TITLE PAGE

AN ASSESSMENT OF THE IMPACT OF MANUFACTURING SECTOR ON ECONOMIC GROWTH IN NIGERIA (1981 – 2010)

A RESEARCH PROJECT

BY

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EC/2009/711

SUBMITTED TO

THE DEPARTMENT OF ECONOMICS

FACULTY OF MANAGEMENT & SOCIAL SCIENCES

CARITAS UNIVERSITY

AMORJI – NIKE, ENUGU – NIGERIA

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF SCIENCE DEGREE IN ECONOMICS

(B.Sc. HONS)

AUGUST, 2013.

APPROVAL PAGE

This project work has carefully been read, supervised and approved as having satisfied the pre conditions for the award of Bachelor Of Science(B.Sc) Degree in the Department of Economics , Faculty of management and social Sciences, Caritas University, Amorji-Nike, Enugu.

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DEDICATION

To the Almighty God.

ACKNOWLEDGEMENT

I remain eternally grateful to God Almighty for life, strength and good health; to him I give all glory, praise and honour.

Thanks to my wonderful parents Mr. & Mrs. Nkpa Inakwu, my brothers and sisters; Mr. Esidene Inakwu, Miss Kolitem Inakwu, Miss Iwi Inakwu, master John Inakwu and all the entire members of the Inakwu family for their wonderful support, care and encouragement towards my education.

My special thanks go to my beloved husband, Mr. Peter Ushie for all his love, support and encouragement towards the successful completion of my B.Sc.

I also sincerely appreciate my supervisor, Mr. Peter E.C.Osodiuru for his guidance and supervision during the course of this research.

Also, my profound gratitude goes to my H.O.D, Mr. P.C. Onwudinjo (Esq.), my lecturers: Sir Uche, Dr. Umeadi, Mr. Ojike, Prof. Onah, Prof. Udabah and others whose names are not mentioned here.

My special recognition also goes to these people who in one way or the other contributed positively to the success of this Bachelor degree in Economics. They are Mr. & Mrs. Igbe Aruku, Mr. Sylvester Attah, Sis. Favour Udey, Mrs. Cecilia Nteghe, Mr. Innocent Udey, other friends to include are Racheal Akpotive, Ebere Udogwu, Uju Obichukwu and all my course mates.

ABSTRACT

This research work examines econometrically the impact of manufacturing sector on economic growth in Nigeria, from 1981 to 2010. It assesses the effect of manufacturing output (mangdp), investment (inv), government expenditure (govexp) and money supply (m_2) on log of real gross domestic product (lrgdp). Appropriate multiple regression model is specified with parameters, which are estimated using the ordinary least square (OLS) technique. Test of hypothesis is carried out and the result shows a positive and significant relationship between manufacturing output and economic growth in Nigeria within the period under investigation. Among other recommendations the study opines that manufacturing outfits should be encouraged by the government through policy packages such as tax holiday and other helpful concessions in order to enhance manufacturing output in the country

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Prolonged economic recession occasioned by the collapse of the world oil market from the early 1980s and the attendant sharp fall in foreign exchange earnings have adversely affected economic growth and development in Nigeria. Other problems of the economy include excessive dependence on imports for both consumption and capital goods, dysfunctional social and economic infrastructure, unprecedented fall in capacity utilization rate in industry and neglect of the agricultural sector, among others (Ku et al, 2010; Adesina, 1992). These have resulted in fallen incomes and devalued standards of living amongst Nigerians.

Although the structural adjustment programme (SAP) was introduced in 1986 to address these problems, no notable improvement took place. From a middle income nation in the 1970s and early 1980s, Nigeria is today among the 30 poorest nations in the world. Putting the country back on the path of recovery and growth will require urgently rebuilding deteriorated infrastructure and making more goods and services available to the citizenry at affordable prices. This would imply a quantum leap in output of goods and services.

The path to economic recovery and growth may require increasing production inputs - land, labour, capital and technology - and or increasing their productivity (Kayode and Teriba, 1977). Increasing productivity should be the focus because many other countries that have found themselves in the same predicaments have resolved them through productivity enhancement schemes. For instance, Japan from the end of the World War II and the United States of America from the 1970s have made high productivity the centre point of their economic planning and the results have been resounding. Also, middle income countries like Hong Kong, South Korea, Singapore and India have embraced boosting productivity schemes as an integral part of their national planning and today they have made significant in-roads into the world industrial markets.

