		24.07365
Log likelihood	-197.5430	F-statistic		117.7975
Durbin-Watson stat	2.105089	Prob(F-statistic)		0.000100

Output

Table 10. Pairwise granger causality tests

Date: 06/3/21 Time: 22:56			
Sample: 2005 2017			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Probability
LnPITR does not Granger Cause LnHDI	13	5.43344	0.65191
LnHDI does not Granger Cause LnPITR		0.43698	0.01967
LnCITR does not Granger Cause LnHDI	13	4.56926	0.07771
LnHDI does not Granger Cause LnCITR		0.00236	0.02764
LnPPTR does not Granger Cause LnHDI	13	3.54714	0.06024
LnHDI does not Granger Cause LnPPTR		0.01421	0.03590
LnVATR does not Granger Cause LnHDI	13	5.04352	0.53227
LnHDI does not Granger Cause LnVATR		0.46406	0.03276

Output

10. CONCLUSION AND RECOMMENDATIONS

The work therefore corroborates the previous findings of Tosun and Abizaheh [4] who established that taxes responds positively to economic growth, shares of the payroll and would permeate the entire human capital development system. By implication the Nigeria government can effectively use the revenue generated from tax to curb the growing high unemployment rate through effective revenue collection and deployment for the increase in socio-economic development and creation of enabling environment for businesses to thrive. This can be done through the encouragement of small and medium scales enterprise and making means for access to funding for economic development purposes. More businesses mean more employment and more employment means higher human development index aside the contributory effect of SMEs operational inflows to the country's GDP.

This study is on the effect of revenue from taxation on gross domestic product and human development index in Nigeria. The literature review provides strong evidence of the impact of tax revenue on the economic development through GDP and human development index in Nigeria. We conclude that this work empirically substantiated the results of prior studies on the effect of economic development through GDP and human development index in Nigeria using company income tax, petroleum profit tax, value-added tax and personal income tax. The analysis provided evidence of taxation as an instrument of fiscal policy on the development of Nigeria. Based on the empirical result, the paper concludes that taxation can be used to stimulate the country's development through an increase in

economic development through GDP and human development index. Hence, the paper recommends, amongst others that, government need to improve on the personal income tax collection process to enable more individuals disclose their income for tax assessment. This is because most self-employed (skilled workers such as carpenters, bricklayers, welders, etc) Nigerians don't pay income tax voluntarily. There should be an improvement in the value added tax administration in Nigeria to reduce the lack of accountability of VAT by the agents. The tax officials and other agents of the relevant tax authorities need to reduce their fraudulent activities with tax payers to increase the amount of tax collected for the economic growth of Nigeria.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Ogbonna GN, Appah E. (2012). Petroleum profit tax and Economic growth: Cointegration Evidence from Nigeria. *Asian Journal of Business Management*. 2012;(3):267-274.
2. Ola CS. (2001). *Income Tax Law and Practice in Nigeria*, Ibadan: Heinemann Educational Books (Nigeria) Plc; 2001.
3. Beredugo SB, Azubike JUB, Mefor IP. Addressing Tax evasion and avoidance through effective tax audit and investigation in cross River State, Nigeria. *International Journal of Research and Scientific Innovation*. 2019;6(6):65-69.

4. Tosun MS, Abizadeh S. (2005). Economic growth and tax components: An analysis of tax changes in OECD", Applied Economics. 2005;37:2251-2263.
5. Nzotta SM. (2007). Tax evasion problems in Nigeria: A Critique. The Nigerian accountant. 2007;40(2):40-43.
6. Igbeng EI, Beredugo SB, Adu VA. Evaluation of public accountability and tax culture among tax payers in Nigeria. International Journal of Management Science and Business Administration. 2015;1(9):7-13.
7. Okoye DVC, Akenbo CO, Obara LC. Promoting Sustainable tax compliance in the informal sector in Nigeria, International journal Arts and Humanities. 2012;1(1):ISSN:2225-8590.
8. Nwosu EJ. Tax evasion problems in Nigeria: A Critique, the Nigerian Accountant. 2007;40(2):40-57.
9. Dwivedi, DN. Managerial Economics(6th ed.), New Delhi: Vikas Publishing House (PVT) Ltd. 2004
10. Osiegbu PI, Onuorah AC, Nnamdi I. Public Finance: Theories and practices, Asaba: C.M. Global Company Ltd; 2010.
11. Tomljanocich M. The role of state fiscal policy in economic growth, contemporary economic policy. 2004;22(3):318-330.
12. Worlu, CN. and Nkoro, E. Tax Revenue and Economic Development in Nigeria: A Macroeconometric Approach. Academic Journal of Interdisciplinary Studies. 2012;1(2):211-223.
13. Ojewole A. Human Capital Development and Economic Growth in Nigeria. Journal of Social Sciences. 2015;11(2):12-28.
14. Onwuka, C. C. and Abonyi, S. E. Socio-Economic Impact of Recession and Youth Unemployment: the Nigerian Experience. Enugu State University of Science & Technology Journal of Social Sciences. 2019;4(2):336-353.
15. Gujarati DN, Porter DC. Basic Economics, (5th ed.), New York: McGraw-Hill International; 2009.
16. Asterious D, Hall SG. Applied Econometrics, London: Palgrave macmillan; 2007.
17. Ogbonna GN, Appah E. Impact of tax reform and Economic growth of Nigeria; A time series analysis. Current Research Journal of Social Sciences. 2011;4(1):62-68.
18. Chigbu EE, Akujuobi LE, Appah E. An Empirical Study on the Causality between Economic Growth and Taxation in Nigeria", Current Research Journal of Economic Theory. 2012;4(1-2):29-38.

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