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Personal Income Tax and Infrastructural Development in Lagos State, Nigeria

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Abstract: Infrastructural provisions and availability of resources to meet such needs has been the major point of concern to government in all states of the federation. In recent time Lagos State has been witnessing infrastructural deficit and this is actually affecting the standard of living of the citizens. Since the advent of civilian government in the state, internally generated revenue has been on the increase, yet the state is still witnessing a lot of infrastructural deficits. This study examined the contributions of personal income tax to infrastructural development in Lagos state to determine the effect that personal income tax has on infrastructural provisions of the state. The study adopted *ex-post facto* research design. The study covered Personal Income Tax and infrastructures development of Lagos State from 1997 to 2018. Secondary data were obtained from Lagos State Internal Revenue Services (LIRS), Lagos State Ministry of budget and planning and Lagos State Ministry of Finance. Data were analyzed using descriptive and inferential statistics. The study found that Personal Income Tax has significant effect on infrastructural development of the state. Given infrastructural provisions; EDH, EDR. On EDH, With *Adjusted* R^2 =0.150, F-stat =3.678, and also at 5% significance level [β = 0.380; P – value = 0.008]. On EDR, Adjusted R^2 = 0.315, F-stat = 3.915, Prob (F-stat) = 0.028), at 5% significance level [β = 0.352; P – value = 0.154]. The study shows that more government income from PIT was spent on housing infrastructures over other infrastructural provisions.

Keywords: Expenditure, Housing, Road, Development, Infrastructural Provisions, and Personal Income Tax

1. Introduction

1.1. Background to the Study

In recent times, the pressure on government to meet the basic needs of the populace in term of provision of infrastructures that would improve the welfare of its citizens has dominated the economic and political space. As the population increases, the agitation for infrastructural needs is also increasing. "The inability of Government to fulfil its obligation in term of meeting the needs of its citizens is the bane of our societal low standard of living, infrastructural decay and by and large, total neglect of the populace" Cleave & Arku, [11]. According to Section 16(1b) of the 2011 Constitution of the Federal Republic of Nigeria, the government has the responsibility of ensuring the maximum welfare, freedom and happiness of its citizens.

Infrastructure is the basic physical and organizational structure needed for the operation of a society or enterprise, or the services and facilities necessary for an organization to function [35]. It is a set of interconnected structural elements such as roads, bridges, water supply, electricity, education, good health care, telecommunications, that provides framework for supporting an entire structure of development Ahmed, [3]. These structural elements provide commodities and services that are essential for enabling, sustaining, or enhancing societal living conditions Ebuh, Ezike, & Shhittie, [12].

Studies of Infrastructural provisions and its funding all over the globe abound and are much more revealing. From the global perspective, to the continent of Africa and even across Nigeria states of the federation, the issue of funds from government to finance infrastructures has always been an issue that is yet be resolved the world over [18], in most cases taxation has always been the surviving means to generate the much needed funds.

In United State of America (USA), studies carried out on

infrastructural development revealed contributions of infrastructure to economic growth but principally hampered by lack of funds, however expansive budgetary provision through borrowing apart from taxes is being used to cater for this. [36] In their late investigation of the relationship existing between infrastructural developments of the states and the level of economic growth at sub-state levels, using data collected from the state of Pennsylvania USA, the study confirmed that at both the state and country's level, telecommunication investment, transport, and housing provisions affects economic activities. This shows government investment on infrastructures is a key factors to economic growth which in turn boots investments and it must always be provided with adequate resources channel into it.

In European Countries, the European Union has recently launched an "Investment Plan for Europe" to provide the needed funds to boost the development of European infrastructure (European Commission, [14]. Most Countries in Europe are now solving their infrastructural problems with the use of Private, public partnership (PPP). Denmark for instance, the use of PPP model is being integrated especially in the area of transportation and construction of roads. This was the model they used to complete the road and rail megaproject (Hammerschmid & Ysa, [19]

In Nigeria, using both primary and secondary data, examined the impact of road transportation on economic growth in Nigeria, Probit model was used to analyse the primary data while multivariate model was used for analysing the secondary data to determine the long run relationship between growth and road transportation infrastructures [32]. Their results showed that the transport sector has a positive impact on the economic growth indicating that government funding of this infrastructure needs (Transportation) should always be adequate.

In Lagos state, infrastructural deficit is glaring all over the place. The growth rate in the state calls for rapid infrastructural provision. Many part of the state lacks good roads, poor electricity, no good drinkable water, houses are not available, poor health care system and lack of security for lives and property. The state Revenues is on the increase with taxes collection, but this has not really reflected on infrastructural provisions. Several efforts are being made by the government to cover the infrastructural deficit. Studies conducted showed that some of these efforts are yielding positive results. According to the House of Assembly in Lagos State recently passed the Lagos State Electric Power Sector Reform Law and same has since been assented to by the Lagos State Governor [7]. The Law essentially aims to boost electricity supply in Lagos State through the establishment of an embedded power scheme and the creation of offences for energy theft. The former governor of Lagos state in one of his town hall meeting sometimes in 2009 announced the decision of government to spend N390b ($3 billion) on infrastructural development in the state over the next couple of years. Mr Babatunde Raji Fashola disclosed that huge funds are required to put in place the necessary infrastructure that will make life easier in the state. He said, "The project on the agenda of the state government requires huge funding. Over the next two decades, Lagos State needs to spend at least N390 billion ($3 billion) annually to expand and improve its water supply network. N2.6 trillion ($20 billion) to provide qualitative and efficient network of roads and drainage; N1.3 trillion ($10 billion) for power supply; N650 billion ($5 billion) for information and computer technology; and N1.2 trillion ($9.3 billion) for inter-modal transportation system." [15], all these are being done to improve the infrastructural deficit in the state.

This study focused on contribution from personal income tax to the infrastructure development in Lagos State. The fact remain that there are several infrastructural challenges in the state, however, in this study effort was made to look at two key infrastructure and examined how taxes from personal income have contributed to their provisions.