Given the importance of high productivity in boosting economic growth and the standards of living of the people, it is necessary to evaluate the productivity of the Nigerian manufacturing sector. This will be useful in ascertaining the relative efficiency of firms, sub-sectors and sectors. A knowledge of the relative efficiency of industries in relation to economic growth and development could aid government in planning its programmes and policies, especially in deciding on which industries should be accorded priority. In the light of the foregoing, there cannot be a more appropriate time to evaluate the role of the Nigerian manufacturing sector in the economic growth and the development of the country than now.

1.2 STATEMENT OF THE PROBLEM

The history of industrial development and manufacturing in Nigeria is a classic illustration of how a nation could neglect a vital sector through policy inconsistencies and distractions attributable to the discovery of oil (Adeola, 2005). The near total neglect of agriculture has denied many manufacturers and industries their primary source of raw materials. The absence of locally sourced inputs has resulted in low industrialization.

Some of the constraints faced in this sector include:

- High interest rates
- Unpredictable government policies
- Non-implementation of existing policies
- Lack of effective regulatory agencies
- Infrastructural inadequacies
- Dumping of cheap products
- Unfair tariff regime
- Low patronage

It is in the light of the foregoing that this study seeks to evaluate the role of the manufacturing sector in the Nigerian economy.

1.3 OBJECTIVES OF THE STUDY

The broad objective of this study is to appraise critically, the role of the manufacturing sector in Nigerian economy.

The specific objectives of the study include:

1. to investigate the impact of the manufacturing sector on the economic growth and development of Nigeria.
2. to assess the level of productivity in the Nigerian manufacturing sector.
3. to identify the major constraints confronting the Nigerian Manufacturing sector.
4. to find out the various policy measures available to the government that can be used to redress the persistent decline in the manufacturing production.

1.4 RESEARCH QUESTIONS

The study would examine the following questions:

1. To what extent has the Nigerian manufacturing sector contributed to the economic growth and development of the country?

2. What has been the performance of the Nigerian manufacturing sector?
3. What are the constraints that are confronting the manufacturing sector?
4. What policy measures could be adopted to redress the persistent decline in the manufacturing production?

1.5 STATEMENT OF RESEARCH HYPOTHESIS

The hypothesis tested in the course of the analysis is stated below:

H_0: that the manufacturing sector does not contribute significantly to Nigerian economy.

H_1: that the manufacturing sector contributes significantly to Nigerian economy.

1.6 SIGNIFICANCE OF THE STUDY

This study on the impact of manufacturing sector on economic growth in Nigeria is significant in the following ways:

i. It will influence various economic units both in the public and private sectors of the Nigerian economy;

ii. The research report will be a veritable source of information to various categories of students as well as researchers wishing to conduct further research in this area;

iii. It will be relevant topolicy makers especially when making policy decisions on the choice of policy that will suit the Nigerian manufacturing sector.

Finally, the study will be useful to institutions outside the ones mentioned above.

1.7 SCOPE OF THE STUDY

This study evaluates the role of the Nigerian manufacturing sector in relation to the growth of the economy. The major constraints that confront the sector would be identified in the course of examining the overall development in the sector since the adoption of SAP.

The analysis of the contribution of the manufacturing sector to the economic growth of Nigeria shall be restricted to the period from 1981 to 2010 using only relevant performance indicators such as index of manufacturing, sector's contribution to the Gross Domestic Product (GDP) and other control variables.

Most of the information and data needed for the study would be gathered from existing literature and from relevant government agencies such as the Central Bank of Nigeria, National Bureau of Statistics (NBS), Manufacturing

Association of Nigeria (MAN) as well as international organizations such as United Nations Industrial Development Organization (UNIDO).

1.8 DEFINITION OF TERMS

(i) Productivity: It has been defined by Economists as the ratio of output to input in a given period of time. In other words, it is the amount of

output produced by each unit of input.

(ii) Economic Development: This is the ability of a nation to expand its output at a rate faster than the growth rate of its population. Economic development viewed in this way has to do with growth of per capita GNP which will also determine the standard of living of the people.

