

## THE NEXUS BETWEEN INTERNALLY GENERATED REVENUE, ECONOMIC GROWTH, AND INFRASTRUCTURE ENHANCEMENT IN DELTA STATE, NIGERIA

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### Article Info

**Keywords:** Peer-teaching,  
Discussion, Biology,  
Achievement

### Abstract

This study investigates the nexus between internally generated revenue (IGR), economic growth, and infrastructure enhancement in Delta State, Nigeria, for the period of 2008 to 2018. Using the Ordinary Least Squares (OLS) regression analysis, we examine the impact of IGR on government expenditure in the health and education sectors, focusing on infrastructural development. The data for this study were sourced from a combination of published materials and data from the Delta State Ministry of Finance.

The study findings reveal that IGR has an insignificant impact on government expenditure in the health sector, indicating that the revenue generated internally within the state has not led to significant improvements in health infrastructure spending. However, in the case of education infrastructure, the study shows a significant positive impact of internally generated revenue on government expenditure, suggesting that Delta State's IGR has indeed contributed to the development of educational infrastructure.

This research provides unique insights into the utilization of internally generated revenue for infrastructure development in Delta State. Based on our findings, we recommend that the government allocate a minimum of 40 percent of IGR to financing the health sector through improved budgetary provisions. Additionally, the Delta State government should implement measures to enhance the total revenue generated internally, including levying and collecting appropriate taxes, to further boost infrastructural development.

### INTRODUCTION

There is no denying the fact that the cost of running governance by state governments in Nigeria is skyrocketing on daily basis; hence the need for state governments to seek ways of generating funds; especially to enhance

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infrastructural development. One of the major ways of generating funds by these state governments is through internally generated revenue (IGR). Oseni (2013) observes that internally generated revenue has taken the second position in sources of revenue since Nigeria put heavy reliance on oil. So important is internally generated revenue that Ogbu, Okezie and Okezie (2017) express that internal sources of revenue are germane to the raising of government revenue to cater for the government expenditure.

Internally generated revenue is the power needed to strengthen the elbow of our contemporary societies; it is the gear that accelerates the speed of societal development. This is basically because, according to Oti and Odey (2017), internally generated revenues are those sources of government finance generated majorly by the federal, states and local councils, which help in broadening and widening the overall non-oil revenue structure of the state. Internally generated revenue in the view of Abiola & Ehigiamusoe (2014) is the revenue that the federal, state and local governments generate within their respective areas of jurisdiction. According to Asimiyu and Kizito (2014), economic development and sustainability of states in Nigeria depend on the ability of such states to generate revenue internally to supplement the revenue allocation from federation account. Delta State is not left of these states as the state government, apart from being one of the highest recipients of federal allocation, indulges in the internal generation of revenue.

The internal generation of revenue for developmental purposes in Delta State is no mean task; yet revenue must be generated. There is the need to attend to several infrastructural needs. The primary and school buildings need to be renovated and well equipped; Delta State University and other higher institutions need to be properly funded; the roads need to be tarred and new ones need to be created; power (light) generation and water supply need to be improved upon; flood drains in Asaba and other water logged areas like Patani, Ogbeh-Ijaw and Bomadi needs to be attended to from time to time, health infrastructure needs to be addressed and hosts of other needs.

The infrastructural needs require lots of finance and the Delta State government has been doing all it could to generate revenue but the researcher is challenged to determine the extent that the Delta State Government have been involved in the utilization of the generated revenue for development. **Objective of the Study**

The general objective of the study is to examine Internally Generated Revenue (IGR) in Delta State as a tool for Infrastructural Development. The specific objectives are to

- i. To determine the impact of internally generated revenue on the development of health in Delta State, Nigeria.
- ii. To find out the extent internally generated revenue has affected the provision of education infrastructure in Delta State.

### **Hypotheses**

The following research hypotheses will be stated and tested in the study:

HO<sub>1</sub>: there is no significant relationship between internally generated revenue and Delta State government expenditure on health

HO<sub>2</sub>: there is no significant relationship between internally generated revenue and Delta State government expenditure on education.

The findings of this study will be useful to the government (Federal, state and local governments) as it will reveal the impact of internally generated revenue on infrastructural development in Delta State. The findings will be of great relevance to policy makers as will contribute in enabling them to make relevant economic decisions pertaining revenue and expenditure on infrastructure in Delta State. It will also be significant to those conducting research in similar area as it will provide them with needful information on the sources of government revenue and its effect on infrastructural development.

