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Tax Revenue Sources and the Nigerian Manufacturing Sector's Output: Any Linkage?

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Abstract
This paper assessed the possible linkage between tax revenue sources and the manufacturing sector's output (MAQ) in Nigeria from 1996 to 2020. The predictor variable is government revenue generated through tax whose proxy were company income tax (CIT), education tax (EDT), value added tax (VAT), and petroleum profit tax (PPT). Meanwhile, the regress and is MAQ measured by the manufacturing sector's contribution to GDP. The study adopted the Autoregressive Distributed Lag Model using E-Views 9.0. The descriptive statistics revealed that most of the study variables did not deviate far away from their mean value while the unit root test exhibited mixed integration. More so, the ARDL co-integration (bound) test reported that the series co-integrated. Specifically, EDT and VAT have favourable yet high impacts on the MAQ while CIT has favourable yet minimal impacts on MAQ; whereas, PPT had adverse impact on MAQ. Hence, the study concludes that irrespective of the share decline in PPT, non-oil tax revenue remains the most feasible tool for improving the Nigerian manufacturing sector. In this light, the study submitted that the current EDT and VAT should be sustained.

Keywords: *Tax Revenue, Sources, Nigerian Manufacturing Sector's Output, Linkage*

1. Introduction

Tax revenue remains one of the essential tools of fiscal policy that helps to generate revenue and also stimulate the development of the economy. Hence, the importance of tax revenue especially as it relates to building and maintaining infrastructures cannot be overemphasized. This suggests that, the level of an economy's development is dependent to a large extent on the level of tax compliance (Ajiteru, Aderanijo, & Bakare, 2018).

Stressing the need for an efficient tax out-sourcing system in Nigeria, studies have shown that through tax revenues, the federal government performs her fiduciary roles and also meet the country's macro-economic objectives of high growth (Ogba, Park & Nakah, 2018; Jeroh, 2019; Ebiaghan, Jeroh & Ideh, 2021). As reported by the Central Bank of Nigeria (2019), VAT, Customs and Excise Duties, CIT, Federal generated funds internally, and forms of taxes contributed 25.1%, 17.9%, 35.7%, 10.9%, and 11.1% of total non-oil tax revenues. This therefore evidenced that tax revenue is very pivotal in driving an economy, especially an emerging market like Nigeria.

Furthermore, since generated revenue from oil sources in Nigeria has been dwindling and uncertain over time coupled with ever uprising infrastructural deficits of the country, the federal government opted for tax reforms which includes the introduction of the VAT in 1994, registering of corporation and entrepreneurs under the Federal Inland Revenue Service (FIRS) among others yet tax revenues still fluctuates (Etim, Mbobo, Joel & Ekanem, 2020; Osiegbu, & Onuorah, 2011).

Furthermore, the manufacturing sector (MAS) is described as the major driving force of the developmental process. This is because no economy can achieve her macroeconomic goal of high economic growth if there are no viable manufacturing firms. However, the Nigerian manufacturing firms are far from this since they have been

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experiencing a decline in terms of their contribution to GDP due to poor electricity supply, low capacity utilization, low output, high production cost, import dependency, lack of effective utilization of tax, illicit importation of foreign goods, high exchange rate, low government expenditure, and trade liberalization (Ogbuagu, &Ewubare, 2017; Onuorah, &Nkwazema, 2016).

Empirically, there seems to be only few studies on the nexus between tax revenues and the MAQ though there exists countless studies on the effect of tax revenue on economic growth within and outside the shores of Nigeria. Again, the Nigerian economy is yet to fully enjoy the rupees of inherent in tax policies due to poor tax administration, irregularities, and leakages in the tax system. As a result, this paper covered tax revenues and MAQ in Nigeria from 1997 to 2020. Specifically, this study examined the effect of CIT, EDT, VAT, VAT, and PPT on the MAQ in Nigeria.

2. Literature Review

This section covered the conceptual clarifications and linkages, theoretical underpinning, extant empirical studies, and literature gaps.

2.1. Conceptual Clarifications and Linkages

The term tax revenue according to Ogba, Park and Nakah (2018) is a required levy imposed on the income of individuals, households and businesses by the government via its agents so as to raise revenue. Okezie and Azubike (2016) assert that tax revenue is paramount for revamping a depressed economy. Hence, this policy is targeted at combating inflation, economic depression, poverty alleviation, inequality to mention but a few.