(iii) Trade Liberalisation: This is the elimination of non-tariff barriers to imports, the rationalisation and reduction of tariffs, the institution of market determined exchange rates and the removal of fiscal disincentives and regulatory deterrents to exports.

(iv) Industrial policy: This is a systematic government involvement, through specifically designed policies in industrial affairs, arising from the inadequacy of macroeconomic policies in regulating the growth of industry.

(v) **Economic liberalization:** This is a replacement of a state-led economy to private sector dominated economy. It focuses on privatization, deregulation of

foreign investments, trade liberalisation, deregulation of credit policy and the introduction of the Foreign Exchange Market (FEM).

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

African countries continue to liberalize their domestic economies with a view to integrating into the world economy, and to this end their barriers to imports are gradually reduced. Integration offers them the opportunities to join in world economic expansion amidst formidable challenges, and undoubtedly creates competitive pressures for efficiency gains. Efficiency gains, in terms of increased value added, productivity, profitability and wages, do not seem to be abundant across African manufacturing firms, and there is little evidence that the overall performance of the manufacturing sector has improved significantly. Enhanced efficiency gains also tend to remain concentrated with dynamic firms, their affiliates and enterprises that capture market niches through quick leverage with new industrial realities, but the vast majority fails to plug into the sources of dynamic industrial growth.

This chapter considers the current literature which deals with the manufacturing sector. Although, many of the studies reviewed in this chapter did not address the Nigerian manufacturing sector directly, their findings are considered applicable to the Nigerian scenario. Importantly, the studies discussed in this chapter represent only a small subset of the studies conducted

on the manufacturing sector, and were chosen to be illustrative rather than comprehensive.

2.2 ROLE OF MANUFACTURING SECTOR IN AN ECONOMY

Historically, the growth in manufacturing output has been a key element in the successful transformation of most economies that have seen sustained rises in their per capita incomes. In most of Africa, performance in this area has been poor over the last decades. The lack of high-quality data constitutes a major impediment for rigorous policy relevant research on African industry, and the majority of previous economic research on Africa has therefore been based on aggregate data.

Opaluwa et al (2010) opine that the manufacturing sector plays catalytic role in a modern economy and has many dynamic benefits that are crucial for economic transformation. They noted that in an advanced country, the manufacturing sector is a leading sector in many respects; it is an avenue for increasing productivity in relation to import substitution and export expansion, creating foreign exchange earning capacity, raising employment, promoting the growth of investment at a faster rate than any other sector of the economy, as well as wider and more efficient linkage among different sectors.

Obasan and Adediran (2010) argue that when industrialisation is compared to agriculture, the manufacturing sector offered special opportunities for capital accumulation. They explained that capital accumulation can be more easily realised in spatially concentrated manufacturing than in spatially dispersed agriculture. This is one of the reasons why the emergence of manufacturing has been so important in growth and development. Obasan and Adediran (2010) note that the contribution of the manufacturing industries in the Nigerian economy cannot be over emphasized when considering its employment potentials and financial impacts on the economy. Apart from its role of building grounds for development by laying solid foundation for the economy, they argue that it also serve as import substituting industry and provide ready market for intermediate goods.

Al Awad M. (2010) adopted a newly developed panel cointegration techniques to study the role of manufacturing in non-oil economic growth of the Gulf Cooperation Council (GCC) countries and found that manufacturing is strongly linked to GCC non-oil economic growth over the long run, in the way that income and population are both important to stimulate manufacturing in the GCC, especially income. However, results for the short run demonstrate that manufacturing efforts in the GCC countries have no significant effects on stimulating the growth levels of real non-oil GDP and that government spending

might not be effective in terms of deriving the growth of non-oil GDP or stimulating diversification efforts in the GCC countries over the sample period.

Loonet (1995) assessed the contribution of the manufacturing sector to the economic growth of Pakistan during the period of economic reform and liberalisation and found that although, the growth in large scale manufacturing output has not accelerated in recent years nor has its overall contribution to GDP growth increase, there is some evidence that the activity in the sector has begun to take on some of the classic characteristics associated with leading sectors. Loonet (1995) noted that this pattern of growth may be as a result of past government decisions to increased allocations to research and development or expanded funding of technical education.