## **LITERATURE REVIEW Profile of Delta State**

Delta State, with Asaba as its capital city, is one of the six states that make up what is known as the South-South geo-political zone of Nigeria. It is situated between longitudes 50 00'E and 60 45'E and latitudes 50 00'N and 60 30'N. The total land area is estimated at 18,050 square kilometers with Atlantic Ocean coastline of about 163 kilometres in the South. The land area comprises rain forest 57%, mangrove swamp/forest 33% and fresh water 10%. Average rainfall ranges from 1,910 mm in the northern areas to 2,670 mm in the coastal parts (Assessment Report. 2014).

Delta State is characterized by flatland in the south and central areas and low-lying plains/undulating terrains with low hills and valleys in the northern areas. The vegetation is a mix of mangrove swamps along the coast to rain forest in the central areas and a derived savannah in the northern extreme. Delta State is one of the major producers of oil and gas in Nigeria. The State is located in the oil-rich Niger Delta region of Nigeria, providing about 30% of Nigeria's total oil and gas output. Similarly, the gas reserves account for an estimated 40% of the national total gas reserves of 150 trillion cubic feet.

At inception, the State had 12 local government councils (LGAs), which was increased to 25 in 1996. According to the 2006 census, the State had a population of 4,098,391. At a population growth rate of 3.2%, the estimated population was 5,441,651 with a land area of 18,050 km<sup>2</sup>, the population density was 228 persons/km<sup>2</sup>. The main ethnic nationalities are the Urhobos, Igbos, Ijaws, Isokos and Itsekiris, reflecting the rich cultural diversity of the people. It has an estimated 2015 population of 5,441,651. The demographic structure is characterized by an active, young and thriving population (15-59 years) of about 64% while less than 15 years old make up about 34%. Even, though oil and gas accounts for the bulk of the statutory revenues, the agriculture and informal sector account for the bulk of employment and livelihood of the people (Delta State Assessment Report. 2014).

### **Concept of Revenue**

Revenue, in the context of this study, is a potent source of income generation in Nigeria. It is a means by which government; be it at local government level, state government level and or federal government level generate income to finance their expenditure. According to Alao and Alao (2013) Section 160 (9) of the 1989 Federal constitution and section 5, 162 (10) of 1999 constitution defined revenue as any income or returns accruing to, or derived by the government from any property belonging to government, any return by way of interest on loans and dividends in respect of shares or interest held by the government, in any company or statutory body incidental sources resulting from a particular environment, permissive sources from normal operations and statutory sources recognized by the Nigerian constitution. In this regard, Hassan (2001) cited in Alao and Alao (2013) defined revenue as tolls, taxes, rates, fees, penalties, rents, forfeitures, dues and other receipts of government from whatever source arising over which legislature has power of appropriation including proceeds of loans raised. Similarly, Fayemi (2001) sees it as,, all tolls, taxes, impress, rates, fees, duties, fine, penalties, fortunes and all other receipt of government from whatever source arising over a period either one year or six months.

Government needs finance to provide infrastructural facilities; which in turn enrich the society and as such relies on revenue generation. It is in reality of this fact that that Nightingale (2002), defined revenue as fund needed for governance in the public sector to finance government activities, adding that these fund is be generated from non – oil sources such as income and other forms of tax, royalties, fines, fees, rates and aids from the federal government and foreign financial institutions and countries. According to Ahmed (2010), in defining revenue within the Nigeria context, revenue is defined as all amounts of money generated by a government from various sources for example taxes, fines, licenses, and those originating from “outside the state government” (federal government) net of refunds, earnings from issuance of loan, the sale of investments, agency or private trust

transactions, and intra-governmental transfers. Otunbala (2011) agrees with this definition by expressing that revenue include the entire fund generated from oil and non – oil sources other than fund raised from issue of debt instrument such as government bonds, stocks, treasury certificates and treasury bills from capital and money market, adding that non-oil source include; income tax reception, charges, royalties, fees, utilities, miscellaneous revenue among others.

### **Concept of Infrastructure Development**

Usman (2014) explains infrastructure as a basic physical and organizational structure needed for the operation of a society or enterprise, or the service and facilities necessary for an organization to function. Ahmed (2011) opined that infrastructure is a set of interconnected structural elements such as roads, bridges, water supply, sewers, electrical gadgets, telecommunication that provides framework. These structural elements provide commodities and services that are essential for enabling societal living condition.

Aigbokhan (1999) explain infrastructure as a term which encompasses activities referred to as social overhead capital, with two principal characteristics being that they have economic of scale in production and spill over's from users to non-users.

Ajakaiye (2012) by infrastructure, it means a large scale public systems, services and facilities of countries that are necessary for economic activities. The component of infrastructure includes electricity, transportation (road, rail, ocean, air).