Khadijat and Kabi, (2019) categorized tax revenue into oil and non-oil revenue. Oil Tax revenue comprises of tax incomes from companies carrying on petroleum operations. Examples of such tax revenues are PPT and royalty paid on exploration and extraction. Meanwhile, non-oil tax revenues comprise personal income tax, CIT, VAT, capital gains tax, custom and excise duties, and stamp duty, to mention but a few. These generated revenues are directed at improving all the sectors of the Nigerian economy (Nigerian MAS inclusive).

On the other hand, MAQ refers to the contributions of a country's manufacturing sector (MAS) to GDP over time. Generally, the MAS is the center-piece of all economic activities since it is the only sector that extracts raw materials and turn such materials to a usable form. Drawing insights from Nigeria, the sector beneficially provides about 70% of the working population and accelerates the productive capacity of the economy (Nwoked, 2021; Onuorah, 2018).

2.2 Theoretical Underpinning and Conceptual Model

This study anchored on the Optimum Taxation Theory. This theory view the government as the social plotter and in charge of ensuring an effective and efficient tax system mainly for generating revenue as well as ensuring maximum welfare of taxpayers (Ayeni, & Afolabi, 2019; Osiegbu, Nwakamme, & Onuorah, 2012). By implication, efficient tax system leads to holistic development (MAQ Inclusive).

Given the above insights the conceptual model designed for this study is presented in Fig.1.

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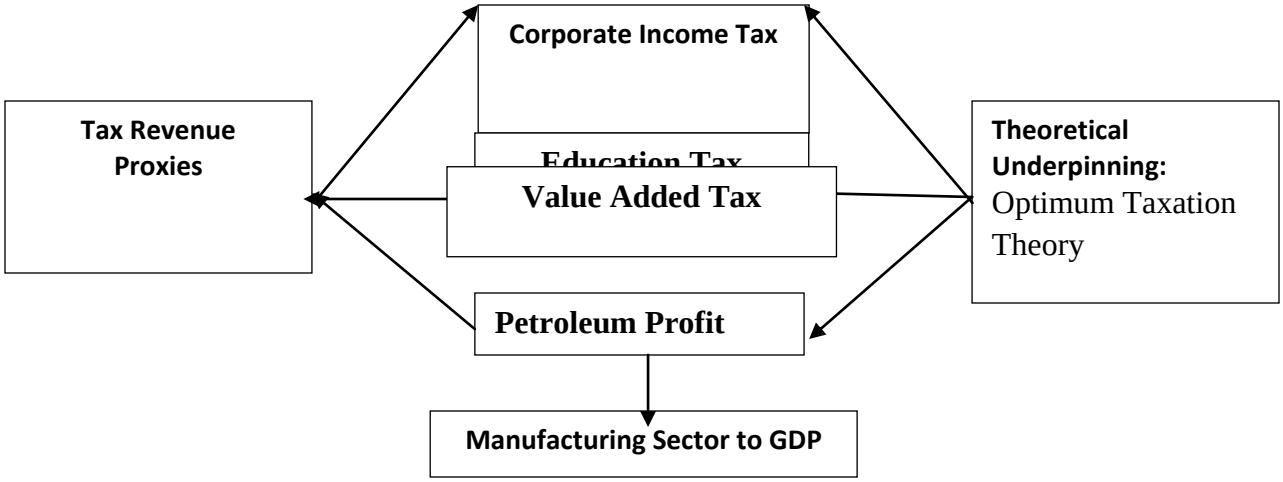

Fig. 1: Tax Revenue Proxies and MAQ
Source: Researcher's Model, 2022

2.3 Empirical Review

This section x-rays prior studies conducted thus far on the subject matter. For instance, Nwoked (2021) and Ayeni and Afolabi (2020) in different studies using different methodologies examined the role of tax composition on infrastructural development of Nigeria. They affirmed that CIT, PPT, EDT, and VAT had favourable impact on the infrastructural development in Nigeria.