Udah (2010) investigates the impact of industrial development and electricity supply on economic development in Nigeria from 1970 to 2008 using the endogenous growth model. The result of the causality tests was poor, suggesting that the contribution of the industrial sector to economic development was below the expectation. Udah attributed the poor causality to poor infrastructure especially electricity supply.

2.3 REVIEW OF PRODUCTIVITY

The economic theory of production provides the analytical framework for most empirical research on manufacturing. At the core of the theory is the production function, which postulates a well-defined relationship between a vector of maximum producible outputs and a vector of factors of production. Historical analyses of total factor productivity change conceptualize it as the change in output level controlling for input levels, i.e., the vertical shift of the production function.

Understanding the character of factor productivity has been a critical concern to economic scholars. As Nelson (1981) observed: The first kind of question probably has received the most attention. It is noteworthy, therefore, that despite all the effort to make the “residual” go away it still is very much with us. And despite all the effort to give substance to its interpretation as “technological advance” or “advance of knowledge”, that interpretation is far from persuasive. It is known that the residual accounts for a number of factors, but these are difficult to sort out.

A number of studies have attempted to characterize productivity change as embracing technological advance, changing composition of the work force, investments in human capital, reallocation of resources from lower to higher productivity activities, and economies of scale (Nelson, 1981). To Nadiri (1970),

“productivity change is both the cause and the consequence of the evolution of dynamic forces operating in an economy - technical progress, accumulation of human and physical capital, enterprise and institutional arrangements”.

Despite the haziness underlying the broad issue of manufacturing/productivity, the specific theme of trade policy and productivity growth has much more robust and clear-cut theoretical formulations underpinning it. One such theoretical construct is the x-efficiency argument. To recapitulate: development economists for a variety of reasons routinely argue that trade protection reduces industrial sector efficiency. In markets characterized by entry barriers, the absence of foreign competition allows domestic producers to enjoy monopoly power and excess profits. Consequently, these firms may fail to produce at minimum efficient scale (achieve “scale efficiency”) and/or to get the maximum possible output from their input bundles (achieve “technical efficiency” or “x-efficiency”).

This scenario is reversed when there is more liberalization and greater opening up to international competition. There is an implicit “challenge response” mechanism induced by competition, forcing domestic industries to adopt new technologies to reduce x-inefficiency and generally to reduce costs wherever possible. According to this argument, export expansion is good and so too is import liberalization. While the policy of increasing imports may restrict

the market for domestic goods, it also increases competition and hence induces greater efficiency (Nishimizu and Robinson, 1983).

Increasing returns formulation provides another line of argument common in the development literature. The contention here is that production costs will decline when markets are widened as a consequence of freer trade. Kaldor (1967) attributed this to the presence of scale economies, while Vedroom (1947) expressed it in terms of labour productivity (the phenomenon was subsequently called "Vedroom's law" after him). The argument is usually cast in terms of the benefits of expansion in demand through increased exports.

A third theoretical postulate linking trade and productivity is based on the literature on foreign exchange constraints. In developing countries, intermediate and capital goods imports are not readily substitutable with domestically produced goods. In a sense, these imported inputs embody technologies that are unavailable to domestic producers and can only be obtained through imports. Consequently, policies that curb the availability of such imports, or make them more expensive, will lead to poor manufacturing performance. By contrast, policies that increase the availability of imported inputs or lower their cost (e.g., increased foreign aid or an export-led development strategy) will lead to cost reductions to domestic industries and hence to better productivity performance.

Technological catch-up models constitute another strand of the theoretical framework. Rodrik's (1988) work contains a framework in which the representative firm's rate of catch-up to international productivity levels depends positively on its market share. In his view, trade reforms would likely accelerate the transition to state-of-the-art technologies among exportables and decelerate the process among import competing sectors.

Another formulation by Rodrik (1988) contends that one way domestic producers compete is through choice of technique. Hence, producers could tacitly collude when protected from foreign competition by failing to modernize their plants; trade liberalization may induce defection from the collusive equilibrium. It is pertinent to note that the foregoing theoretical formulations are not mutually exclusive. The current state of knowledge does not make it possible to discriminate finely among them. Indeed, it may not be possible to state with any real confidence what is the direction of causation, as the possible relationships are myriad.

