MANUFACTURING INDUSTRIES AND EXPORT GROWTH IN THE NIGERIAN ECONOMY

Christian E. BASSEY
Department of Economics, University of Calabar, Calabar.

Mathew M. AGBA
Department of Economics and Statistics, University of Benin, Benin City.

ABSTRACT

This study analyses the performance of the manufacturing industries and export growth in the Nigerian economy between the periods of 1980 and 2015 using annual time series data sourced from the Central Bank of Nigeria. The method of co-integration and error correction mechanism (ECM) were used to capture the short and long-run relationship between the dependent (Non-oil export,) variable and independent (Manufacturing Capacity Utilization, Exchange Rate, Foreign Direct Investment, Interest Rate an Index of Manufacturing Productivity) variables.

The analysis began with the unit root test for the variables using the Augmented Dickey Fuller (ADFJ test statistic. The empirical results of the study showed very high explanatory power of the model and the co-integration test (Unit root test for the residual series) indicates that the variables are co-integrated that is they all converge in a long-run. The study found out that manufacturing industries are a significant determinant of non-oil export growth. Based on the findings, the study recommends that adequate policies and institutional framework should be put in place by the Nigerian government in order to regulate and control exchange and interest rates in the economy so as to stimulate vigorous performance of the indigenous manufacturing industries sand also patronage of made in Nigeria goods by Nigerians.

Keywords: Manufacturing, Export Growth, Non-oil export, Economy, Nigeria.

INTRODUCTION

There is no doubt that manufacturing export remains one of the most powerful engines for economic growth. It acts as a catalyst to transform the economic structures of countries, from simple slow value activities to more productive activities that enjoy greater margins driven by technology and having higher growth prospects (Albaledjo, 2008). The manufacturing sector has become the main means for developing countries to benefit from globalization and be able to bridge the income gap with the Industrialized world, this is evident in the rapid development of Asian Tigers (Amakom, 2012). The manufacturing sector is known to exhibit a "Pull effect" on the other sector of the economy by stimulating the demand for more and better services in banking, insurance, communication and transportation. This sector has been confirmed the main vehicle for technological and human development and has been known today to represent the hub of technical progress not just in developed countries but also in developing ones (Amakon, 2012). Generally speaking, the manufacturing sector plays a catalytic role in a modern economy and has many dynamic benefits crucial for economic transformation (Loto, 2012).

In any advanced economy or even growing economy, the manufacturing sector is a leading sector in many aspects. It is an avenue for increasing productivity in relation to import replacement and export expansion, creating foreign exchange earning capacity, rising employment and per capita income, which causes unique consumption patterns (Loto, 2012). Furthermore, it creates investment capital at a faster rate than any other sector of the economy while promoting wider and more effective linkages among different sectors (Ogwuma, 1995). In Nigeria early efforts in the manufacturing sector were oriented towards the adoption of an import substitution strategy in which light industry and assembly related manufacturing ventures were embarked upon by the former trading companies. Up to about 1970 the prime mover in the manufacturing activities was the private sector which established some agro-based light manufacturing units such as vegetable oil extraction, plants, tobacco etc. The import-dependent industralisation strategy virtually came to a halt in the late 1970s and early 1980s when the liberal; importation policy expanded the import of finished goods to the detriment of domestic production. This led to relative decline in manufacturing production of exportable and thus, little diversification in products and production processes was achieved (Loto, 2012). The study therefore seeks to determine how manufacturing industries impacts on export growth in Nigeria.

The specific objective of this study is to evaluate how the index of manufacturing industries affect non-oil export in Nigeria.

LITERATURE REVIEW AND THEORETICIAL ISSUES

Most, if not all international trade and development theories portray a positive relationship between the volume of trade and economic growth right from classical comparative advantage model of David Ricardo, the neo-classical model of Hecksher and Ohlin to the contemporary endogenous growth models (Ibrahim, 2011). We now begin by examining some of these theories to have surgical theoretical background about the study.

The Ricardian model of comparative advantage was developed by David Ricardo in 1817. This model of comparative advantage, assert that a country should specialize in the export of commodities that it can produce at lowest cost". Example Germany may be able to produce cameras and cars as well as fruits and vegetables at lower absolute unit cost than Kenya but because the commodity cost difference between countries are greater for the manufactured goods than for agricultural products it will be to Germany's advantage to specialized in the production of manufactured goods and exchange them for Kenya's agricultural products where as Kenya which has absolute disadvantage in the production of both goods in relation to Germany will specialize in the production of agricultural produce which the absolute disadvantage is less than that of manufactured goods (Todaro and Smith, 2009). It is this phenomenon of differences in comparative advantage that gives rise to beneficial trading partners (Ibrahim, 2011).

Soderbom (2001) in trying to find the drive behind manufacturing export in Africa found that there is a subtler picture of exporting behaviour in African manufacturing than implied trade theory. African firms according to the study even within the same industries are highly heterogeneous in their ability to transformation inputs to output, and this kind of ability is important for firms to be able to export and compete in world market (Amakon, 2012).

Nashimizu and Robinson (1994), accepted the hypothesis that export growth cause productivity growth in Japan, Turkey, Yugoslavia and south Korea. They concluded that the larger the share of output that goes into export the higher the productivity growth. As evidence supporting the statement that "manufacturing is the engine of growth" (Kaldor, 1952) has argue

that growth iii non manufacturing output responds positively to the growth of manufacturing. The explanation for the correlation between the growth of manufacturing output and the overall performance of the economy is to be found on the impact of the former on the growth of productivity on the economy.

According to Thirwall (1983), there are two reasons for expecting a strong relationship between the growth of manufacturing industry and the growth of the overall economy. The first is that productivity growth in industry is closely related to growth of manufacturing output, which in turn is related to the existence of returns related to the size and scale of production units and are largely a feature of manufacturing. The second induced effect is that manufacturing growth has an overall growth factor that is, the faster the growth of manufacturing the faster the rate of transfer of labour from other sector of the economy.

Rosenstein Rodan in his "BIG PUSH" theory opined that there is a minimum level of resource that must be devoted to a development programme if it is to have any chance of success. Launching a nation into self-sustaining growth especially through manufacturing is like an airplane taking off the ground. The theory states that a bit-by-bit process will not launch a nation's development path, rather a minimum amount of investment is required. This calls for the acquisition of external economies that arise from the simultaneous establishment of technically interdependent industries (Ellis and Wallich, 1961).

Ayodele and Falokun (2003) in their work examined the structure of the Nigeria industrial sector with emphasis on the manufacturing subsector. In their analysis, it was observed that industralisation is central to economic growth and development this is because the excess labour resources in the country are expected to be absorbed by the desire positive development in the process of industralisation.

The Import Substitution Industrialisation Strategy (ISIs) pathway was informed by the work of prebisch (1950) and singer (1950) known as the prebisch-singer thesis. The thesis provide justification for 1ST policies on tool for economic development. The result of the study greatly influenced developing countries that were involved in the production of primary commodities to diversify their economies and lessen their dependence on primary commodities export through the development of the manufacturing sector (Prebisch, 1950).

Egwakhide (1997), presents a review of studies on Nigeria's import substitution industrialization. Evidence from the study shows that the implementation of this model of development aggravated the problem of balance of payments as it increasingly relied on foreign input, technology and expertise for production. It is inferred from the study that while it was easy for Nigeria to achieve the early stage of import substitution industrialization, it was exceedingly difficult to proceed to the more difficult stage of producing capital goods.

From figure 1 the Industrial sector output which comprises of Crude

petroleum and Natural gas (60%), Solid minerals (1 %),Manufacturing(1 7%), Utilities (13%), Building and Construction (9%),is dominated by Crude oil production.