### **Internal Revenue Generation in Delta State**

The generation of revenue has been ongoing right from the creation of the state in 1992. The need to generate revenue for infrastructural development in Delta State is so vital that in 2017, the Commissioner for Finance, David Edevbie, disclosed that the state was looking to generating at least N7 billion monthly from internal sources in the 2018 fiscal year. The commissioner said that while the performance level of over 70% in IGR was an appreciable increase over the projected figure the previous year, the state had consolidated on its Central Tax System overseen by the state Board of Internal Revenue (DBIR) in order to deal with the leakages and address the problem of double taxation associated with the use of numerous consultants, which was rampant in the past.

According to Edevbie, the internally generated revenue (IGR) realized from January to December 2017 is N51,352,398,514.95 representing a 73.18% performance when compared to the budgeted revenue for the period. However, it represents an increase of 13% when compared to IGR of N45,586,142,651.63 received in the year 2016 (ThisDay, 2018). In corroborating Edvwie's claim, the State Commissioner for Economic Planning, Dr. Kingsley Emu, assured that communities including rural areas would be involved in the 2019 budgeting process so that the citizens would have an increased opportunity to make inputs into the budget towards the development of the state (ThisDay, 2018).

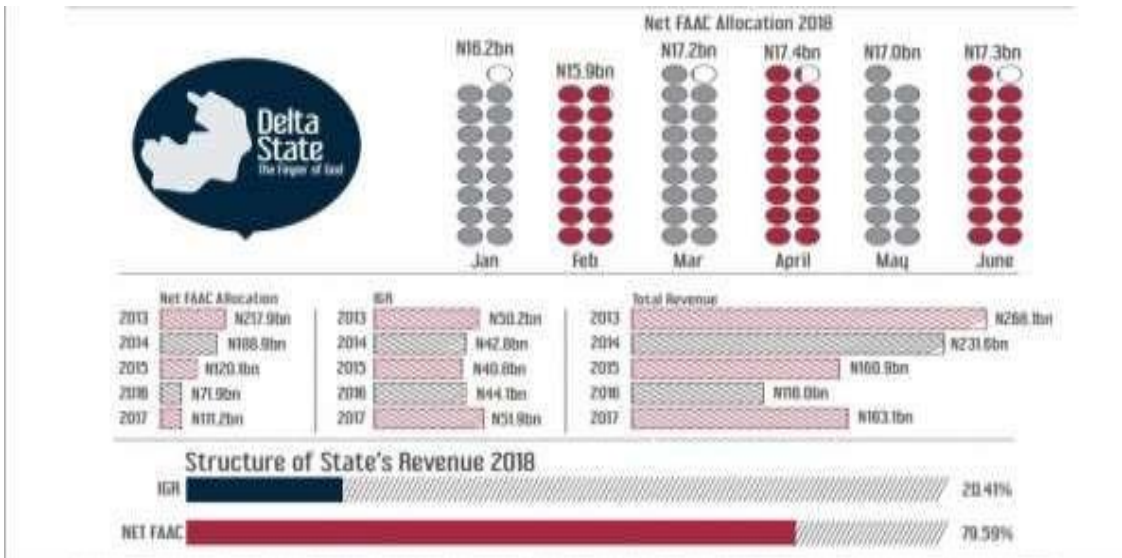
The latest Internally Generated Revenue (IGR) report released by the National Bureau of Statistics (covering January to June, 2019) showed that Delta ranks fourth in Nigeria with the generation of N36.3 billion as indicated in the table below:



States Rank By IGR (NGN) January - June 2019							
S/N	State	Total IGR	% of Total IGR	S/N	State	Total IGR	% of Total IGR
1	Lagos	205,163,386,767.06	0.30	19	Plateau	9,413,952,271.51	0.01
2	Rivers	75,974,536,695.99	0.11	20	Niger	9,126,750,293.89	0.01
3	FCI	38,570,894,950.27	0.06	21	Bauchi	8,268,708,138.19	0.01
4	Delta	36,390,689,921.88	0.05	22	Abia	7,912,596,332.05	0.01
5	Ogun	29,583,479,438.84	0.04	23	Zamfara	7,210,062,254.23	0.01
6	Kaduna	22,401,973,458.00	0.03	24	Kogi	6,683,808,064.70	0.01
7	Akwa Ibom	20,464,607,233.41	0.03	25	Anambra	6,073,241,006.13	0.01
8	Ondo	19,001,563,646.74	0.03	26	Bayelsa	5,875,518,818.67	0.01
9	Kano	18,564,546,104.36	0.03	27	Jigawa	5,369,753,095.83	0.01
10	Cross River	16,731,425,493.77	0.02	28	Ebonyi	5,140,599,994.92	0.01
11	Kwara	16,090,373,542.93	0.02	29	Ekiti	5,054,605,377.85	0.01
12	Edo	15,441,748,874.50	0.02	30	Adamawa	5,014,807,850.67	0.01
13	Oyo	14,060,685,978.15	0.02	31	Nasarawa	4,842,313,122.18	0.01
14	Benue	12,131,771,966.24	0.02	32	Katsina	4,807,071,081.00	0.01
15	Sokoto	12,077,025,746.68	0.02	33	Kebbi	4,728,501,342.76	0.01
16	Enugu	10,699,049,784.00	0.02	34	Borno	3,917,848,074.57	0.01
17	Imo	10,550,388,151.30	0.02	35	Taraba	3,272,217,539.86	0.00
18	Osun	10,205,102,028.94	0.01	36	Yobe	2,206,307,291.27	0.00
				37	Gombe	2,087,431,130.42	0.00

Source: *nairametrics.com*

Meanwhile, the internally generated revenue for 2017 is stated to be N51.9 billion and that of 2018 is said to average N4.3 billion monthly (N51.6 billion when stretched for the entire year). According to the NBS, Delta State had internally generated revenue of N44.1 billion in the 2016 calendar year. In other words, the year on year growth (that is percentage increase) is only 17.7% (ICIR, 2018).



Source: *BudgIT's State of States, 2018 Edition*

Data compiled by BudgIT, a civic organization that simplifies the budget and matters of public spending, have shown that under Governor Emmanuel Uduaghan, who was governor between 2007 and 2015, the IGR had risen to a record high of N50.3 billion, as a result of various reforms, before dropping in 2014 to N42.8 billion (ICIR, 2018).

### Theoretical Framework

This study is anchored on two theories, benefit theory and endogenous growth theory. The theories were discussed as below:

### **Benefit Theory**

The benefit principle is a concept in the theory of taxation from public finance. It bases taxes to pay for public-goods expenditures on a politically-revealed willingness to pay for benefits received. The principle is sometimes likened to the function of prices in allocating private goods (Fritz and Charles, 2013). The benefit theory was propounded by Erik Lindahl in 1919. The theory assumes that citizens tend to pay more taxes when they feel they have sufficient benefits from the activities of the state. It is however argued that the services which are provided are not quantified and measured, especially as some citizens who pay taxes do not have the opportunity of enjoying them (Onwuka and Christian, 2019). This theory is relevant to this study as it evaluate the benefits of internally generated revenue on Delta State's infrastructural development.

### **Endogenous Growth Theory**

Endogenous growth theory is based on the submission by Romer (1994) that economic growth is basically influenced by endogenous and not external forces. This holds that economic growth relies on investment in human capital, innovation and knowledge management. Endogenous growth theory primarily holds that the long run growth rate of an economy depends on policy measures (Romer, 1994). This implies that the theory is based on the fact that the economic growth of any nation depends on government's policies that could boost economic growth in a nation. One of these policies is concerned with the internal generation of fund for developmental purpose. This is more so that the federal government allows state government to generate fund within the ambit of the law. This theory is therefore relevant to this study as it examines the impact of government policies on internally generated revenue on the growth of the state.

### **Empirical Framework**

Ogbu, Okezie and Okezie (2017) evaluated the impacts of Internally Generated Revenue (IGR) utilization on structural development in Ebonyi State. It explicitly seeks to discover the degree of contributions of the IGR to infrastructural development like road, water plus educational infrastructure. This study used secondary data extracted from the audited financial reports from the office of the Auditor-General for 1996-2014. The study employed simple regression analysis to test the hypothesized variables and using this research design to analyze the data, it showed pvalue of  $0.578 > 0.05$  Road Infrastructure (RDI), p-value of  $0.38 < 0.05$  Educational Infrastructure, and p- value of  $0.033 < 0.05$  Water Infrastructure at 0.05 alpha level of significance. It was discovered that IGR has insignificant impact on Road infrastructure but significantly impacted on Educational and Water infrastructure. Also, in Ebonyi State, Nkanor and Udu (2016) reviewed 'the effects of electronic internally generated revenue (e-IGR) on Infrastructural development of Ebonyi State for a period of four (4) years'. The study suggests a low effect of IGR on infrastructural development in the State.

Onwuka and Christian (2019) examined revenue generation as a tool for infrastructural development in Nigeria. The objectives of this research were to determine the impact of revenue generated on infrastructural development in Nigeria and to determine the relationship between revenue generated and economic growth in Nigeria. Time series data were applied in carrying out this research work and the data were sourced from Federal Ministry of Finance, 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). Ordinary least square regression analysis was employed in this work with the use of STATA 13 economic package. The findings of this work reveal that revenue generated have significant effect on infrastructural development in Nigeria. Besides, Madugba and Joseph (2016) carried out a study on the relation involving value added tax and economic development in Nigeria; using the multiple regression model, demonstrated a significant and positive association encompassing total consolidated revenue and gross domestic product.

Nkechi and Onuora (2018) examine the Effect of Internally Generated Revenue on Infrastructural Development of the South Eastern States in Nigeria. Ex – post facto design was used in the study. Data used were extracted from budget estimates of each of the five South Eastern States. The study employed descriptive statistics, correlation and linear multiple regression for data analysis and data interpretation. Findings from the study revealed that there is a significant relationship between Internal Generated Revenue and the cost of infrastructure in the South East States as at the date of the study.

Similarly, Nnanseh and Akpan (2013) investigated the effects of internally generated revenue on infrastructural development in Akwa Ibom State for stated infrastructures like road, water and electricity. The study used simple percentage statistics to analyze the data and simple regression statistics to test the hypothesis; the paper discovered uneven contributions to infrastructural development in the areas of road water and electricity.

Olayinka & Phebe (2019), in their study, assessed the impact of internally generated revenue on infrastructural development in Lagos state. Data was sourced from State and Local Government Programme (SLGP) Consultants' Report 320 and Lagos State Ministry of Planning and Budgeting website. The result showed that there is a significant positive relationship between internally generated revenue and infrastructural development. Taxes, earnings and sales which are major components of internally generated revenue, do not have any significant impact on the infrastructural development of Lagos state. However licenses, fines and fees have a significant impact on the infrastructural development of the state. Meanwhile, in a study by Adenugba and Ogechi (2013) about the effects of internal revenue generation on infrastructural development, Lagos State; using descriptive and inferential statistics and applying simple percentage and spearman rank respectively; it was found that there is a positive significant association between IGR and Infrastructural development in the State.

In addition, Adesoji and Chike (2013) assessed the effect of internal revenue generation on infrastructural development. The research methodology entailed the use of survey research design and purposive sampling method to select respondents from Lagos State Inland Revenue Office. Questionnaires and statistical data were instruments used for the study. Descriptive and inferential statistics were the statistical tool used for the analysis. The descriptive statistics involves the use of simple percentages while the inferential statistics involved the use of Spearman's Rank, which is to show the direction of relationship between variables in the study and to show the scale for the data that is interval. Two hypotheses were formulated and the Spearman's rank correlation analysis was used to test the relationship between internally generated revenue and infrastructural development. The result showed that there is a positive relationship between internally generated revenue and infrastructural development. The study also revealed the various methods of generating internal revenue, which are the enforcement of tax personnel, contribution, and creating awareness to the public. The findings of the study however show that revenue administration agencies need to be reviewed to generate more revenue in the country. Omodeero, Ekwe and Ihendinihu investigated the impact of internally generated revenue (IGR) on economic development of Nigeria. This study made use of ex-post facto research design to specifically examine the impact of total IGR (TIGR), Federal Government Independent Revenue (FGIR), States IGR (SIGR) and Local IGR (LIGR) Governments IGR on the Real Gross Domestic Product (RGDP i.e. proxy for economic development) of the country. The time series data employed covered a period from 1981 to 2016 and were gathered from the Central Bank of Nigeria (CBN) Statistical Bulletin. The statistical tool used for the data analysis was the multi-regression and t-test for test of hypotheses. The findings of the study revealed that TIGR, SIGR and LIGR have robust and significant positive impact ( $p\text{-value} = 0.000 < 0.05$ ) on RGDP, while FGIR also indicated positive and significant influence on RGDP. There was an existence of high correlation between the dependent and independent variables.

It is obvious that the above works on the effects of Internally Generated Revenue on infrastructural development are not concern with that of Delta State, Nigeria, hence, the gap in knowledge which necessitated this research.

## MATERIALS AND METHODS

The Ordinary Least Squares was used to analyze the impact of internally generated revenue on infrastructural development in Delta State. The OLS is a best Linear and unbiased estimation. The data used covered the period between 2008 to 2018. The models used for the study are stated below: **Model 1**

$$EXH = b_0 + b_1IGR + U_t$$

### Model 1

$$EED = b_0 + b_1IGR + U_t$$

Where

EXH = Government Expenditure on Health

EED = Government Expenditure on Education

IGR = International Generated Revenue

$U_t$  = Error term

The data was generated from a combination of publishing materials, data from Delta State Ministry of Finance, etc.

The coefficient of determination ( $R^2$ ) for model indicates that 89 percent internally generated revenue of Delta State was explained by the expenditure on health infrastructure.

This is good enough since only 11 percent of the total changes was explained outside the model.