1.2. Statement of the Problem

Over the past years revenues collection from personal income taxes have been on the increase in Lagos State, but despite this increment, Infrastructural deficit is noticeable in all over the State. There is a huge gap and disconnect between revenue generation from taxes and infrastructural provisions in the State. This gap therefore necessitates the need to study the effect of tax contribution in form of personal income tax on the infrastructures provisions in the State.

Lagos State has been facing a lot of infrastructural challenges in recent time. This is partly due to high influx of people from other states in Nigeria to Lagos and this has increased the infrastructural needs of the citizen, and the inadequate provision of such is greatly affecting economy of the state Hamzat, [20, 34]. Opines that revenue contribution from Tax System toward provision of infrastructures needs, such as; good road, affordable housing is grossly inadequate, there is need to generate more revenues.

Several reforms have been introduced by successive government in Lagos state to increase revenues of the state [28]. One of such area of coverage of these reforms was the collection and administration of Personal Income tax in the state. With the reforms, available records are showing that Lagos State Government has been recording huge tax revenue on incremental basis yearly BudgIT research, [9], but despite this, infrastructural deficit keeps increasing. There is need to comprehensively examine and evaluate the level of personal income tax contribution toward the provision of infrastructural needs of the citizen of the State, and this is the main issue of this study.

1.3. Objective of the Study

The main objective of this study is to evaluate the effect of personal income tax on Infrastructural Development in Lagos. The specific objectives are to;

1. determine the impact of Personal Income tax on the expenditure of government on Housing Infrastructure in Lagos State;

2. evaluate the impact of Personal Income tax on the expenditure of government on Road Infrastructure in Lagos State;

1.4. Research Questions

The following research questions were answered in this Study.

i) How does Personal Income tax impact expenditure on Housing Infrastructure in Lagos state?
ii) In what way does Personal income tax impact expenditure on road infrastructure in Lagos State?

1.5. Hypotheses

The following hypotheses were tested in this study;

H_{01}: There is no significant impact of Personal Income tax on expenditure on housing in Lagos state.

H_{02}: There is no Significant Impact of Personal Income tax on expenditure on roads in Lagos State.

2. Review of Literature

2.1. Conceptual Review

2.1.1. Tax Revenue

There are certain functions and responsibilities that government must perform for the benefits of those it governs. Principal among these is the provision of public goods. Tax is a burden which every citizen must bear and comply with in order for government to have funds to provide these responsibilities. Tax is defined as a levy imposed by the government against the income, profit or wealth of the individuals and corporate organizations [26]. According to Adams (2001), taxation is the most important source of revenue for modern governments, typically accounting for ninety percent or more of their income. Taxation is defined as a compulsory levy imposed by the government through its agencies on the income, consumption and capital of its subjects [2]. These levies are made on personal income, such as salaries, business profits, interests, dividends, discounts and royalties. Tax is a compulsory levy imposed on a subject or upon his property by the government to provide security, social amenities and create conditions for the economic wellbeing of the society Ogbonna & Appah, [27].

Objectives of Taxation

Taxation as the most potential source of revenue to government of any nation has played very prominent roles as an instrument of government's economic, social and fiscal policy. Other major objectives of imposing taxes in any economy of a nation include: Taxation serves as an instrument to regulate or control the economy, Taxation is used to cover the cost of Administration, Taxation is used for Investment promotion, Taxation is used to protect companies at infant stages: Taxation is used for Income and wealth distribution among the populace[1].

2.1.2. Personal Income Tax

Personal Income Tax is payment of tax on the income of individuals, partnerships, executors and trustees. It is governed by the Income Tax Management Act (ITMA) 1961 as amended and now referred to as personal income tax decree (PITD) 104 of 1993 as amended. It is also referred to as Cap P8 LFN 2004. The latest amendment was in June, 2011. According to [1], Personal Income Tax covers; Taxation of sole Trader; Taxation of Employees (Pay as you earn- PAYE), Taxation of Partnership, taxation of Settlements, Trust and Estate. It also includes; Individual Direct self-assessment and Withholding tax (individual).

2.1.3. Tax Reforms in Lagos State, 1994 to Date

Lagos state embarked on several tax reforms to avoid a lot of problems and distractions arising from revenue generation and collection. Some of the early reform embarked on includes;

i) Accelerated revenue generation programme (ARGP) – 1994
ii) CITI Bank direct monitoring and reporting of internal revenue system – 1999
iii) Electronic banking system of revenue collection and monitoring (EBS-RCM) – 2000
iv) Granting full autonomy to Lagos Board of Internal Revenue – 2006, and others include; Tax Payer Education and Enlightenment, Payment Process, Transparency and Convenience, Self-Assessment System, Tax Payment closer to the People, Creation of New Operational Units, Enforcement:

2.1.4. Infrastructure Developments in Lagos State

Infrastructure is a basic physical and organizational structure needed for the operation of a society or enterprise, or the services and facilities necessary for an organization to function [35]. Infrastructure is a set of interconnected structural elements such as roads, bridges, water supply, electricity, education, good health care, telecommunications that provides framework for supporting an entire structure of development within a state. Successive governments have recorded some milestones achievements in providing infrastructural needs to the citizens, but more are still needed because as the population of the state keeps increasing the agitation for more infrastructures is also increasing. To make thing worse some infrastructural projects are being abandoned due to funding. Some of the infrastructural developments in recent time include;

Lagos State Government Expenditure on Housing and Road Infrastructure

The population growth of Lagos metropolis has assumed a geometrical proportion, the provision of urban infrastructure and housing to meet this demand is not at commensurate level. This has resulted in acute shortage of housing to the teeming population with Lagos alone accounting for about 5 million deficit representing 31% of the estimated national housing deficit of 18 million [29]. 60% of residents are tenants and have to pay rent as high as 50-70% of their monthly incomes since most of the existing accommodations are provided by private landlords (Roland Igbinoba Real Foundation for Housing and Urban Development, 2009).