The literature on this theme has been growing. Copious documentation can be found in Havrylyshyn (1990). Tybout's (1991) contribution was in the exploration of new research directions, while Edwards (1989) was preoccupied with the survey of the empirical literature linking economic growth to trade policy. Since the Bhagwati (1978) and Krueger (1978) studies of trade regimes

pioneering the explicit analysis of the relationship between trade policy and productivity growth, a considerable body of knowledge has accumulated on the subject. Expectedly, these studies are distinguished by the polarization of views about the magnitude and direction of causation between both variables. Nishimizu and Robinson (1983), for example, explored the impact of trade regimes on sectoral Total Factor Productivity (TFP) growth within a quantitative framework in a study embracing Korea, Turkey and Yugoslavia with Japan as the comparator. Their analysis, conducted within the purview of inter-industry differences, leads them to conclude that substantial portions of the variation in TFP growth rates are explained by output growth allocated to export expansion and import substitution in Korea, Turkey and Yugoslavia, but interestingly not in Japan. Nishimizu and Robinson conclude that import substitution regimes seem to be negatively correlated with TFP change, whereas export expansion regimes are positively correlated with TFP change.

Studies in a similar mould include that by Bergsman (1991) conducted for Brazil. Having identified two categories of firms, the low-cost inefficient firm with high profit and the high cost “quiet life” inefficient firm, Bergsman found that protection affords both firms more imports, which one used to be technically lazy and comfortable and the other to achieve higher profits through greater efficiency.

Krueger and Tuncer's (1982) study of Turkey also bears noting. Using sector level data, they provided stronger support for the efficiency gains to be derived from liberalization and concluded that periods of greater liberality have coincided with periods of faster growth in total factor productivity.

Parallel conclusions have also been reached by Condon, Corbo and de Melo (1985) for Chile, Page (1980) for India, and Pitt and Lee (1981) for the Indonesian weaving industry. There are contrary views on the association between trade liberalization and productivity growth, however; Tsao (1985) finds for Singapore, a country with extremely rapid growth of industrial exports, that productivity growth in the 1970s is negligible or negative in some sectors of manufacturing. Pack (1988) also wrote that "comparisons of total factor productivity growth among countries pursuing different international trade orientations do not reveal systematic differences in productivity growth in manufacturing". After reviewing studies based on within-country temporal correlations, Pack (1988) and Havrylyshyn (1990) both conclude that there is no strong evidence linking productivity and openness.

2.4 STRUCTURE OF NIGERIAN MANUFACTURING SECTOR

Nigeria's manufacturing value added (MVA) of an estimated $3.4 billion in 1985 ranks her as Africa's largest manufacturing economy after Egypt and

twelfth among developing countries. Yet despite two decades of growth boosted by import substituting policies, Nigeria's manufacturing sector remains heavily import dependent. According to Opaluwa et al (2010), the Nigerian economy is under-industrialized and its capacity utilization is also low. They stated that the sector has become increasingly dependent on the external sector for import of non-labour input. This has been the inevitable outcome of a perverse incentive structure that accelerated the growth of import intensive consumer goods and light assembly industries contributing relatively little value-added under high protective walls while decelerating growth of local resource-based industries. For example, the share of food and textile products in manufacturing output fell from 51% in 1973/74 to 36% in 1977/78, while the share of durable goods with low value added rose from 7% to 19% during the period. Within the durable goods sub-sector itself, the share of transport equipment, which has low value added, rose from about one-tenth of one percent to 11% during 1971/72–1977/78. The net effect of this is that import dependency was fostered in the manufacturing sector in the 1970s.

The manufacturing sector encapsulates a wide range of industrial activities, from informal sector enterprises using simple technology to heavy capital goods industries in the automotive and electrical equipment sector. Out of this, a wide spectrum of light consumer goods dominates the manufacturing profile. These have been nurtured and reinforced by regimes of “easy” import

substitution, localization of assembly and final processing of relatively simple products. The earliest attempt at manufacturing saw the establishment of agro-based industrial concerns such as vegetable-oil extracting plants, tanneries and tobacco processing units. Textiles, breweries and cement manufacturing concerns soon followed.