The coefficient of determination for the second model indicates that about 82 percents of the total variation in the IGR has been explained by the Delta State government's expenditure on infrastructure on education. This is good enough. The unexplained change is only 18 percent.

## RESULTS AND FINDINGS

The results of the OLS are shown in the table below:

**Table 1: Summary of OLS Result**

Independent Variable	Dependent Variables	
	EXH	EED
IGR	0.18	0.54
t – statistic Probability	(0.96) (0.3602)	(2.04) 10.021
C	3.95	6.60
t – statistic Probability	(9.34) (0.0000)	(6.40) 0.0001

$$R^2 = 0.89, \quad R^2 = 0.82, \quad DW = 2.20, \quad DW = 2.15, \quad t\text{-critical}$$

The result indicates that the Internally Generated Revenue has a positive impact on the expenditure on health. The result indicate that an increase in the internally generated revenue by 1 unit increase the expenditure on health by 0.18 units. The result showed further that internally generated revenue has a positive impact on government expenditure on education. The result indicates further that an increase in internally generated revenue by 1 unit increase the government expenditure on education by 0.54 units.

The result indicates that the internally generated revenue has an insignificant impact on government expenditure on health. This indicates that the fund generated internally within the state has not improved the spending on the



health infrastructure. The result indicates that the internally generated revenue by the Delta State Government has a significant impact on government expenditure on education infrastructure. This result indicates that the internally generated revenue from Delta State has improved the money spent on the educational infrastructure. The statistical insignificance of the internally generated revenue with a t-value of  $0.98 < \text{critical value of } 1.96$  in explaining the changes in government expenditure or health.

This indicates a validation of the null hypothesis of no significant relationship between internally generated revenue and Delta State government expenditure on health.

The statistical significance of the t-value of  $2.04$  which is greater than critical of  $1.96$  indicates the validation of the alternative hypothesis that there is a significant relationship between internally generated revenue and Delta State government's expenditure on educational infrastructure. The Jarque-Bera Normality test for model 1 and model II are shown below:

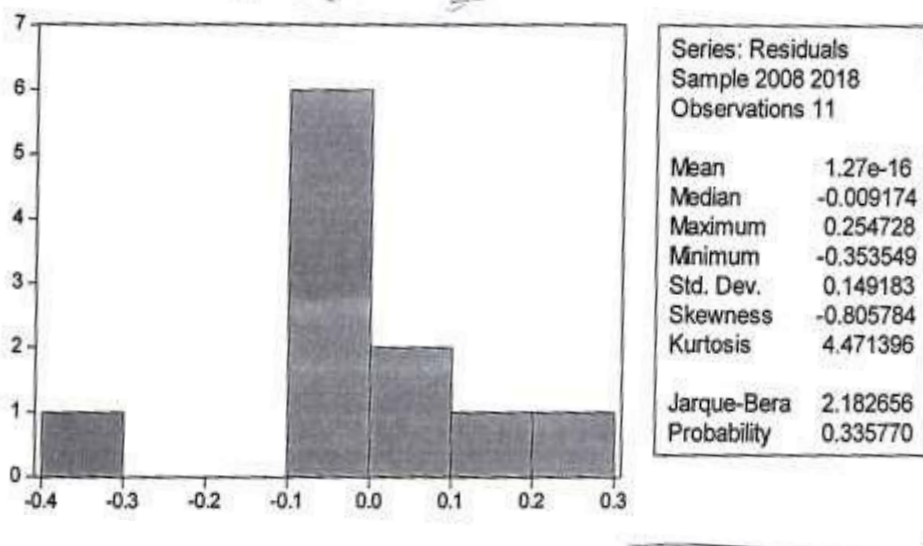
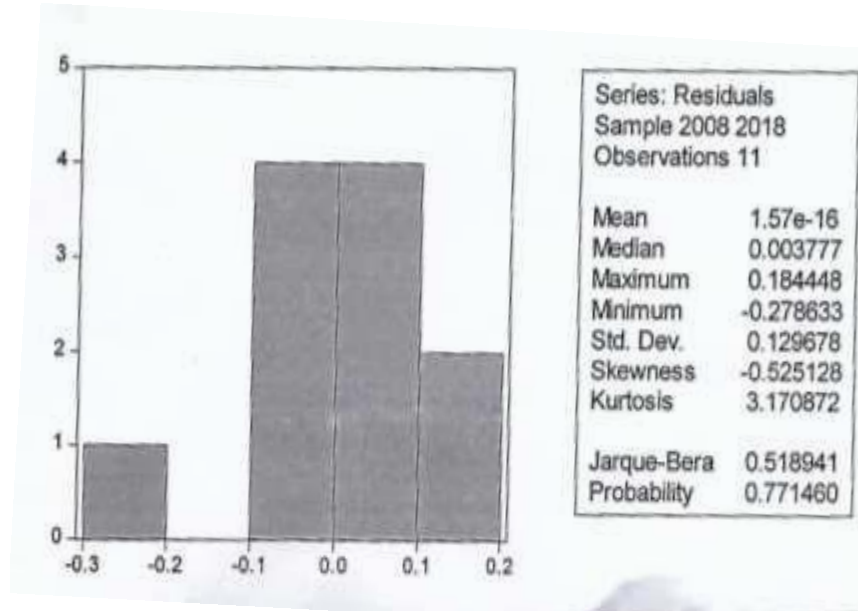