"The concentration of housing and income levels has stratified the metropolis into various neighborhoods of low-income/high density, medium income/medium density and high income/low density" Lawanson, [23]. Significant areas of peri-urban settlements are not state-managed hence leading to the emergence of organic and informal settlements. Poor living condition and lack of basic infrastructure facilities and services also abound in peri-urban settlements (Obeng & Whittal, [25]. To stem the housing crisis, Lagos State Government started making housing provision from the days of Lagos Executive Development Board (LEDB) from 1950's. LEDB was able to delivered 4, 502 housing units, within 17 years, from 1955 to 1972 when it was dissolved. With the population rising from 1.4 million in 1963 to 3.5 million in 1975, LEDB functions were transferred to Lagos State Development and Property Corporation (LSDPC) as the sole agency responsible for the provision of Housing in Lagos State. Since its inception in 1972, LSDPC has been saddled with the execution of gigantic low-cost housing program of the early eighties which yielded close to 10, 000 units. In 1979 under the leadership of Alhaji L. K. Jakande, LSDPC took a dynamic and elaborate turn with emphasis on low cost flats to cater for the needs of the low-income earners. Government realized that only the supply of housing units on a large-scale either through Government or by individuals themselves can reduce the chronic shortages. By 1992, about 17, 000 units were built in several locations which included Abesan [4, 272 units], Amuwo Odofin (2, 068), Iba (1, 560) Ijaye (812), Ijeh (62), Isolo (3, 632), Ojokoro (534) (Mayaki, 2009).

Road transport forms the most important means of transport throughout Lagos State. The increased urban population, the expansion of road longer urban journeys and increased urban trip volumes have all placed a great burden on land use, urban planning and on city's transport system, which becomes an urban mobility problems Owoputi, [30]. There are various types of road network, which extend to different parts of Lagos State. by 2001, the total length of tarred roads was 5,514 kilometres which include: Trunk, A roads maintained by the Federal Government; Trunk B roads maintained by the State Government and Local roads that are maintained by the Local Governments with aids from the State Government (Lagos Urban Transport Project, 2002). The primary road network (Federal and State Roads) which link the major population centres cover some 4,921 kilometres. Majority of the primary roads are 3-lane, while some are 2-lane with width of 1.32 metres. In terms of road surface about one third of the roads in Lagos State are made of concrete deck, 43.0% are asphaltic concrete while some 23.2% are bituminous (Lagos Urban Transport Project, 2002).

2.2. Theoretical Review

According to [2] the problem of taxation is best explained using some theories on taxation that have been propounded by scholars in the field of Government Accounting and also relative to infrastructure.

2.2.1. The Theory of Ability-to-Pay

This theory was propounded by Adam Smith in his Ability to pay canon of taxation in seventeen century**.** As the name suggests, it says that the taxation should be levied according to an individual's ability to pay. It says that public expenditure should come from "him that hath" instead of "him that hath not". The principle originated from the sixteenth century, the ability-to-pay principle was however supported scientifically by a Swiss philosopher Jean Jacques Rousseau (1712-1778), the French political economist Jean-Baptiste Say (1767-1832) and the English economist John Stuart Mill (1806-1873). The usual and most supported justification of ability to pay is on grounds of sacrifice. The payment of taxes is viewed as a deprivation to the taxpayer because he surrendered money to the government which he would have used for his own personal use. Pigou was one of the critique of this theory. Pigeou among other critics are saying that the theory did not provides a solid approach for the measurement of the equity of sacrifice, as it can be measured in absolute, proportional or marginal terms. Thus, equal sacrifice can be measured as: (i) taxpayer surrenders the same absolute degree of utility that she/he obtains from her/his income; (ii) Each sacrifice the same proportion of utility she/he obtains from her/his income; (iii) Each gives up the same utility for the last unit of income; respectively.

2.2.2. The Benefit Theory of Tax Revenue

This theory was propounded by Adam Smith in seventeen century as coined from the cannon of taxation but the theory was principally expanded by John Locke in the year 1690. He emphasized that taxes are to be imposed on individuals as revenue for government according to the benefit conferred on them. The theory suggested that the more benefits a person derives from the activities of the state, the more he should pay to the government (Cooper, 1994). However, the shortcoming of this theory is that, it is impossible to implement precisely due to the difficulty of determining the amount of government benefits, including diffuse benefits such as military protection received by each resident and non-resident tax payer. Mill, a critique of the theory, in his argument of benefit theory of taxation in 1965 argued that that gauging this benefit requires setting definite values on things essential indefinite, and making them a ground of practical conclusion. In the administration of Personal Income taxes, tax payer pays directly from their salaries and emolument without necessarily expecting equal benefit from government. This is akin to the principle of taxation that says taxes are paid by tax payer with quid pro quo.

2.2.3. Resource Dependency Theory (RDT)

This theory was propounded in the late 1950 by an Argentine Economist and Statesman called Raul Prebisch. The theory was later supported by some other philosophers and economists like; [38, 24, 33, 37] The concept of Resource Dependency Theory (RDT) is that organization is seeing as an open system which means, it continually exchanges resources with the environment. Different organizations and individuals are part of this exchange

process and influence outcomes of the organization. Power of these stakeholders could be a derivative of their resources which the organization tries to gain by continuous bargaining. Many stakeholders have the right and possibilities to dispose an important organization's resources and the same affect organization's decision making process. That is why appropriate management of stakeholder's relationships is crucial for success of public organizations. Resource-dependency theory proposes that in a situation of resource scarcity, where resources are distributed unequally, organizations collaborate with others by attempting to control or influence each other's activities to access critical scarce resources[31] Individual gain is the top priority above all else [33].

Resource-dependency theory assumes that when an organization is dependent on external, scarce resources to execute the tasks for which it has a responsibility, each organization may attempt to influence or control the domains and activities of others [33]. An organization that controls more critical resources than others may use this power to maintain or enhance their position by encouraging dependent organizations to become partners. On the other hand, organizations lacking in-house resources and expertise may establish dependence on others in the network to obtain critical scarce resources so that they can function normally [22].

This theory was however criticized and was labeled as a pessimist view of collaboration [33]. They suggested a more optimistic theory called Exchange Theory. Exchange theory, was developed by Levine and White (1962), it posits that collaboration will occur when service providers of a particular public service in a fragmented system voluntarily seek to form interagency relationships. This is done to address the scarcity of necessary resources, so that shared goals can be achieved.

2.2.4. Theoretical Framework

For the purpose of this study, the underpinning theory is Resource Dependency Theory (RDT).