Figure 1: Structure of Nigerian Industrial Output (2011) in percentage
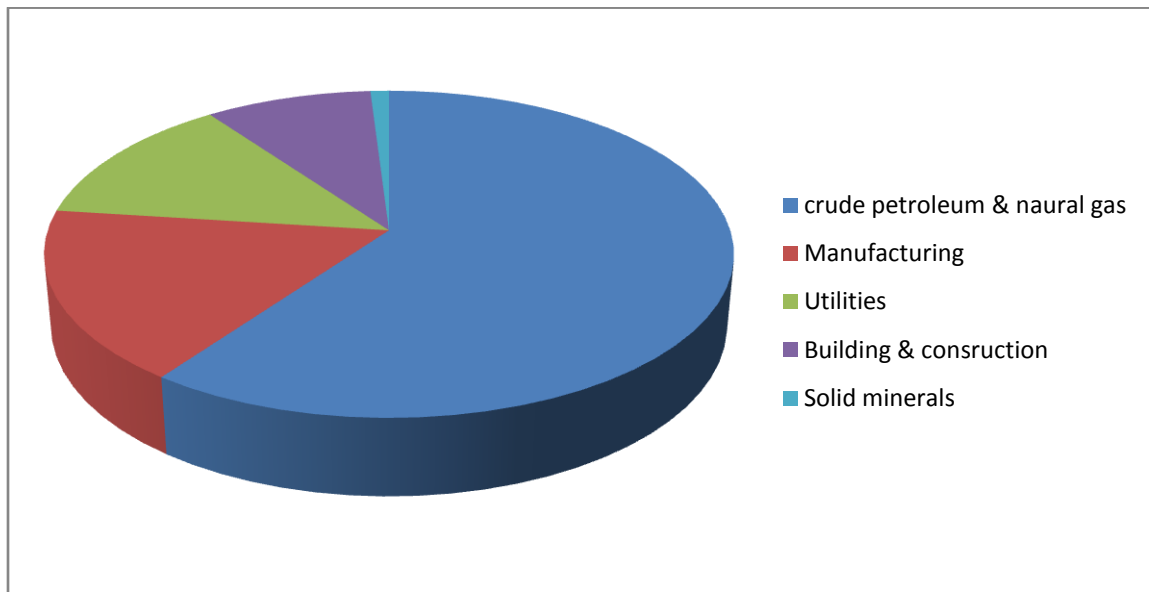
Source: National Planning Commission and National Bureau of Statistics Data (2011)

In table 1, it shows that there is low value addition to the manufacturing sector, arising from poor state of infrastructure, unimplemented industrial polices and low investment in the Nigerian Manufacturing sector. Data from NBS reveals that growth in the industry sector decelerated in 2011 by 2.4% as against 5.95% in 2010, largely due to a decline in the oil and gas sector. Accordingly the contribution of the industry sector to overall GDP growth dropped substantially from 19.39% in 2010 to 8.28% in 2011. Similarly, the share of the industry sector in overall real

GDP declined slightly to 24.35% in 2011 from 25.52% in 2010.Also Manufacturing sector percentage(%) of GDP was stagnated at 4.16% in 2010 and 2011.

Table 1: Value-Added in the Industrial sector 2010-2011

Activity sector	Nominal GDP (Naira Billion)		Real GDP (Naira billion)		(%) growth rate	
	2010	2011	2010	2011	2010	2011
Industry	15,194.56	16,092.83	158.19	160.35	5.95	2.41
Coal Mining	0	0	0	0	8.8	8.74
Crude petroleum	14,505.76	15,275.68	123.29	122.52	5.25	0.57
Metal Ores	0.04	0.05	0.01	0.01	11.59	11.35
Quarrying & mining	45.69	52.38	2.65	2.95	12.08	11.48
MANUFACTURING	643.07	694.72	32.26	34.71	7.57	7.6
Oil Refinery	61.31	70.65	1.05	1.12	7.28	6.25
Cement	22.33	25.79	0.68	0.75	10.56	10.72
Other Manufacturing	559.53	598.28	30.53	32.84	7.51	7.57
Electricity	67.43	77.13	23.35	24.07	2.96	3.05
Water	2.86	3.28	1.15	1.27	10.2	10.18
Building & construction	394.67	456.04	15.45	17.35	11.85	12.96

Source: National Planning Commission and National Bureau of statistics (2011)

Table 2: Share of sectors to GDP

Activity sector	Contribution to growth		(%) of GDP	
	2010	2011	2010	2011
Industry	19.39	8.38	25.52	24.35
Coal Mining	0	0	0	0
Crude petroleum	10.72	1.22	15.88	14.71
Metal Ores	0	0	0	0
Quarrying & mining	0.5	0.53	0.34	0.35

MANUFACTURING	3.96	4.29	4.16	4.16
Oil Refinery	0.12	0.11	0.14	0.13
Cement	0.11	0.13	0.09	0.09
Other				
Manufacturing	3.72	4.05	3.93	3.94
Electricity	1.17	1.25	3.01	2.89
Water	0.19	0.21	0.15	0.15
Building & construction	2.86	3.32	1.99	2.08

Source: National Planning Commission and National Bureau of statistics (2011)

MODEL SPECIFICATION

Based on the detailed theoretical exposition, a model has been specified in order to lend empirical support to the evaluation of the performance of manufacturing industries and export growth in the Nigerian economy thus;

NOILX=F (INMP, MCU, FDI, INTR, EXCR) ………………….. (3.1)

Where:

NOILX - Non —Oil export

INMP   - Index of manufacturing production

MCU   - Manufacturing Capacity Utilization

FD   - Foreign Direct Investment

INTR   - Interest Rate

EXCR   - Exchange Rate

Econometrically;

NOILX= β_o+ β_1INMP + β_2MCU+ β_3FD1+ , β_4INTR + $\beta5$EXRT+ μ…. equ. (3.2)

The log linear version of the above equation 3.2 is shown below.

LnNOILX= β_o +β_1InINMP+β_2InMCU+ β_3InFDI + β_4IINTR + β_5InEXRT + μ…….equ. (3.3)

NOILX (Non-oil export) is said to be a proxy used to capture export in the Nigerian Manufacturing sub sector.

The Apriori Specification for the expected co-efficient of the independent parameters is given as follows:

B_o, β_1, β_2, β_3, >0 and β_4, β_5 <0

From economic theory it implies that INMP, EDI and MCU Coefficient are expected to be positive while EXCR and INTR co-efficient are expected to be negative in order to enhance export growth of manufacturing industries.

DATA PRESENTATION AND ANALYSIS

Table 4.1: Unit root test results.

	Unit Root Test At Levels			Unit Root Test At 1st Difference With Intercept and no Trend			Unit Root Test At 1st Difference With Intercept and Trend		
Variables	ADF-Test	95% Critical Value	Remarks	ADF-Test	95% Critical Value	Remarks	ADF-Test	95% Critical Value	Remarks
NOILX	-3.8184	-3.57231	*	-3.6179	-2.9706	*	-3.6034	-3.5796	*
MCU	-2.8802	-3.5 7231	**	-3.103	-2.9706	*	-2.8014	-3 .5 796	**
EXCR	-1.1233	-3.5 7231	**	-3.4838	-2.9706		-4.0046	-3.5 796	
FDI	-3.8822	-3.5 7231	*	-3.1957	-2.9706		-3.1016	-3.5 796	**
INTR	-1.7443	-3 .5 7231	**	-4.875	-2.9706		-3.6034	-3.5 796	
INMP	-1.8841	-3 .57231	**	-3.829	-2.9 706		-3.556	-3.5 796	**

Note: Stationarity * Non- stationarity**

Source: Researchers computation

The result shown in Table 4.1 provides strong evidence that most time series are non-stationary in level. Non-Oil exports (NOILX) and Foreign Direct Investment (FDT) confirms absence of unit root and they are stationary. This is revealed from the assertion of the outcome of ADF test statistic for NOILX and PDI greater than 95% critical value for the ADF while the ADF test statistic for each of the other variables which are less than the 95% critical value for the ADF are non-stationary.

Also in the result presented above in Table 4.1 it shows the Unit Root Test in the first difference with intercept but no trend as all stationary in all variables

Moving further we obtain the first difference Unit Test result with intercept and a linear trend in Table 4.1. The result above directly indicates with each variable (after first differencing with intercept and a linear trend) been influenced by trend; Non-oil Export (NOILX) Exchange Rate(EXCR) and Interest Rate (INTR) were stationary and Manufacturing Capacity Utilization (MCN), Index of Manufacturing Production (INMP) and Foreign Direct Investment were non-stationary.

PRESENTATION OF CO-INTEGRATION RESULT

The Engle and Granger two-step is employed for the test of cointegration this method follows a simple procedure the dependent variable is regressed on all the independent variables and the residuals are obtained if the variables are co-integrated then the residual from the co integrating equation must be integrated to order zero(1(O) stationary). The result of the cointegration test is shown in Table 1.3

Table 4.2 -Cointegration Test Results

Variables	ADF Test- Statistics	95% critical value	Remark
Residual Vector	-5.9911	-5 .3084	Stationary

From table 4.2 Using the Engle and granger cointegration, the null hypothesis of no cointegration among the variable at the 5% level cannot be accepted. This is evident from the

fact that, in absolute values the ADF test Statistics is greater than the 95% critical value. This further implies that the residuals are stationary thus, the variable are cointegrated and therefore a long run relationship exist between the dependent and independent variable ie Non-Oil export (NOILX) and the regressors.

Table 4.3 Error correction representation for selected ARDL model.

Regress	Regressors	Co –efficient	T- Ratios
d NOILX	dLNOILX($_{-1}$)	0.47923	2.06
	dLNOILX($_{-2}$)	0.29582	2.16
	dLIMP	1.3478	3.22
	dLIMP($_{-1}$)	-0.5825	-1.30
	dLEXCR	-0.69277	-4.39
	dLFDI	1.3243	3.69
	dLFDI($_{-1}$)	-0.73 75	-2.66
	dLMCu	2.487	3.34
	dLMCu($_{-1}$)	3.3 798	3.49
	dLMCU($_{-2}$)	3 .4802	4.21
	dCm($_{-1}$)	-1 .7850	-6.42

$R2 = 0.90$ $\bar{R}2 = 0.800$ $F(12,16)$ $= 10.33$

See =0.1958

DW-Statistic = 1.63

ANALYSIS OF ERROR CORRECTION RESULTS.

However, all the variables except Foreign Direct Investment (FDJ) at first lagged period, Interest Rate (INTR) and first lagged period of index of Manufacturing Production (INMP..i) pass their apriori expectation. Based on the t-ratios of the variables from the ECM (Error Correction Mechanism) result, first lagged period of Index of Manufacturing production (INMP-

i) fail the t test at both 5% and 10% level of significance. While other variables at various current and lagged periods pass their t-test.

A close examination of the empirical results shows that the ECM was able to explain only 90% of the systematic variation in degree of non-oil export in Nigeria under the period of study as indicated by the value of R-Square (R2) . The overall fit is satisfactory with an adjusted co-efficient of determination (R2) vhich stood at 80% in approximate terms. The F- Statistic of 10.33 further provides a re-enforcement of the overall statistical significance at the 5% level. The co-efficient of ECM is negative (rightly signed) and significant at the 1%level, thus its ability to correct long-run deviation of the regress and is high. In other words it acts rightly to adjust any observed deviation of the regress and from its long-run equilibrium value. More so, with, the value of the ECM adjustment it shows that long-run adjustment to equilibrium is made during the first period.

The value of standard error of regression (see) which stood at 0.1958 implies that the model possess a better predictive ability and the D.WStatistic of 1.63 indicates the absence of auto correlation .Non-Oil export first and second lagged periods (NOILX-i and Noilx.2)have a positive but significant relationship with current Non-oil export (NOILX). Hence a unit increase in Non-oil export lagged periods will lead to a 0.47 and 0.29 units increase in current Non-Oil export respectively.

Current Foreign Direct Investment (FD1) has a significant positive effect on Non-oil export (NOILX). Therefore a unit increase in FDI will expand non-oil export by 1.32 units. But first lagged period of Foreign Direct Investment (FDI$_1$) has a negative but significant relationship with Non-oil export. This is not surprising because FDI in Nigeria's Manufacturing sector is essentially market seeking if its contribution to export is positive, then we will conclude that Foreign Direct Investment are not essentially attracted by the availability of domestic market in Nigeria but also by the presence of some economic fundamentals.

Interest Rate (INTR) has a positive but significant relationship with Non-oil export (NOILX) instead of a negative relationship as stated in the *apriori* expectation. This arises due to the persistent use of Monetary Policy Instrument in combating inflation in Nigeria over the

years. Hence government seek to increase interest rate so as to combat money supply or money in circulation.

Manufacturing capacity utilization at current, first and second lagged periods (MCU, MCU-i and MCU-2) have a positive but significant relationship with non-oil export (NOILX). In Nigeria iow manufacturing sector capacity utilization rates have largely been blamed on frequent power outages, lack of funds to procure output and this reduced the demands for locally manufactured goods.

Index of manufacturing production at current takes a positive but significant impact. The reason is in tandem with loto (2012) findings which states that manufacturing sector plays a catalystic role in modern economy as if creates avenue for increased production and export expansion.

Conclusively given the results, it can be said that the regressors use during the period of study are major determinant of the nations (Nigeria) Non-oil export growth. Hence we reject the null hypotheses that the variables used are not determinants of non-oil export growth in Nigeria.

POLICY IMPLICATIONS

Examining the various results of the study, it suggests a number of implications firstly the positive impact of lagged period. Non-oil export suggests that every current Non-oil export policies will be felt in the next period in the economy. Furthermore the significant positive impact of Manufacturing Capacity Utilization (MCLI) suggest that the business environment of Nigeria has a strong potential to influence the performance and gross utilization of resources in the manufacturing sector.

In addition, the significant positive effect of Interest Rate (INTR) implies that the use of interest rate as monetary policy mechanism will have a multiplier effect on investment in the economy.

It is observed that current and pervious period Foreign Direct Investment are positive and negative respectively. The implication indicates that the business environment of the Nigerian economy has been observed to be very uncertain due to insecurity, infra structural decay and unfavourable governmental and industrial polices.

SUMMARY, RECOMMENDATION AND CONCLUSION

Based on the regression analysis it was found out that;

a)   Previous years level of Non-oil export has a positive impact on the current year's Non-oil export. I3ased on their t-ratios. This was attributed to the fact that every current non-oil export policies will be expected to be felt in the next year period by the citizens.

b)   Foreign Direct Investment has a positive effect on Non-oil export in Nigeria. But one period lagged Foreign Direct Investment has a negative effect showing the uncertainty in the Nigerian business environment.

c)   Exchange Rate has a significant negative impact on Non-oil export

d)   Interest Rate has a positive but significant effect on non-oil export. This was attributed to the fact that interest rate is seen as a major monetary policy instrument used in combating inflation on the Nigeria economy.

e)   Previous and current years manufacturing capacity utilization have a significant positive effects on Non-oil export in Nigeria.

Recommendations

Based on the analysis and findings of this study, the following recommendation were made;

i.   Government must create enabling environment in the area of infrastructural provision, security and quality control in the economy. With these measures it will promote attraction of more capital inflow, foreign direct investment, there by enhancing manufacturing export in the economy.

ii.   The Nigerian government sequentially should put in place number of policies, reforms and incentive so as to encourage the production and export of non-oil tradable.

Furthermore bringing about a reduction in the nation's level of dependence on the dominance of crude oil or what can be describe as monocultural foreign trade.

iii. Value re-orientation should be created by the Nigerian government for Nigerians so as to encourage the production patronage and exports of made-in-Nigeria product.

iv. Finally the Nigerian government should create adequate measure to prompt provision of loan at low interest rate for local and infant industries manufactures.

Conclusion

The empirical evidence of manufacturing industries and export growth as examine in this study indicates the existence of a positive relationship importantly in the study, Foreign Direct Investment, Non-oil export policies, Interest Rates were seen as major catalyst of Non-oil export growth in the Nigerian economy over the years.

The study also revealed the need for Nigeria to seek manufacturing export as a viable alternative to oil which is a dominant export product in Nigeria. It is also noted in the study that exporting non-oil products offers a greater viable alternative to oil in export earning and economic development for Nigeria. Therefore Nigerian government should put in place adequate institutional and strategic policies to encourage indigenous Nigerian manufacturing firms to prosper both domestically and internationally so as to manifest the desired economic transformation in the economy.

REFERENCES

- Amakon,U. (2012), " Manufactured Export in sub-Saharan African Economies: Econometric Test for the learning by Exporting hypothesis". American International Journal of contemporary Research, Vol.2, No.4 April.

- Albaladejo, M. (2003) "Industrial realities in Nigeria: from bad to worse", Working Paper number 101, Queen Elizabeth House

- Bigsten, A & Soderbom, M. (2006), "What have we learned from a decade of manufacturing enterprise surveys in Africa" The World bank Observer 21(2):241-265

- Central Bank of Nigeria (2010), Annual report CBN Abuja

- Dickey, D.A. and Fuller, W.A. (1981) "Likelihood Statistics for Auto regressive time series with a Unit root" Econometrics 49 (4) pp.1057- 1572.

- Egwaikhide, F.(1997) " Import Substitution Industralisation in Nigeria". The *Nigerian Journal of Economics and Social Science*

- Falokun, G. & Ayodele, A. (2003) The Nigerian Economy Structure and pattern of Developing. JODAD publishers.

- Falokun, G. O. (1998), "Sources of Industrial growth in Nigeria: A factor Decomposition Approach" NISER Monograph series No. 12, NISER Ibadan.

- Tyoha, M.I. (2004), Applied Econometrics, Second Edition, Mindex Publishing, Benin City.

- Kaldor, N. (1968) "Productivity and Growth in Manufacturing Industry". A Reply Economics New Series, 35 (140) 385-391

- Loto, M. (2010) "Global Economic Downturn and the Manufacturing

- Sector Performance in the Nigerian Economy (A Quarterly Empirical Analysis)".*Journal of Emerging Trends in Economics*

- Manufacturers Association of Nigeria (2012) http//www. Manufacturing Nigeria Sector.org

- National Bureau of Statistics (2010) Manufacturing Industry of Nigeria, NBS Abuja

- Soderbom, M & Teal, F. (2001) "Skills Investment and Exports from Manufacturing Firm in Africa" Center for the Study of African Economies (CASE) UNIDO, Working paper No.5

- Thirwall, A.P. (1998) Growth and Development in Developing Economies" Third Edition Macmillan, London

- Tizhe, A.N. (2012)," Trade liberalization and industrial performance in Nigeria At levels". A PhD Proposal submitted to the Department of Economics and Statistics University of Benin, Benin City.

- Todaro, M. & Smith, C. (2009), Economic Development lOth edition, Pearson Addition Boston.