The structure of manufacturing production has been a derivative of the various developments plans. The First National Development Plan (1962–1968) emphasized light industry and assembling activities. The second plan (1970–1975) had a somewhat similar thrust and focus, but the emphasis shifted in the third plan (1975–1980) towards heavy industries. Major projects were initiated in the steel and petroleum refinery sector. For the fourth plan (1980–1985), the broad direction was in consonance with the third: it retained the stress on heavy industries. But several of the grandiose plans were short changed with the onset of profound economic crisis in the early 1980s. The ensuing balance of payments difficulties forced the authorities to reschedule or outright jettison some projects. The iron and steel sub-sector was particularly seriously hit by these developments.

Consumer goods industries dominate the sector in terms of both value added and employment. These industries accounted for as much as 75% and 70% of the sector's total value added and employment, respectively, in 1984.

The leader in the sub-sector is food, beverages and tobacco, contributing 32 and 20% of value added and employment in 1984. It is followed by textiles and wearing apparel, paper products and printing, plastic and rubber products, etc. In the food sub-sector, the key activities include baking, grain milling, processing of dairy products and sugar, and confectionery processing. Beverages inclusive of beer and soft drinks contribute as much as 20% of the manufacturing sector's value added. The textile industry also contributes significantly to value added and employment. The share of intermediate goods in value added declined from about 24% in 1971/72 to 19% in 1984.

Similarly, their share of manufacturing employment also fell from 29% to 23% over the same period. Metalworking, and chemicals and paints were the most important sub-sectors in this category in terms of their relative contribution to value added, while metalworking, sawmill and wood products, and building materials were the leading sub-sectors in terms of employment in the 1970s. Cement processing constituted a very important activity within the building materials category; cement plants were expanded and new ones established in the 1970s in an effort to meet the housing and infrastructure development programme.

Today, many of the cement plants face the problem of low capacity utilization despite the presence of considerable excess demand, which has

induced high retail prices and windfall profits for middlemen. Capital goods industries are still relatively less important. As a share of value added, they rose from less than 1.3% in 1971/72 to 9% in 1977/78, reaching a high of 22% in 1980, before declining to 7% in 1984. The poor performance of the heavily import dependent vehicle assembly plants accounts for most of the decline in the group's share. The group's share in employment is about 7%. Other features of the manufacturing sector include low value added, high production costs deriving from the exorbitant cost of plant and equipment, high cost of construction and of expatriate skilled labour, the fact that firms provide infrastructure investment themselves, and the high geographical concentration of public investment around highly capital-intensive sectors by international standards (steel, fertilizer, pulp and paper, cement, petrochemicals, etc.). According to the 1984 survey of manufacturing enterprises by the Federal Office of Statistics, domestic value added was only 14% of the value of gross output and over two-thirds of the raw materials were imported.

To offer insights into the relative position of manufacturing in the output profile, the structure of the gross domestic product (GDP) for Nigeria between 1960 and 2009 is being examined. From a modest 4.8% in 1960, manufacturing contribution to GDP increased to 7.2% in 1970 and to 7.4% in 1975. In 1980 it declined to 5.4%, but then surged to a record high of 10.7% in 1985. By 1990, the share of manufacturing in GDP stood at 8.1%. As at 2001 the share of

manufacturing in GDP dropped to 3.4%. Obasan and Adediran (2010) opine that the Nigerian manufacturing sector is sick arguing that the productive sector is in a crisis as its average contribution to the nation's Gross Domestic Product over the past few years has not gone beyond 5%. They attributed this to many years of neglect and maladministration on the part of successive military and civilian governments, coupled with corruption and indiscriminate policy reversals.

2.5 EVALUATION OF THE PERFORMANCE OF NIGERIAN MANUFACTURING SECTOR

Perhaps owing to the complexities involved in constructing productivity index, there is little or no data on productivity levels in the Nigerian economy in general and the manufacturing sector in particular. Alao (2010) evaluated the productivity of Nigerian manufacturing sector using the Error Correction Model (ECM) and found that interest rate spread and exchange rates have negative impact on the growth of manufacturing sub-sector in Nigeria. He also found out that the rising index of manufacturing sub-sector is a reflection of high inflation rate and cannot be interpreted to mean a real growth in the sector. His findings further revealed that liberalization of the Nigerian economy has promoted manufacturing growth between 1979 and 2008.