Figure I: Jarque-Bera Normality Test for Model I

The F-statistic of 2.18 and probability of 0.34 indicates that the residuals are normally distributed.



*Figure 2: Jarque-bera Normality Test for Model II*

With an F-statistics of 0.52 and probability of 0.77, the result indicates that the residuals are normally distributed.

**CONCLUSION AND RECOMMENDATION**

The research has been on the link between internally generated revenue and the level of infrastructural development in Delta State. States across Nigeria depends heavily on Federal allocation to execute infrastructural projects. The internally generated revenue of each state has been a useful tool of augmenting government's many states doesn't take this seriously. For Delta State, the paper concludes that internally generated revenues has not significantly improved health infrastructure. This pose a great threat since a healthy workforce is necessary for the development process. The study also revealed that the internally generated revenue from Delta State has improved the educational infrastructure. The paper thus recommends that the government should spend at least 40 percent of the internally generated revenue in financing the health sector through improved budgetary provision. This will improve the development process in Delta State. The Delta State government should put in place measures to improve the total money generated internally by levying and collating appropriate taxes.

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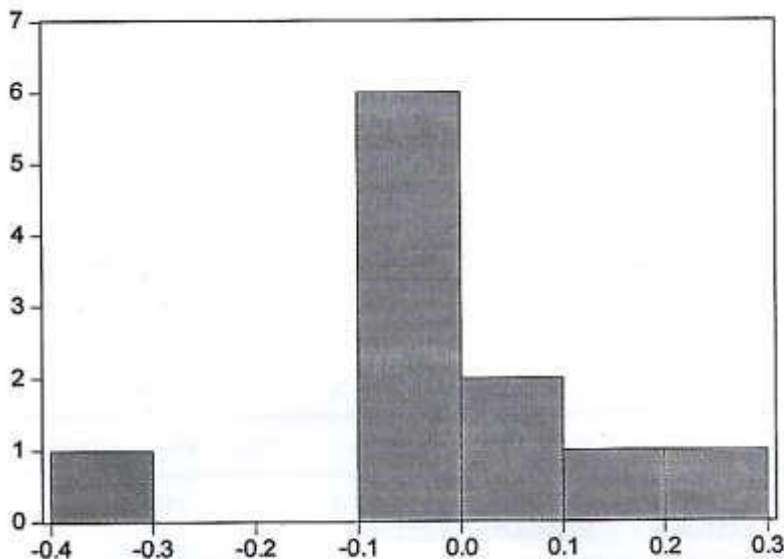
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## Appendix

Dependent Variable: LIGR  
Method: Least Squares  
Date: 03/23/20 Time: 21:34  
Sample: 2008 2018  
Included observations: 11

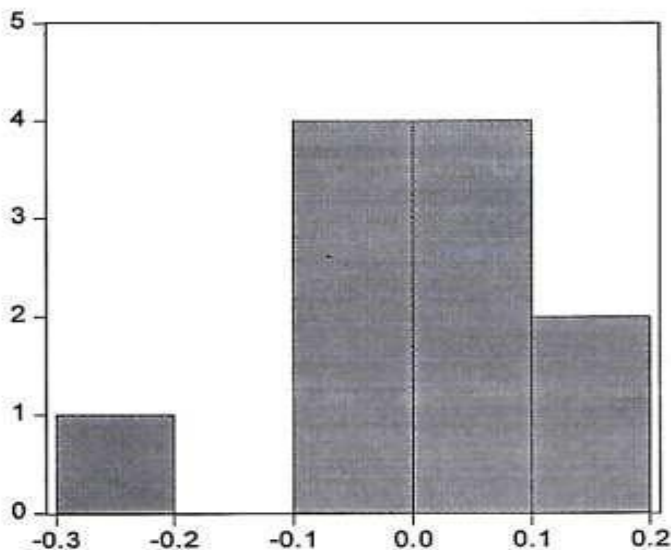
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEXH	0.179815	0.186505	0.964129	0.3602
C	3.953472	0.423363	9.338248	0.0000
R-squared	0.893614	Mean dependent var		4.359082
Adjusted R-squared	-0.007095	S.D. dependent var		0.156698
S.E. of regression	0.157253	Akaike info criterion		-0.698956
Sum squared resid	0.222557	Schwarz criterion		-0.626611
Log likelihood	5.844256	Hannan-Quinn criter.		-0.744559
F-statistic	40.29545	Durbin-Watson stat		2.150745
Prob(F-statistic)	0.000000			



Series: Residuals	
Sample 2008 2018	
Observations 11	
Mean	1.27e-16
Median	-0.009174
Maximum	0.254728
Minimum	-0.353549
Std. Dev.	0.149183
Skewness	-0.805784
Kurtosis	4.471396
Jarque-Bera	2.182656
Probability	0.335770

Dependent Variable: LIGR  
Method: Least Squares  
Date: 03/23/20 Time: 21:38  
Sample: 2008 2018  
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEED	0.538564	0.264649	2.035011	0.0723
C	6.59732	0.983979	6.463282	0.0001
R-squared	0.815135	Mean dependent var		4.359082
Adjusted R-squared	0.799038	S.D. dependent var		0.156698
S.E. of regression	0.136693	Akaike info criterion		-0.979198
Sum squared resid	0.168164	Schwarz criterion		-0.906854
Log likelihood	7.385592	Hannan-Quinn criter.		-1.024802
F-statistic	44.11269	Durbin-Watson stat		2.200148
Prob(F-statistic)	0.000000			

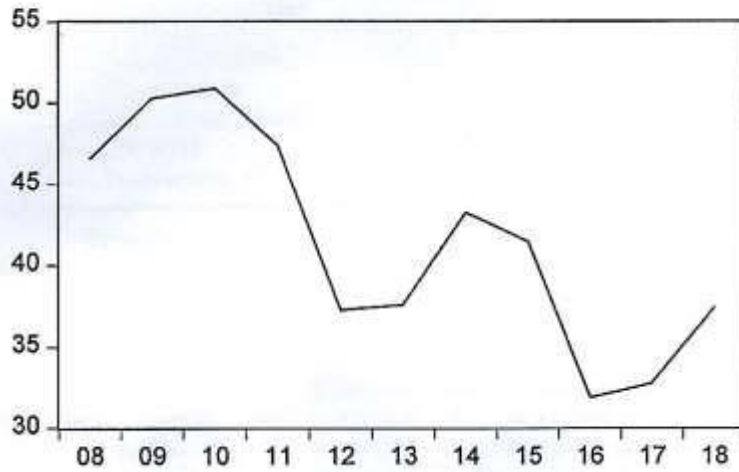


Series: Residuals	
Sample 2008 2018	
Observations 11	
Mean	1.57e-16
Median	0.003777
Maximum	0.184448
Minimum	-0.278633
Std. Dev.	0.129678
Skewness	-0.525128
Kurtosis	3.170872
Jarque-Bera	0.518941
Probability	0.771460

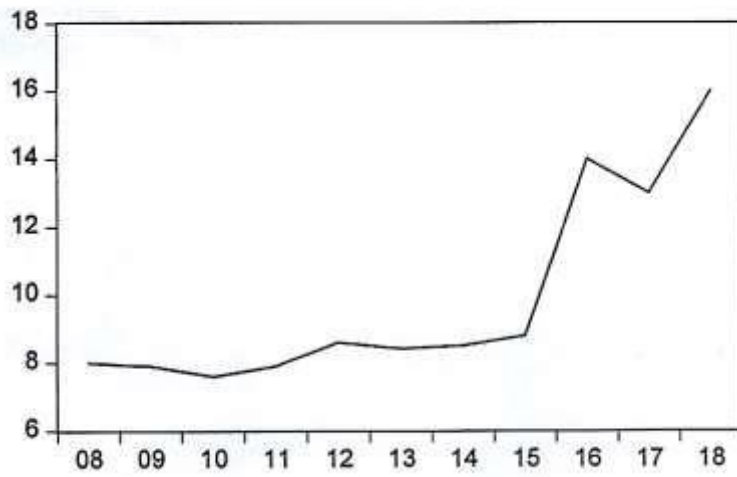
Years	EED	EXH	IGR
2008	46.6	8	73.3
2009	50.3	7.9	82.8
2010	50.9	7.6	52.7
2011	47.4	7.9	79.8
2012	37.3	8.6	99
2013	37.6	8.4	86
2014	43.3	8.5	71.4
2015	41.5	8.8	76.8
2016	31.9	14	83
2017	32.8	13	81.2
2018	37.4	16	83.1



EED



EXH



IGR