Resource Dependency Theory (RDT) proposed and emphasized that organization is an open system which continually exchanges resources with the environment [38] and [24]. In the process of this exchange, some form of influences are involved which make organization with greater hold on scarce resources to exert authority over and above the dependent organizations. Deriving from this theory, Citizen of a particular country or state often depends on the government to provide the infrastructural needs and due to this dependency, government demands from the citizens often resort to use of power, authority and legitimacy to impose taxes so as to generate the needed revenues to provide all the infrastructural demands by the citizens. Resource-dependency theory assumes that when an organization is dependent on external, scarce resources to execute the tasks for which it has a responsibility, each organization may attempt to influence or control the domains and activities of others. In the case of Lagos state, the revenue allocation to the state at the central is not enough to provide infrastructures needs of the citizen, hence the need for tax reforms which involve the use of state authority to impose tax on people as the citizen also depends on the state government for the supply of their infrastructural needs. This is the main explanation of this Resource Dependency Theory.

2.3. Empirical Review

In their studies of Government Revenue and Government Expenditure on Infrastructures Nexus: Evidence from Developing Countries [40] The paper established relationship between government revenue and government expenditure which attracted a lot of interest given its policy relevance, particularly with respect to budget deficits. The paper investigated evidence of causality between government revenue and government expenditure within a multivariate framework by modelling them together with gross domestic product for 12 developing countries. The application of the Statistical inference in vector autoregressions test for Granger causality reveals support for the tax-and-spend hypothesis for Mauritius, El Salvador, Haiti, Chile and Venezuela. For Haiti, there is evidence for the spend-and-tax hypothesis, while for Peru, South Africa, Guatemala, Uruguay and Ecuador there is evidence of neutrality [42].

In the study conducted to examine the effect of Federal Government of Nigeria's Tax resources on infrastructural development of Nigeria [39]. Incomes from Value Added Tax (VAT), Petroleum Profit Taxes (PPT) were used as proxies for Tax revenues/resources while Infrastructural Development was applied as proxy for Infrastructural Development of Nigeria. The research adopted ex-pos-facto research design as secondary data were used for the analysis. Data were sourced from the Central Bank of Nigeria Statistical Bulletin and the Federal Statistical Bureau. The study covered ten year period (2006-2015). Data were analyzed using the multiple linear regression technique. The result reveals tax revenue resources (PPT, CIT AND VAT) had positive and insignificant effect on Infrastructural Development in Nigeria. The study recommends that government should provide the necessary human and material infrastructures that are needed to support seamless tax collection so they can earn more income that will boost taxation to enhance infrastructural development in Nigeria.

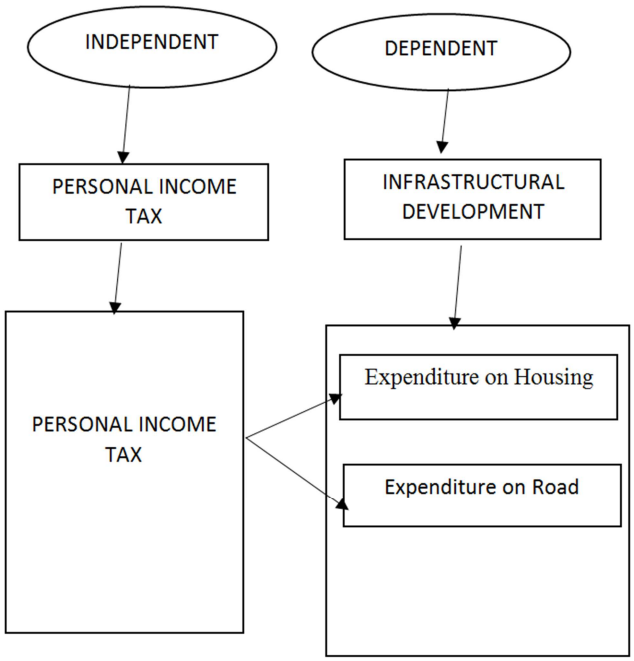
In examining the extent to which internal revenue generation such as personal income tax had affected the development of infrastructures like housing, roads and others in some selected local governments [13]. Primary and secondary data were used and analyzed using simple least square regression method. The analysis reveals that there is a significant relationship between revenue generated from internal sources and level of infrastructures development of the areas.

Using secondary data to study government infrastructural development [6, 16]. The study covered time series data on G.D.P. as a proxy for economic growth and government spending on infrastructure for transportation, housing communication, education, health, agriculture and natural

resources from 1980 to 2016 as contained in the Central Bank of Nigeria statistical bulletin for 2014, 2015 and 2016. The choice of the data used was informed by previous studies [21].

Primary data, with sampling frame comprises of 237 Lagos residents whose work interfaces frequently with infrastructure and economic growth, dependent and independent variables [16]. The dependent variable is economic growth with G.D.P. as a proxy; the independent variables are government spending on infrastructure for transportation, housing and communication, education, health, agriculture and natural resources. The determination of the variables follows the trend in [10]. The statistical analysis is done with the aid of EViews statistical analysis package for Windows 7. The study concluded that government spending on infrastructures such as; housing, health care, roads, educations and natural resources has significant inverse effect on economic growth.

2.4. Conceptual Model



Source: Researcher Conceptual Model (2020).

Figure 1. *Conceptual Model.*

3. Methodology

3.1. Research Design

This study adopted *Expost facto* research design. Descriptive and inferential statistics were employed in the analyses of the data obtained from Lagos State Internal Revenue Services, Lagos state Ministry of work, Ministry of budget and planning, Ministry of finance and Lagos state bureax of statistic between 1997 to 2018. The population of this study is the entire Lagos State. The sample size is the entire Lagos state Personal Income tax payer. The sample was selected using purposive sampling method. Purposively, as all the personal income tax revenues for the period under review was collected from Lagos State Internal Revenue Services(LIRS). With this, few institutions were selected for the purpose of data collection, these include; Lagos Internal Revenues Services(LIRS), Lagos State Ministry of Finance, Lagos state Ministry of Planning and Budget and Ministry of Works for the purpose of data related to infrastructures. Personal income tax include; Pay as you earn (PAYE), witholding tax individual, taxes from (self or government) asessment individual.

For unwaivering quality and dependability, all data representing values of personal income tax and values of infrastructures developments used in this study are included in the yearly Financial Statement of the state and this had been accented to or passed by the State Assembly and had been gazetted. The study used eViews software to analyse the data and the variable statistics was interpreted based on the outcome of the result. Static panel models was used to test the quantitative measures of personal income taxes on each of the dependent variables(infrastructural developments) also represented by quantitative measures. They were tested at 1%, 5% and 10% anticipated degree of error. Thus, the rule is that each probability value of the independent variable will be compared with the critical p-values 0.01; 0.05 and 0.10. Where if $p < 0.01$; 0.05 and 0.10; the effect is statiscally significant and the null hypothesis will be rejected, and if $p >$ 0.01; 0.05 and 0.10 the effect is not statistically significant and the null hypothesis accepted.

3.2. Model Specification

To establish the relationship between Personal Income tax and infrastructural development in Lagos State, the models stated below were used. The essence is to establish whether there is a linear relationship and correlation among the variables of the study for the samples selected as well as the sample period of study.

i) Hypothesis 1

$$Y=f(x)$$

$$EDH_t = \alpha o + \beta_1 PITt + u_t$$

ii) Hypothesis 2

$$Y=f(x)$$

$$EDRt = \alpha o + \beta_2 PIT_t + u_t$$

Where;
PIT=Personal Income Tax at time t
EDH= Expenditure of Government on Housing at time $_t$
EDHR= Expenditure of Government on Road at time $_t$
αo- constant
β_1-β_2 specify the coefficient of the parameters
N_t= the standard error term of the linear model.
α = The constant of the variables
β_1- β_2 = Coefficients of the parameter estimates
ε = the error term of the linear model

4. Data Analysis, Results and Discussion of Findings

4.1. Descriptive Statistics

Table 1 gives a summary of personal income tax on Infrastructural Development Indicators as obtained from Lagos State Ministry of Economic Planning and Budget and Ministry of Finance. The study looked at 22 years (1997-2018) for each of the series as reported in the Table. The variables considered for this study includes Expenditure of Government on Housing (EDH), Expenditure of Government on Road (EDRand Personal Income Tax (PIT).

Generally, the summary statistics in the Table shows that Lagos State spent more on housing This is reflected in the fact that about N24.4b was ever recorded as government spending on housing. Besides, an all-time high personal income tax was recorded between 1997 and 2018 in Lagos State. More specifically, from the result, Expenditure of Government on Housing (EDH) takes value between N137.16million. The average in Lagos state EDH between 1997 and 2018 is locked at N4, 951.15 million with a median value of N3, 553.02 million; this reflects asymmetry in the distribution of EDH. The standard deviation value of 5,690.93 further confirms that the series widely vary during the period.

Based on the result, it can be inferred that the Expenditure of Lagos State Government on Road (EDR) is hovering around N284.29 million and N11, 290.51 million. On average, the Expenditure of Government on Road (EDR) during the period of 22 years stood at N4, 160.05million. However, the median is N4, 377.95million with a standard deviation of 3418.50. These show that the government spending on road during the period of this study significantly varies.

In Table 1 the Personal Income Tax (PIT) of Lagos State is hovering around N11, 138.49 million and N680, 100.00million. On average, the Personal Income Tax (PIT) during the period of 22 years stood at N156, 663.00million. However, the median is N106, 300.00million with a standard deviation of 161485.50. These show that the Lagos state Personal Income Tax (PIT) during the period of this study significantly varies.

Table 1. *Summary Statistics.*

Variables	EDH (N'million)	EDHR (N' million)
Observed years	22	22
Mean	4,951.15	4,160.05
Median	3,553.02	4,377.95
Max	24,375.58	11,290.51
Min	137.16	284.29
Std.	5,690.93	3,418.50

Source: Researcher's Fieldwork Computation Result from Eviews 10.

4.2. Unit Root Test

One of the requirements of time series analysis regression approach is that the variables of interest must be stationary. Also, one of the requirement in the ARDL procedure is that there must be no $I(2)$ variables involved. Therefore, to test the ordered integration or time series properties of the selected variables in this study, we employ both the ADF and PP unit root tests. Table 2 below shows the results of the tests. The unit root test result for the series in their level and difference forms is represented. In the two approaches, the Table clearly show mixed result. In the result, both ADF and PP unit root tests suggest that all variables are integrated of order 1 (I(1)) except for Personal Income Tax which is stationary at levels (i.e I(0)). Therefore, the study proceeds to Bound test cointegration to examine if long relationships exist among the variable.

Table 2. *Unit Root Test Result Table.*

Variable	Test	Level	1st diff
	ADF	- 8.50 (0.348)	-3522** (0.018)
EDH	PP	-2.030 (0.273)	-3.458** (0.021)
	Decision	I(1)	
	ADF	-2.512 (0.127)	-4.539*** (0.002)
	PP	-2.109 (0.243)	-7594*** (0.000)
EDHR	Decision	I(1)	
	PP	-2.653 (0.263)	-6.868*** (0.000)
	Decision	I(1)	
	ADF	-3.123** (0.035)	-
PIT	PP	-2.812* (0.074)	-
	Decision	I(0)	

Source: Researcher's Computation Result from Eviews 10. Note: ***, ** and * represents 1%, 5% and 10% level of significance.

4.3. Discussion of Regression Result

ARDL Regression Analysis

To evaluate the effect of personal income tax on Infrastructural Development in Lagos, this study employed Autoregressive distributed lag (ARDL) approach. The choice of this model is informed by the fact that all the variables are not integrated of the same order. In this model, the dependent variables are; Expenditure of Government on Housing (EDH), Expenditure of Government on Road (EDR), while the independent variable are lag of each of the dependent variables, Personal Income Tax (PIT) lag as case may be.

4.4. Hypothesis Testing

(i) Hypothesis 1

Research hypothesis one: There is no significant impact of Personal Income tax on expenditure on housing in Lagos state

Co integration test for Personal Income tax and expenditure of government on Housing Infrastructure

Following the unit root result in Table 2, the study employed ARDL co-integration approach which is bound test to investigate the presence of long-run relationships among the variables. The test is conducted on the variables considered for this model and the result is presented in Table 3. From the table, the computed F-statistic value is 5.943 which is greater than the upper critical bound values of 5.73. This suggests that the null hypothesis of no cointegration can

be rejected at 5% significance level and conclude that there is cointegration.

Table 3. *F-Bounds Test for Personal Income tax and expenditure of government on Housing Infrastructure.*

Signif.	I(0)	I(1)	F-statistic
10%	4.04	4.78	5.943
5%	4.94	5.73	
2.5%	5.77	6.68	
1%	6.84	7.84	

Source: Researcher's Computation Result from Eviews 10.

Short-run and Long-run Models for Personal Income tax and expenditure of government on Housing Infrastructure

From the short-run and long-run dynamic models estimated (with Adjusted R-squared = 0.150, F-stat =3.678, Prob(F-stat) = 0.048) in this study shows that the coefficient of CointEq(-1) is -0.413 (P = 0.039). As shown in the Table 4, this value is negative (and less than unity as expected) and statistically significant at 5% level. This negative and significant value confirms the stability of the model.

In the chosen model the coefficient of the explanatory variables show that a positive and insignificant relationship exists between current Expenditure of Government on Housing (EDH) and the Expenditure of Government on Housing (EDH) at lag 1 [β = 0.342; P – value = 0.181] in the short run. This means past value of Expenditure of Government on Housing (EDH) doesn't have any effect on current value of Expenditure of Government on Housing (EDH) during the period of this study. Furthermore, a positive and significant relationship is found between Personal Income Tax (PIT) and Expenditure of Government on Housing (EDH) at 5% significance level [β = 0.380; P – value = 0.008] indicating that one percent increase in PIT causes EDH to increase by 0.380 percent in the long-run.

Diagnostic Tests

To check the residual (error term) of the estimated model for normality, the study reports a histogram and descriptive statistics of the residuals, including the skewness, kurtosis and Jarque-Bera statistic for testing normality in Table 4. Also, Breusch-Godfrey Serial Correlation LM Test with the null hypothesis of no serial correlation is applied to validate the model. Econometrically, a model is said to possess heteroskedasticity if the variances of error term are not equal over the various values of the independent variables. This simply means that during regression analysis the variance would be found to be non- consistent. To check whether the selected model in this study possesses heteroskedasticity or not, the study employed Breusch-Pagan-Godfrey. From the Table, all the test statistics and their associated p-values are statistically insignificant. These mean that the residual is normally distributed, free from serial correlation problem and has constant variance. Therefore, we conclude that the model is fit.

(ii) Interpretation, Decision and Discussion of Findings

$$EDH_t = \alpha o + \beta_1 PITt + u_t$$

Table 4. *Short-run and Long-run Models for Personal Income tax and expenditure of government on Housing Infrastructure.*

Variable	Coefficient	Std Error	t-Stat.	Prob.
ECM Regression				
C	-1.745275	0.771486	-2.262225	0.0380
DLOG(EDH(-1))	0.341673	0.244129	1.399557	0.1807
CointEq(-1)*	-0.413344	0.184083	-2.245418	0.0392
Long Run Coefficients				
LOG(PIT)	0.379532	0.129990	2.919701	0.0079
R^2	0.240			
Adj. R^2	0.150			
F-Statistic	3.678			
Prob.(F-Stat)	0.048			
Post Estimation Tests				
Durbin-Watson	1.93			
Jarque-Bera (P-Value)	0.477 (0.788)			
Serial Correl. LM Test (P-Value)	1.224 (0.324)			
Heteroskedasticity Test (P-Value)	0.222 (0.880)			

Source: Reseacher's Computation Result from Eviews 10.

The above Tables 4. showed the result of the Autoregression analysis. Model 1 tests relationship between Personal Income tax and Government expenditure on housing. The result shows that, given the F-statistic value of 5.943 which is greater than the upper critical bound values of 5.73, the null hypothesis of no cointegration can be rejected at 5% significance level and conclude that there is cointegration. From Table 4 Adjusted R-squared = 0.150, F-stat =3.678, Prob (F-stat) = 0.048), the short-run and long-run dynamic models, estimated in this study shows that the coefficient of CointEq(-1) is -0.413 (P = 0.039). As shown in the Table 4. this value is negative (and less than unity as expected) and statistically significant at 5% level. This negative and significant value confirms the stability of the model.

Similarly also in the short run, a positive and insignificant relationship exists between current Expenditure of Government on Housing (EDH). The Expenditure of Government on Housing (EDH) at lag 1 [β = 0.342; P – value = 0.181] in the short run, however, in the long run, a positive and significant relationship is found between Personal Income Tax (PIT) and Expenditure of Government on Housing (EDH) at 5% significance level [β = 0.380; P – value = 0.008] indicating that one percent increase in PIT causes EDH to increase by 0.380 percent in the long-run.

4.5. Hypothesis Testing

(i) Hypothesis 2

Research hypothesis two: There is no Significant Impact of Personal Income tax on expenditure on roads in Lagos State**.**

Co integration test for Personal Income tax and Expenditure of Government on Road Infrastructure.

The bound test result that is used to examine the presence of long-run relationships among the variables is presented in this subsection. This becomes necessary since the unit root result in Table 5 shows mixed result. The test is conducted on the variables considered for this model and the result is

presented in Table 5. From the table, the computed F-statistic value is 5.830. This is more than the upper critical bound values of 5.73. Thus, the null hypothesis of no cointegration is rejected at 5% significance level and the study concludes that there is long run relationship among the variables.

Table 5. *F-Bounds Test for Personal Income tax and Expenditure of Government on Road Infrastructure.*

Signif.	I(0)	I(1)	F-statistic
10%	4.04	4.78	5.830
5%	4.94	5.73	
2.5%	5.77	6.68	
1%	6.84	7.84	

Source: Authors Computation from Eviews 10.

Short-run and Long-run Models for Personal Income tax and Expenditure of Government on Road Infrastructure

The short-run and long-run results with adjusted R-squared = 0.315, F-stat = 3.915, Prob(F-stat) = 0.028) are presented in Table 6. The result shows that the coefficient of the lagged CointEq(-1) (error correction term) is -0.870 (P = 0.004). This value is negative and significant at 5% level. It means that about 87.0 percent of the disequilibria from the previous year's shock are adjusted back to the long run equilibrium in the current year.

Based on the estimated coefficient of the model, the result shows that the coefficient of current Personal Income tax (PIT) in the short run is negative but statistically insignificant at 5% level [β = - 0.093; P – value = 0.802]. This means that the current PIT does not affect the Expenditure of Government on Road Infrastructure in the short run. Also, the coefficient of Expenditure of Government on Road Infrastructure (EDR) at lag 1 is positive and statistically insignificant [β = 0.352; P – value = 0.154]. This depicts that the value of Expenditure of Government on Road Infrastructure one year ago does not have any effect on current Expenditure of Government on Road Infrastructure in Lagos State. However, the coefficient of Personal Income Tax (PIT) appears to be negative and statistically significant at 5% level [β = - 0.756; P – value = 0.045]. This means that change in current Expenditure of Government on Road Infrastructure (EDR) responds negatively. This could mean that at certain stage, further increase in PIT rate leads to decrease in total revenue which in turn reduces Expenditure of Government on Road Infrastructure (EDHR) in the long-run during the period of the study.

Diagnostic Tests

Again to check whether the residual (error term) of the estimated model is normally distributed or not, the study reports a histogram and descriptive statistics of the residuals, including the skewness, kurtosis and Jarque-Bera statistic for testing normality. Also, Breusch-Godfrey Serial Correlation LM Test with the null hypothesis of no serial correlation is applied to validate the model. Econometrically, a model is said to possess heteroskedasticity if the variances of error term are not equal over the various values of the independent variables. This suggests that during regression analysis the variance would be found to be non- consistent. To check whether the selected model in this study possesses heteroskedasticity or not, the study employed Breusch-Godfrey. As in the Table, all the test statistics that are not statically significant suggests that the residual is normally distributed, free from serial correlation problem and homoscedastic in nature. Hence, we conclude that the model is fit.

Table 6. *Short-run and Long-run Models for Personal Income tax and Expenditure of Government on Road Infrastructure.*

Variable	Coefficient	Std Error	t-Stat.	Prob.
ECM Regression				
C	-3.967962	1.167970	-3.397314	0.0040
DLOG(EDHR(-1))	0.351816	0.234469	1.500476	0.1542
DLOG(PIT)	-0.093385	0.366017	-0.255139	0.8021
CointEq(-1)*	-0.869711	0.255532	-3.403536	0.0039
Long Run Coefficients				
LOG(PIT)	-0.755692	0.345533	-2.187030	0.0450
R^2	0.423			
Adj. R^2	0.315			
F-Statistic	3.915			
Prob.(F-Stat)	0.028			
Post Estimation Tests				
Durbin-Watson	2.09			
Jarque-Bera (P-Value)	0.182 (0.913)			
Serial Correl. LM Test (P-Value)	1.231 (0.324)			
Heteroskedasticity Test (P-Value)	0.035 (0.997)			

Source: Researcher's Computation Result from Eviews 10.

(ii) Interpretation, Decision and Discussion of Findings

$$EDRt = \alpha o + \beta_2 PIT_t + u_t$$

The Table 6 above depicted the result of the Autoregression analysis. From the table, the computed F-statistic value is 5.830. This is more than the upper critical bound values of 5.73. Thus, the null hypothesis of no cointegration is rejected at 5% significance level and the study concludes that there is long run relationship among the variables. the short run and long run model to test relationship between Personal Income tax and Government expenditure on road and also the diagnostic test conducted to assess the fitness of the model. The short-run and long-run results as shown in Table.6, with adjusted R-squared = 0.315, F-stat = 3.915, Prob(F-stat) = 0.028) The result shows that the coefficient of the lagged CointEq(-1) (error correction term) is -0.870 (P = 0.004). Based on the estimated coefficient of the model, the result shows that the coefficient of current Personal Income tax (PIT) in the short run is negative but statistically insignificant at 5% level [β = - 0.093; P – value = 0.802]. This means that the current PIT does not affect the Expenditure of Government on Road Infrastructure in the short run.

However, the coefficient of Personal Income Tax (PIT) appears to be negative and statistically significant at 5% level [β = - 0.756; P – value = 0.045]. This means that in the long run current PIT affect the Expenditure of Government on Road Infrastructure.

4.6. Discussion of Findings

The findings in this study indicate that Personal Income tax exert statistically a significant relationship on Infrastructural development in Lagos state. This is line with our *a-priori* expectation that personal income tax will exert positive relationship. This therefore translate to the fact that the null hypotheses are to be rejected to accept the alternative hypotheses.

Similarly also, The result indicated that there is a positive contribution from Personal income tax to infrastructure provision in Lagos state and this is reflected through government provisions of affordable various infrastructures in terms of; houses, provision of Road, Although there are some area in the study where there are negative or insignificant contribution of personal income taxes to infrastructural development, according to the Autoregression test carried out.

The result of the ARDL conducted on Housing Infrastructure, showed a positive and significant relationship between Personal Income Tax (PIT) and Expenditure of Government on Housing (EDH) at 5% significance level [β = 0.380; P – value = 0.008] indicating that one percent increase in PIT causes EDH to increase by 0.380 percent in the long-run. On Road Infrastructure, the coefficient of Personal Income Tax (PIT) appears to be negative and statistically significant at 5% level [β = - 0.756; P – value = 0.045]. This means that change in current Expenditure of Government on Road Infrastructure (EDR) responds negatively. This could mean that at certain stage, further increase in PIT rate leads to decrease in total revenue which in turn reduces Expenditure of Government on Road Infrastructure (EDHR) in the long-run.

The results as presented in this study also supported the finding of some previous researchers in the area of the study.

In the study conducted by Oliver, [39] the study examines the effect of Federal Government of Nigeria's Tax resources on infrastructural development of Nigeria. Income from Value Added Tax (VAT), Petroleum Profit Taxes (PPT) were used as proxies for Tax revenues/resources while Infrastructural Development was applied as proxy for Infrastructural Development of Nigeria. The research adopted *ex-pos-facto* research design as secondary data were used for the analysis. Data were sourced from the Central Bank of Nigeria Statistical Bulletin and the Federal Statistical Bureau. The study covered ten year period (2006-2015). Data were analyzed using the multiple linear regression technique. The result reveals tax revenue resources (PPT, CIT AND VAT) had positive and insignificant effect on Infrastructural Development in Nigeria. The study recommends that government should provide the necessary human and material infrastructures that are needed to support seamless tax collection so they can earn more income that will boost taxation to enhance infrastructural development in Nigeria.

In the work of looking at the interrelationship [41], between total government expenditure on health care, roads, education and social welfare and total tax revenue in Barbados applying Granger Causality on both bivariate and multivariate co-integrating models. The result of the multivariate error correction model suggests that a unidirectional causality exists from tax revenue to government expenditure.

5. Summary, Conclusion and Recommendations

5.1. Summary

The agitation for infrastructural development by citizen of Lagos state from government and the needs to meet this demand given the available resources elicited this study. Apart from funds coming to the government from the central government, the only alternative means of generating the much required funds to meet these infrastructural provisions is personal income tax. Overtime government has been collecting this tax yet infrastructural provision is still in deficit, this therefore calls for a critical study and review to know if government of Lagos State is actually utilizing the taxes (PIT) for the benefit of the people in terms of provision of infrastructural needs.

The study explored the use of *ex-post facto* research design and examined Personal Income tax collections and Infrastructural provisions for twenty two years. Data collection was from Secondary source and data were collected from yearly published financial report of Lagos State Government from the ministry of Finance, published report from Lagos state Ministry of Planning and budget and all PAYE tax collection from State Internal Revenue Services. The study employed descriptive and inferential statistics, with the use of cointegration to test the relationship between the dependent and independent variables and also Autoregressive distribution Lag (ARDL) was used to test the effect of personal income tax on infrastructural provisions as stated in the research hypotheses. Some Econometric models such as; Augmented Dickey-Fuller (ADF), Phillip-Peron test(PP) and error correction model were also used in the study, Eviews software was used to analyse data and all analyses were presented in various tables.

5.2. Conclusion

The purpose of this study is to determine the contribution of Personal Income Tax to the provision of Infrastructural Development in Lagos State, and the study covered 22years period between 1997 to 2018. In achieving this lofty objective, several measures were undertaken to determine relationship between the Dependent and the Independent variables, and also the impact of Personal Income Tax (Independent variables) has on Infrastructural Provisions (Dependent Variables).

The study concluded that there is causal relationship between Personal Income Tax (PIT) and Infrastructural Development and provision in Lagos state over the period of the study. This is seen from the significant relationship exhibited between Personal Income Tax (PIT) and the

Expenditure of Government on Housing (EDH), Expenditure of Government on Road (EDR), Expenditure of Government on Health Care (EDHC), Expenditure of Government on Education (EDED), Expenditure of Government on Security and Safety (EDSS) and also Expenditure of Government on Water Resources and Rural Development (EDWR).

In Hypothesis one, the finding indicated a cointegration and a significant relationship between PIT and EDH leading to rejection of the Null hypothesis to accept the alternative. The finding revealed a significant government Expenditure on Housing infrastructure with over N24.4B and the period recorded all time increase in PIT collection. This indicated that with increase in PIT collection Government is equally spending more on infrastructure and this is reflected in EDH.

In hypothesis two, a cointegration exist and significant relationship between PIT and EDR leading to rejection of Null hypothesis. This shows that PIT has significant impact on EDR.

From all the findings as shown above, the conclusion of this study is that there exist a positive relationship and positive impact in the long run between PIT and all the Dependent Variables; EDH, EDR, EDHC, EDED, EDSS and EDWR but by and large inadequacy of government spending is still being witnessed in some of the Expenditure variables. Unlike Housing (EDH) and Security and Safety (EDSS) with its high expenditures all through the period of coverage, 1997-2018, other expenditure variables did not receive adequate spending, hence infrastructure deficit was witnessed in all these sectors, This is one the major revelations from this study.

5.3. Recommendations

Based on the findings and conclusion from this study the following recommendations are being proposed for the purpose of ensuring adequate provisions of infrastructures by the government to the citizen and also to alleviate the agitation of the citizens.

On the Provision of Infrastructural needs, findings from this study revealed that government expenditure on Housing are all the time high. Government should make it a top priority also by providing necessary infrastructures in other all areas, such as; Road Network, Health Care, Education, security and Rural Development so as to guarantee the quality of living standard of the citizen in the state. According to European Intelligent Council [14] Lagos state was rated poorly because of its infrastructures inadequacy that is being witnessed in the area of Education. Road network, Health care and others.

On Infrastructural development and revenue drive, given the positive significant relationship demonstrated between PIT and infrastructural provisions in this study, government should extend the present urban development under the umbrella of Lagos mega city to rural area. The provision of amenities in all the slum should be improved. There should be massive rural development with good road network, provisions of water resources and quality education, this will encourage rural dweller to pay taxes to government.

On generation of income to meet the infrastructural needs, finding from this research shows that government has been recording successive increment in personal income tax revenue collection. Government should now take it with all the priority it deserves and diversify the revenue collection from oil revenue to non-oil revenue and a living example in this regard is Personal Income Tax collection. The dwindling income from oil which has affected global economies including federal government of Nigeria. This is also leading to lower income distribution to states hence the need to improve on internally generated revenue such as PIT. This is one major area that government can earn the much desired income to improve on its infrastructural provisions to the citizens.

5.4. Suggestion for Further Studies

Further research work is required on how government can increase contribution of revenue (PIT) to those area of infrastructure needs that are still witnessing inadequate funding and deficit in term of provisions.

Successive Government in Lagos state have been advocating widening the tax net to include rural dwellers, further study should be carried out on how the present Lagos mega city project can capture development of rural area so that the much desire widening of tax net can be achieved and eventually lead to increase in government revenue through collection of Personal Income Tax.

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