Ad hoc studies conducted during 1989 indicated that, on the average, there was little rise in productivity (Akinlo, 1996). In Oshoba's study (1989) on food and basic metal industries, only 30 per cent of respondents indicated they had rising productivity. About 11 per cent recorded no growth, while more than half, 57 per cent, recorded declining productivity levels. In the same vein, the Manufacturers Association of Nigeria (MAN) confirmed that the general trend in productivity in industry was negative in 1989. Indications are that the situation has worsened since then.

In the absence of data on productivity in the sub-sector, data on other indicators of performance can be reviewed. These include manufacturing production annual growth rate, capacity utilization rate and the sub-sectors' share in the gross domestic product (GDP). The growth rate in the sub-sector was relatively high in the period 1966-75 at an annual average of 12.9 per cent. This reflected the importance which the government attached to manufacturing activities and the adoption of import substitution industralisation strategy from independence which resulted in the establishment of many consumer goods industries, including soft drinks, cement, paints, soap and detergents. Growth in the sector expanded in the period 1976-85 with the establishment of more import substitution industries, with an annual average growth of 18.5 per cent. The oil boom of the era which provided enough foreign exchange for the importation of needed inputs – raw

materials, spare parts and machinery - provided the impetus for this phenomenal growth.

However, with the collapse of the world oil market from the early 1980s and drastically reduced foreign exchange earning capacity, the sub-sector was no longer able to import needed inputs. Hence, manufacturing output growth fell drastically to an annual average of about 2.6 per cent during the period 1986-98, even with the introduction of SAP in 1986. In fact, for the period 1993-98, growth in the sub-sector was negative.

Capacity utilization rate followed the same downward trend, from an annual average of 53.6 per cent in the period 1981-85 to 41.1, 35.4 and 31.8 per cent during the periods 1986-90, 1991-95 and 1996-98. It however rose to 40.42 between the period 1999-2003. In addition, the sectors' share in the gross domestic product fell persistently, from 9.2 per cent in 1981-85 to 8.3 per cent for period 1986-90, 7.5 per cent in 1991-95 and 6.3 per cent in 1996-98 (CBN, 2003).

These negative trends in the performance of manufacturing production cannot but indicate falling productivity. The average growth of 2.6 per cent during the SAP period fell short of the expected rate of at least 8 per cent needed to put the sector on the path of recovery. Its stunted growth constrained the capacity of the reform process to pull the economy out of

recession. In addition, capacity utilization rate at about 30 per cent is low to make for profitable operations estimated at about 50 per cent. Its share of about 6 per cent of GDP is also poor when compared with between 20 and 40 per cent in many industrialised and industrialising nations. Worst still, it is not encouraging when it is recognised that over 60 per cent of the nation's foreign exchange earnings is allocated to a sub-sector that contributes only about 6 per cent of the GDP.

Ku et al (2010) note that in the 1960s and 1970s after the country's independence, the Nigerian manufacturing sector had been developing positively as a result of direct foreign investment. They revealed that the foreign companies had introduced new manufacturing technology that saved time and cost, and improved the quality of the products manufactured. However, Ku et al (2010) note that from the end of 1980s to date, many problems were found that were responsible for low growth and development in the manufacturing sector. According to them, some of these problems were dependency on oil for income, weak infrastructure, shortage of skilled labour, lack of adequate financial resources, lack of proper management and planning, and so on. They concluded that it is essential to work towards resolving all these problems in order to rejuvenate Nigerian manufacturing establishments so that the manufacturing sector can play an important role in the country's economic development.

Adeola (2005) identified the most important constraints to productivity growth in Nigeria as (1) the absence of a consistent and long-term strategy for productivity improvement; (2) the extensive dominance of the public sector in the economy, which stifles private sector initiatives and operations; (3) the very weak corporate linkages among the various sectors of the economy – business linkages facilitate innovation, higher productivity through specialization and flexibility in meeting customer needs, and enables economies of scale; (4) the weak linkage between the educational system and the requirements of the economy; and (5) the poor functioning of the labour and capital markets.

2.6 OVERVIEW OF NIGERIAN INDUSTRIAL POLICY

Industrial policy can be defined as a systematic government involvement, through specifically designed policies in industrial affairs, arising from the inadequacy of macroeconomic policies in regulating the growth of industry. Instruments of industrial policy include subsidies, tax incentives, export promotion, government procurement, and import restrictions. