



Manufacturing Companies Investment Spending and Government Expenditure on Infrastructures in Nigeria (1990 -2015)

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ABSTRACT

This study examined the extent to which government spending on Infrastructures impacted on Investment Spending of listed manufacturing companies in Nigeria. *Ex-post facto* research design was adopted for the study. The population of the study was 83 listed manufacturing companies in Nigeria as at December 31, 2016, from which a sample size of 20 was purposively selected based on availability of data covering the period from 1990 to 2015. Secondary data were obtained from published financial statements of listed manufacturing companies in Nigeria, publications of government and the World Bank. Validity and Reliability of the data were based on the reports of external auditors and other regulatory agencies. The data were analyzed using descriptive and inferential statistical methods.

The study found that government spending on power, roads, security and human capital development have joint significant effect on INVEXP ($F(4, 21) = 0.681$, $Adj R^2 = 0.34$, $p < 0.05$); Government spending on Power had positive significant effect on Invexp ($t(26) = 4.14$, $p < 0.05$). Roads had positive but insignificant effect on INVEXP ($t(26) = 0.36$, $p > 0.05$). Security had negative but insignificant effect on INVEXP ($t(26) = -1.72$, $p > 0.05$). HCD had positive but insignificant effect on INVEXP ($t(26) = 1.28$, $p > 0.05$).

The study concluded that government spending did not have significant effect on Investment Spending by the manufacturing companies in Nigeria within the period covered.

Keywords: Manufacturing, Investment Expenditure, Government spending,, Power, Roads, Security, Human Capital Development

I. INTRODUCTION

Government Spending and Investment Expenditure

This is expenditure incurred by the manufacturing industry in the acquisition of acquisition of new non-current assets such as; plant and equipment, buildings, motorvehicles, fixtures and fittings, intellectual properties and goodwill (Bilsborrow,1977). They are company long-term investments in assets whose full value will not be realized within the accounting year (Ross, 2018).

Manufacturing companies invest in these assets for the purpose of increasing the productive capability that will have a remarkable impact on the long-run operations (Manjappa & Niranjan, 2010). Investment in plant and machinery causes increase in the industrial output Investment expenditures also have a profound impact on the long-run growth of the economy. Devoting a larger (or smaller) share of the economy's gross domestic production to investment expenditures for capital goods means more (or fewer) capital goods are produced (Seruvatu, 2001). Capital goods are key to the productive capabilities of the economy. An increase in the quantity of capital goods expands the ability to produce goods and thus results in economic growth. A decrease in the quantity of capital diminishes this production capacity. An increase in the production of capital goods



inevitably corresponds with a decrease in the production of consumer goods purchased by household sector consumption expenditures. This trade-off between consumption and investment is fundamental to the process of long-run economic growth. By devoting more resources to investment and less to consumption today, an economy generates greater economic growth in the future. By devoting more resources to consumption and less to investment, economic growth can be less or even negative.

Objective of the study: To examine the effect of government spending on infrastructures covering power, roads, security and human capital development On the Investment spending of listed manufacturing companies in Nigeria.

Research question: How has the government expenditure on power, roads, security and Human Capital Development in Nigeria impacted on investment expenditure in the manufacturing companies?

Hypothesis : There is no significant relationship between government expenditure on power, roads, security and Human Capital Development and investment expenditure in the manufacturing companies in Nigeria

Method of data analysis

The study adopted *ex-post facto* research design. Secondary data obtained from published financial statements of listed manufacturing companies in Nigeria, publications of government and the World

Bank were analyzed using descriptive and inferential statistical methods

II. LITERATURE REVIEW

Theoretical Framework

This study adopted Normative Accounting theory, **this theory is used** to explain the reasons for the adoption of a particular method in the allocation of public funds by the managers of public finance. Normative theory of accounting was developed by MacNeal in 1939. Normative theory of accounting in the public sector attempts to prescribe the best practices for accounting for government spending in the public sector (Schick, 1998). It requires accountability and transparency in public finance as the basis for ensuring that government expenditure have positive and significant effect on economic activities in the country, hence its adoption for this study.

Empirical Review

Government Spending and Manufacturing Investment Expenditure

This is expenditure incurred by the manufacturing industry in the acquisition of new capital such as; plant and equipment, buildings and other non-current assets (Bilsborrow, 1977). Investment expenditures also have a profound impact on the long-run growth of the economy. Devoting a larger (or smaller) share of the economy's gross domestic production to investment expenditures for capital goods means more (or fewer) capital goods are produced (Seruvatu, 2001). Capital goods are key to the productive capabilities of the economy. An increase in the quantity of capital goods expands the ability to produce goods and thus results in economic growth. A decrease in the quantity of capital diminishes this production capacity. An increase in the production of capital goods inevitably corresponds with a decrease in the production of consumer goods purchased by household sector consumption expenditures. This trade-off between consumption and investment is fundamental to the process of long-run economic growth. By devoting more resources to investment and less to consumption today, an economy generates greater economic growth in the future. By devoting more resources to consumption and less to investment, economic growth can be less or even negative

According to Wee (2017), the power sector in Nigeria is faced with diverse problems which include decaying infrastructures and access to the latest technologies. This he said has continued to make interruption of power supply to become very prominent and in many cases power outage last for several hours in a day and most of the time on a very large scale, blackouts extending to several days. Wee (2017) said further that both business and residential areas are affected with the ultimate effect of frustrating business and increasing operational cost.

CIA report (2017) claimed that Nigeria is one of the countries where the manufacturing sector on the average, suffer a loss of income of 15.6% to total sales as a result of poor power supply. Smaller economies like. Afghanistan suffers only 9.6%, Uganda 11.2% and south Sudan 13.6%. World Bank Enterprise Survey of Business (2017) shows that about 71% of businesses in Nigeria depend on generators for greater part of electricity required for their plants. This was also supported by the results of the study carried out by Ado and Josiah (2015), According to them, the cost of the alternative



power supply through generating plant account for about 25% of the operational cost of businesses in Nigeria. The poor electricity supply according to Chete et al (2015) affects machinery and equipment; this has made reliance on power generation from the alternative source more preferred. This alternative source usually from the generating plant is more costly and makes the costs of production to be a very serious challenge to the manufacturing sector.

Ogwo and Agu (2016) investigated the extent of influence of transport infrastructure on the performance of manufacturing firms in Nigeria and the effect of such performance on the value of national output. Result of their study revealed that state of road infrastructure in Nigeria has negative effect on sales and profitability of the manufacturing sector. Based on the results of his study, Holodny (2015) asserted that countries with very good performance of the manufacturing companies incidentally are the countries with best road infrastructure in the world. In the developing countries, poor development of infrastructures has been one of the significant limitations to industrialization (McCawley, 2010). These countries still require a higher percentage of their national output to finance infrastructure. Very good networks of road according to Donaubauer, Meyer, Nunnenkam (2014) increase productivity by reducing the costs of transporting goods within the country. In addition to this, road networks contribute to country's integration into world markets. Yash and John (2017)

attributed growth of the manufacturing sector in India to very strong infrastructure. This is because government of India over the years has been spending so much money particularly on the construction of strong network of roads, rails and transport to foster the growth of the manufacturing sector in the country. Many industrial areas in the country are now being connected with road networks rapidly Yash and John (2017). This effort by the government according to the result of their study is helping India to emerge as the new

manufacturing sector hub. Again on the importance of roads to growth of manufacturing sector, the studies by Estache and Garsous (2012) shows positive impact particularly in developing countries. For example in Africa, roads are needed for Africa to catch with the rest of the world (Estache and Garsous, 2012).

Essien, Tordee, Solomon and Felix (2015), in their study on security issues and its relationship with Foreign Direct Investment obtained results showing that national security remains one common and major factor hindering the growth of FDI in Nigeria within the period covered by the study. Every investor they said wants his investment to be secured and therefore will like to assess the situation in a country before investing in such an environment Essien et al (2015).

The security challenges facing Nigeria include the threats to lives, properties and business establishments coming from regional or ethnic agitation for self-determination, crisis in the Niger-Delta, Terrorism in the North, rising cases of armed robberies, kidnapping and ritual killing (Essien et al, 2015). This insecurity according to the result of his study has continued to cripple business activities and frighten investors.

Government spending on education is expected to produce highly skilled workers, this will occur when the spending is properly directed to areas that will not cause a mismatch between the needs of employers and the skilled acquired (Simkovic, 2013). This mismatch and inadequate funding of education, results in the insignificant relationship between Human Capital Development HCD and investment spending by the manufacturing sector.

Investment in the manufacturing sector contributes to the economy, therefore this study examined government spending on infrastructures covering power, roads, security and Human Capital Development in Nigeria and how this has impacted on manufacturing sector investment spending on non-current assets.



Government Spending On Infrastructuresand Manufacturing Investment Expenditure

Year	Manufacturing Investment Spending N'billion	Power N'billion	Roads N'billion	Security N'billion	Education N'billion
1990	4.60	1.50	.63	2.74	2.30
1991	5.72	2.66	.41	3.76	1.55
1992	7.68	2.38	1.14	4.45	2.06
1993	11.37	1.52	2.32	7.00	8.00
1994	33.56	1.42	1.14	10.21	10.28
1995	42.62	1.43	1.70	9.41	12.73
1996	88.85	1.18	.93	25.88	15.35
1997	136.08	1.00	1.81	24.47	15.94
1998	181.40	2.70	3.22	33.56	26.72
1999	362.80	6.96	21.64	53.38	31.56
2000	413.08	31.97	4.99	59.35	67.57
2001	460.08	80.41	7.20	107.14	59.75
2002	460.09	69.96	7.45	200.30	109.46
2003	598.10	46.68	16.95	138.65	79.44
2004	717.72	58.94	14.90	171.20	93.77
2005	933.04	93.29	17.91	226.47	120.04
2006	1,492.86	75.85	20.10	206.82	165.22
2007	1,928.23	104.65	71.50	292.00	185.77
2008	1,755.74	139.78	94.50	354.00	213.00
2009	1,586.72	93.44	81.00	356.00	181.00
2010	9.18	194.52	57.00	512.00	259.00
2011	9.90	90.03	197.00	592.00	371.00
2012	10.28	73.42	83.00	755.00	396.00
2013	11.48	67.65	92.00	565.00	390.42
2014	13.60	50.22	116.30	548.00	343.75
2015	14.11	10.22	114.60	779.00	492.03

Source: Central Bank of Nigeria Annual Financial Report and statement of Accounts

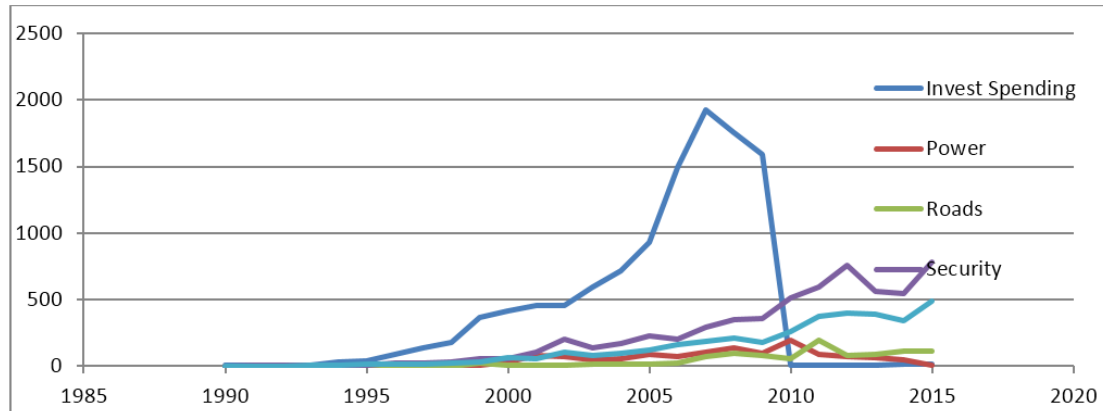
Manufacturing investment spending covers acquisition of Plant and machinery, buildings, motor vehicles and equipments. These assets are acquired by the manufacturing companies for the purpose of increasing the capacity level of the sector. Government expenditure on infrastructures is expected to provide the necessary environment for expansion of the operation of this sector. This section therefore examined Manufacturing sector investment on non-current assets in the last thirty years in relation to government expenditure on Power, Roads Security and Human Capital Development in Nigeria. In the table, manufacturing sector in the country spent about N1.16 billion on acquisition of non-current assets in 1986. In 1990 investment spending in this sector increased to N4.6 billion, that is more than three times after about five years. By the year 2000 the total spending of this sector on acquisition of non-current assets increased exponentially to about

N413 billion. It however attained a peak of N1.6 trillion in 2009 and began to decline. It fell to only N9.18 billion in 2010 and N14.11 billion in 2015. The Federal government of Nigeria's expenditure on Power in 1986 was only N177 million Naira, it rose to N194.5 billion in 2010 and fell to only N10.2billion in 2015, this decline may be attributed to the privatization of the sector. The table also shows that the Road expenditure by the government was N154 million in 1986; it increased to N197 billion in 2009and began to decline. As at 2015, it was only N114.6 billion. Security expenditure was N1.35 billion in 1986; it rose consistently through the years to about N779 billion in 2015. In the same way expenditure on Human Capital Development rose from N1.095 billion in 1986 to N492 in 2015. Except for Security and Human Capital Development, the fall in manufacturing investment expenditure occurred about the same years when government



spending on Power and Roads began to reduce. This is further illustrated with the Chart below

Chart



.Source: Researcher’s field survey

Chart shows the combined effect of all the variables. We can see that the dependent variable which is the manufacturing sector investment expenditure for the period was far higher than each of the independent variables. Curves for the independent variables of Power, Roads, Security and Human Capital Development are far below that of the dependent variables, that is the manufacturing investment spending curve. Incidentally the curves of the independent variables

show similar pattern of growth, the manufacturing investment curve showed no significant relationship with the other curves. The curve for the dependent variable eventually came down to below the curves of the independent variables. This shows that there is a need for government to increase its spending on Power, Roads, Security and HCD significantly to impact on the manufacturing investment performance in Nigeria.

Descriptive Statistics

Statistics	Manufacturing Investment	Power	Road	Security	Human Capital Development
Mean	376.54	43.48	34.44	201.46	121.95
Median	38.09	21.09	7.33	83.25	63.66
Mode	1.16	.14	.15	1.29	.65
Std. Deviation	582.09	50.38	49.47	244.39	146.24
Skewness	1.67	1.16	1.67	1.14	1.18
Kurtosis	1.66	1.18	2.61	.11	.25
Range	1927.07	194.38	196.85	777.71	491.38
Minimum	1.16	.14	.15	1.29	.65
Maximum	1928	194.52	197.00	799.00	492.03
Jarque Bera	1.7137	0.3076	31.7442	9.1846	0.4609
Probability	0.4245	0.8575	0.0000	0.0101	0.7942

Source: Researcher’s field survey

Manufacturing Investment Expenditure: From the table, average value of the manufacturing expenditure data for the period is 376 while the median is 38. The Standard deviation which

measures the degree of dispersion of the data from the mean is 582. Although the standard deviation of 582 would appear to be on the high side, however, Jacque bera was 0.1714 with Probability value of



0.425, both skewness and kurtosis are 1.67 and 1.66 respectively showing that the data for manufacturing investment are normally distributed. Skewness measures the height of the distribution to the left or right. Kurtosis which is the extent to which the data are not symmetrical in the table has a positive value of 1.66 that is less than 3 indicating that the distribution is flat and relatively normal.. The maximum value is 1,928 while the minimum is 1.16 with a range of 1,927. The range indicates that

there was a tremendous increase in the amount of money spent by the manufacturing sector on non-current assets within the period. The significance of government spending on Manufacturing Investment Expenditure in Nigeria was tested with regression analysis based on our Hypothesis. Results of the regression are as stated in the co-efficient table below

Model Specification: $Y = f(X)$

$Y =$ Manufacturing Investment Expenditure

$X =$ Government Expenditure on Infrastructures

$X = x_1, x_2, x_3, x_4$

$x_1 =$ Government Expenditure On Power

$x_2 =$ Government Expenditure On Roads

$x_3 =$ Government Expenditure On Security

$x_4 =$ Government Expenditure On Human Capital Development

Model : $INVEXP = \beta_0 + \beta_1POWEXP_{it} + \beta_2 RODEXP_{it} + \beta_3SECEXP_{it} + \beta_4HCDEXP_{it} + \epsilon$

Model Summary Table

Model	R	R ² Square	Adjusted R ²	Standard Error of the estimate	Sig.F-Change	df1	Durbin-Watson
1	0.65	0.43	0.34	47.46	0.01	4	1.471

Source: Researcher's Field Survey

- a. Dependent Variable: Manufacturing Investment Spending
- b. Predictors: (Constant), HCD, Power, Road, Security

Correlations Table

		Manufacturing Investment	Power	Roads	Security	HCD
Pearson Correlation	Manufacturing Investment	1.000	.548	.163	.107	.109
	Power	.548	1.000	.523	.591	.545
	Roads	.163	.523	1.000	.872	.885
	Security	.107	.591	.872	1.000	.989
	HCD	0.109	0.545	0.885	0.989	1.000

Source: Researcher's field survey

- a. Dependent Variable: Manufacturing Investment Spending
- b. Predictors: (Constant), HCD, Power, Road, Security



COEFFICIENTS Table

Model	Unstandardized Coefficients		Standardized Coefficient	t-statistics	Sig.
	B	Std. Error	Beta		
(Constant)	129	12.39		1.041	0.31
POWEXP	9.60	2.31	0.83	4.15	0.00
RODEXP	1.41	3.88	0.12	0.36	0.72
SECEXP	-4.63	2.69	-1.94	-1.72	0.10
HCDEXP	5.85	4.58	1.47	1.28	0.21

Source: Researcher’s field survey

- a. Dependent Variable: Manufacturing Investment Spending
- b. Predictors: (Constant), HCD, Power, Road, Security

ANOVA Table

Model	Sum of Squares	Df	Mean Squares	F	Sig.
Regression	41947	4	10486	4.65	0.01
Residual	56308	25	2252		
Total	98256	29			

Source: Researcher’s field survey

- a. Dependent Variable: Manufacturing Investment Spending
- b. Predictors: (Constant), HCD, Power, Road, Security

$$INVEXP = 129 + 0.096POWEXP_{it} + 0.014RODEXP_{it} - 0.046SECEXP_{it} + 0.0585HCDEXP_{it} + \varepsilon$$

III. Findings

Results of the Regression Analysis are contained in the tables. R which is the correlation between Government expenditure on the four independent variables and Manufacturing Investment Spending as the dependent variable is 0.65. This value indicates that there exist a high positive correlation between the independent and the dependent variables. We can also see from the correlation table that each of the independent variables is positively correlated to the dependent variable. Power has the highest correlation of 0.55 to the manufacturing investment, followed by Roads with 0.16 while the rest independent variables, that is Security and Human Capital Development(HCD) have approximately 0.1 each. The inference to draw from these values is that both the dependent and independent variables move in the same direction.

Although with the values of 0.1 for both security and HCD the relationship is weak. Increase in government expenditure on Power and Roads will cause a positive increase in manufacturing investment spending. However for Security and HCD spending by government, their relationship with manufacturing investment is a weak one. The value of R² in the model summary is 0.43, showing that 43 percent of the variation in the value of the

dependent variable is explained by the independent variables. R² measures the strength of the relationship between Manufacturing Investment Spending and Government Expenditure on Power, Roads, Security and HCD. It shows that the coefficients β is not zero. Adjusted R² of 0.34 is relatively high, this statistics tell us what happens to R² when more independent variables are introduced. The standard error of the estimate which is 47.46 is relative small considering data used in the regression while Durbin Watson statistics of 1.47 shows existence of non-autocorrelation in the data used. Result of the model for this relationship is re-stated below.

In the coefficient table, the value of the constant is 129, this is the value of the dependent variable when all the independent variables are held constant. The t-statistics of 1.042, less than 2 with a significant value of 0.31 shows that the constant value does not have a significant relationship with the manufacturing investment spending. Coefficient of Power that is β₁ is 9.60 indicates that 9.6% of a change in dependent variable is contributed by the government expenditure on Power. The standard error of this variable is only 2.31 with t-statistics of 4.15 and the significant value of 0.000 showing that Power expenditure is highly significant to the



change in manufacturing investment spending. Road expenditure by the government on the other hand contributes only 1.4% to change in investment spending in the manufacturing sector. It can be seen from the coefficient table that the coefficient of this variable, β_2 is 1.4 and the standard error is only 3.88, the t-statistics is 0.36 far less than 2, this explains why the probability value is higher than 0.05. The p-value is 0.72 showing that there is no significant relationship between government expenditure on roads and manufacturing investment spending in spite of the so much money spent by government on roads annually. It can also be seen from the table that the coefficient of Security β_3 has a value of -4.63. This result shows that security spending does not contribute to increase in manufacturing investment rather it reduces it. Even though the standard error of this variable is low at 2.68, with a t-value of -1.72, this variable has no significant relationship with manufacturing spending. This is revealed with the p-value of 0.097. HCD has a β value of 5.58, a coefficient showing that 5.58% change in manufacturing investment is caused by government spending on education in Nigeria. The standard error is 4.59 with t-value of 1.28 less than 2 and the p-value of 0.213 indicating there is no significant relationship between this independent variable and the manufacturing sector spending on acquisition of non-current assets.

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ANOVA table indicate fitness of the model to the hypothesis tested. F-value which is the Mean Square Regression (10486) divided by the Mean Square Residual (2252) is 4.65, the P-value associated with the F-value as shown in the significance column is

0.01, this is less than 0.05 indicating fitness of the model to the hypothesis. We therefore accept the null hypothesis which says there is no significant relationship between government spending on Power, Roads, Security and Human Capital Development and manufacturing investment expenditure.

IV. Conclusion and Recommendations

The results of our study show that government expenditure on Power, Roads, Security and Human Capital Development did not have significant effect on manufacturing investment expenditure on non-current assets in Nigeria. We therefore recommend that government expenditure on infrastructures be restructured to make it have positive effect on manufacturing companies' financial and operational performances in Nigeria. Restructuring will mean reviewing upward the percentage of total spending allocated to each of the expenditure items



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