Using the OLS estimates, Etim, Mbobo, Joel and Ekanem (2020) reported that CIT, and VAT had a minimal impact on economic growth in Nigeria from 1985 to 2018. Meanwhile, PIT and PPT were statistically significant.

Using the Bayesian time-varying, Olayungbo (2019), reported that oil revenue had a favourable impact oneconomic growth in Nigeria from 1970- 2015. Similarly, Using the OLS estimates, Omodero and Dandago (2019) reported that tax revenue had a favourable impact on public service delivery in Nigeria from 1981- 2017. In another study that used data from 2000 – 2016, Philip and Temidayo (2018) reported that tax incentives are veritable tool to manufacturing firms' output. In addition, Amos, Uniamikogbo, and Aigienohuwa (2017) found a positive and statistically significant relationship between CIT and GDP from 1995 to 2015.

Contrary to these results, Oladipo, Iyoha, Fakile, Asaleye and Eluyela (2017) studied the effect of tax revenue on agricultural output in Nigeria and reported that tax revenue was not significant enough to promote agriculture in Nigeria.

Considering the empirical reviews above, none of the studies have been able to combine CIT, EDT, VAT, & PPT against MAQ in a single study. In attempt to bridge this gap, this study was undertaken.

3.0 Research Methodology

3.1. Research Design

In this paper, we relied on the *ex-post facto* design since the targeted events and/or facts had occurred already. Meanwhile, the study sourced data from CBN annual reports, 2020. Before the regression result, some preliminary analyses were conducted. Accordingly, the study was patterned after the ARDL.

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3.2 Model Specification

The study modeled after Etim et'al (2020). The model 1 above is modified below:
$MAQ = \beta_0 + \beta_1 CIT + \beta_2 EDT + \beta_3 VAT + \beta_4 PPT + \mu it$

Where:

MAQ = Manufacturing Sector Output measured by the manufacturing sector's contribution to GDP

CIT = Company Incomes Tax

EDT = Education tax

VAT = Value Added Tax

PPT = Petroleum Profit Tax

μ = Error Term

The Apriori expectation: $\beta_1, \beta_2, \beta_3, \beta_4$ are positive.

4.0. Results and Discussions

This section began with data presentation and data analysis discussion of results.

4.1. Data Presentation

The following data are presented in table 1 below:

Table 1: Raw Data of Tax Revenue and Manufacturing Sector Output in Nigeria

Year	Company Income Tax (CIT)	Value Added Tax (VAT)	Education Tax (EDUT)	Petroleum Profit Tax (PPT)	Manufacturing Sector Output
1996	22000	31000	0	76667	11,850,000
1997	26000	34000	0	68574.1	13,050,000
1998	33.3	36.9	0	68.0	15,550,000
1999	46.2	47.1	0	164.3	15,260,000
2000	51.1	58.5	18.1	525.1	12,300,000
2001	68.7	91.8	78.0	639.2	14,340,000
2002	89.1	108.6	19.7	392.2	14,460,000
2003	114.8	136.4	17.1	683.5	13,150,000
2004	113.0	159.5	21.9	1183.5	13,290,000
2005	140.3	178.1	28.4	1904.9	12,170,000
2006	244.9	221.6	51.8	2038.3	11,220,000
2007	327.0	289.6	47.2	1500.6	11,620,000
2008	416.8	404.5	72.2	2812.3	11,370,000
2009	568.1	468.4	139.5	1256.5	12,790,000
2010	657.3	562.9	114.5	1944.7	6,550,000
2011	700.5	649.5	101.7	3976.3	7,190,000

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2012	848.6	710.2	214.6	4365.4	7,790,000
2013	985.5	795.6	281.0	3719.0	9,030,000
2014	1207.3	794.2	193.1	3439.6	9,750,000
2015	1029.1	778.7	202.1	1782.4	9,530,000
2016	988.4	811.0	152.3	1192.3	54,760,000
2017	1206.3	967.7	49.0	1801.4	38,320,000
2018	1429.9	1097.4	136.6	3726.2	51,630,000
2019	1637.2	1175.9	247.8	3529.1	54,769,000
2020	2344.8	4543.6	253.02	3575.3	153,200,000

Source: CBN Annual Report (1996-2020)

4.3. Results and Discussion

A careful perusal of results in Fig.2 unveiled the fact that for the period, tax revenue reported a complete downward curve. This was evident from 1998 till date. Also, series of short falls were noticed as well. Believably, it is obvious that the 2008/2009 global meltdown, inefficient tax laws administration, sharp practices may have contributed to the sharp decline and reductions in tax earnings noticed.

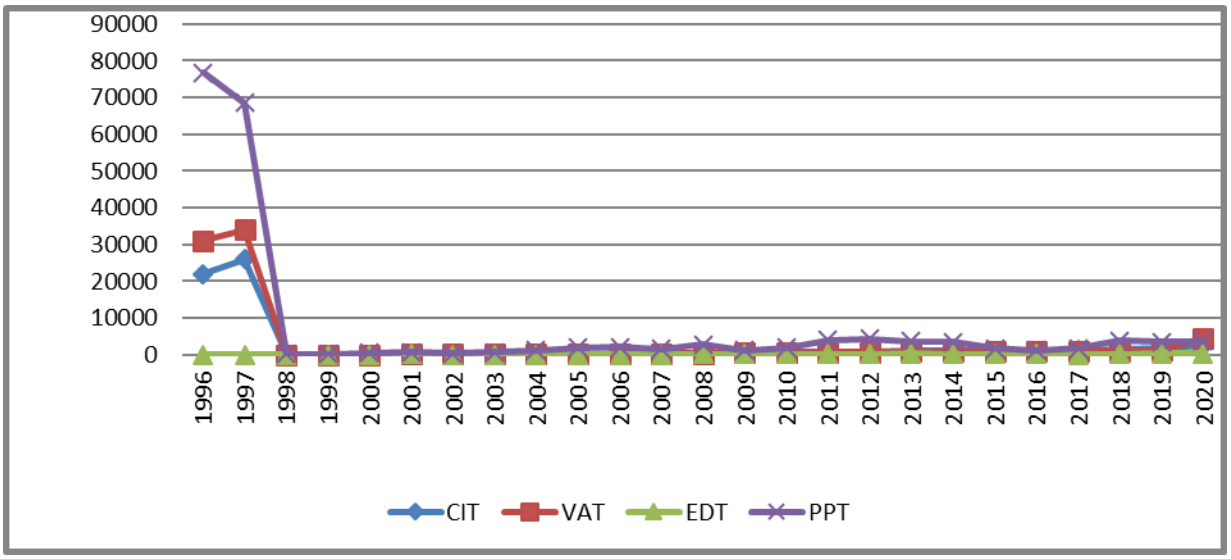

Fig. 2 -Tax Revenues Trend Analysis
Source: E-Views 9.0 (2022)

Prior comments from the literature suggests that the dwindling global crude oil price largely contributed to the sharp decline and reductions in tax earnings of Nigeria overtime (Ighosewe & Agbogun, 2021). It becomes imperative that the trend in Fig.2 and Fig.3 alongside data on Table 2 to 5 which vividly and statistically illustrates the position of Nigeria's tax revenue is not unconnected to the issues identified above.

Table 2: Summary of all Descriptive Statistics

Parameter	MAQ	CIT	VAT	EDT	PPT
Maximum	1.53E+08	26000.00	34000.00	281.0000	76667.00
Minimum	6550000.	33.30000	36.90000	0.000000	68.00000
Mean	23397560	2529.928	3203.508	97.58480	7658.448

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Std. Dev.	30782857	6514.407	8871.763	90.40920	19629.35
Observations	**25**	**25**	**25**	**25**	**25**

Source: E-Views 9.0 (2022)

Table 2 reported that MAQ, CIT, VAT, EDT, and PPT had maximum (highest) values of: ₦1.53E+08 billion, ₦26000 billion, ₦34000 billion, ₦281 billion and ₦76667 billion. However, they reported minimum (lowest) values of: ₦6550000 billion, ₦33.30000 billion, ₦36.90000billion, 0.000000, ₦68 billion.

In terms of volatility, MAQ, CIT, VAT deviated far away from their average values while EDT and PPT clustered around their average values. To ensure that the model is normally distributed, we tested for normality as evidenced in Fig.3:

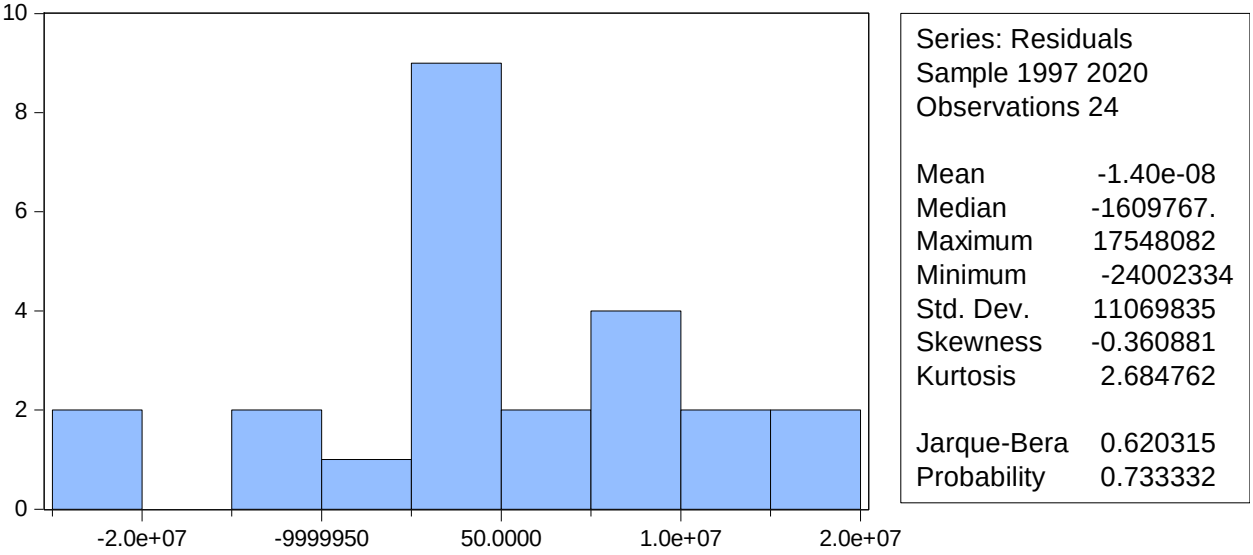

Fig.3: Normality Test
Source: E-Views 9.0 (2022).

The normal test above affirmed that the series are normally distributed.

Table 3: Summary of ADF test

ADF TEST @ LEVEL					
Study Variables	**ADF Test Statistics**	**MC Value @ 5%**	**P-Value**	**Order of Integration**	**Conclusion**
MAQ	-2.955206	-2.998064	0.0545	1(0)	Non-Stationary
EDT	-1.426601	-2.986225	0.5531	1(0)	Non-Stationary
CIT	-2.224896	-2.986225	0.2029	1(0)	Non-Stationary
VAT	-4.894751	-2.991878	0.0007	1(0)	Stationary
PPT	-2.797549	-2.986225	0.0729	1(0)	Non-Stationary
ADF TEST @ FIRST DIFFERENCE					
Study Variables	**ADF Test Statistics**	**MC Value @ 5%**	**P-Value**	**Order of Integration**	**Conclusion**
MAQ	-6.816769	-3.004861	0.0000	1(1)	Stationary
EDT	-4.834560	-2.998064	0.0008	1(1)	Stationary
CIT	-5.003760	-2.991878	0.0005	1(1)	Stationary

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VAT	-7.707373	-2.998064	0.0000	1(1)	Stationary
PPT	-5.091673	-2.991878	0.0004	1(1)	Stationary

Source: E-Views 9.0 (2022)

The ADF test above evidenced that VAT attained stationarity at level. Meanwhile, the rest series are stationary at first difference. This signal that the model exhibited mixed integration.

Table 4: ARDL Bounds Test

Null Hypothesis: No long-run relationships exist Test Statistic		
	Value	**K**
F-statistic	6.000027	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	**2.86**	**4.01**
2.5%	3.25	4.49
1%	3.74	5.06

Source: Econometric Views Version 23.0 (2021)

Since the F-statistic of 6.000027 is higher than the upper critical bound value of 3.79 at 5% level, we concluded that tax revenues have a long run effect on economic development in Nigeria.

Table 5: Breusch-Pagan-Godfrey(BPG)

F-statistic	2.342405	Prob. F(5,18)	0.0836
Obs*R-squared	9.460432	Prob. Chi-Square(5)	0.0920
Scaled explained SS	10.28712	Prob. Chi-Square(5)	0.1066

Source: E-Views 9.0 (2022).

The BPG test with p-value of 0.0836 affirmed that the series is not Heteroskedastic.

4.4. ARDL Result

The ARDL was used test of hypotheses. The results (see Table 6) showed an R^2 value of 0.805317 affirming that the series is fit. More so, Since the Prob. (F-statistic) is 0.000007<0.05 our argument is that the result is significant. Meanwhile, the Durbin Watson test of 2.144171 revealed that the model is not serially correlated. As expected, the co-integration equation was found to be negatively signed and statistically significant.

Additional results from Table 6 reveal that with respect to the ARDL test CIT had adverse, yet minimal effect on MAQ. By implication, CIT is not instrumental to MAQ. This result hold claim to the findings of Etim, Mbobo, Joel and Ekanem (2020); Oladipo, Iyoha, Fakile, Asaleye and Eluyela (2017) but did not conform to the findings of Ayeni and Afolabi (2020); Amos, Uniamikogbo, and Aigienohuwa (2017).

Furthermore**,** EDT and VAT had positive yet high effect on MAQ. By implication, EDT and VAT are instrumental to MAQ. This result holds claim to the findings of Omodero and Dandago (2019); Philip and Temidayo (2018) but deviated from the findings of Oladipo, et'al (2017).

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Other insights from Table 6 is that PPT had negative, yet high effect on MAQ. By implication, PPT is detrimental instrumental to MAQ. This according to prior studies, may be due to mismanagement of oil revenues. Notwithstanding, this position deviated sharply from the findings of Etim, et'al (2020).

Table 6: Autoregressive Co-integrating and Long Run Form

Dependent Variable: LOG(MAQ)				
Selected Model: ARDL(1, 0, 0, 0, 0)				
Date: 10/10/21 Time: 04:32				
Sample: 1996 2020				
Included observations: 24				
	Cointegrating Form			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(CIT)	-1.257974	0.799310	-1.573825	0.1329
D(EDT)	0.448160	0.123198	3.637728	0.0220
D(VAT)	0.484642	0.186127	2.603823	0.0180
D(PPT)	-1.087740	0.363813	-2.989836	0.0079
CointEq(-1)	**0.496407**	**0.230585**	**2.152815**	**0.0469**
Cointeq = MAQ - (-5.4291*CIT + 0.5820*EDT + 0.6880*VAT -1.1325*PPT + 18.7719)				
	Long Run Coefficients			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CIT	-5.429092	4.415791	-1.229472	0.2347
EDT	0.581970	0.177673	3.275513	0.0306
VAT	0.687958	0.229441	2.998409	0.0400
PPT	-1.132464	0.414424	-2.732620	0.0148
C	18.771895	2.472979	7.590802	0.0000
R-squared	0.805317	Mean dependent var		16.59300
Adjusted R-squared	0.751239	S.D. dependent var		0.772966
F-statistic	14.89161	Durbin-Watson stat		2.144171
Prob(F-statistic)	0.000007			

Source: Econometric Views Version 23.0 (2022)

5. Conclusions and Recommendations

This study examined the effect of tax revenues on manufacturing sector output in Nigeria Nigerian economy from 1996 to 2020. The study was patterned after the ARDL Methodology. Sequel to the diverse findings of this paper, the study concludes that non-oil tax revenue remain the most feasible tool for sustaining the growth of the Nigerian manufacturing sector irrespective of the decrease in PPT. Hence, the following recommendations were made:

1. Policy makers should effectively devise procedures for the collection of CIT in Nigeria.
2. The current tax laws on educational sector need be revisited since EDT has the capacity of possibly influencing MAQ.
3. There is need to sustain the current rate of VAT in the currently since it has largely proved to have positive influence on MAQ.
4. The federal government should monitor the operations of companies engaged in petroleum operations with a view to minimize tax evasion and avoidance. This will further strengthen the contributions of PPT to MAQ.

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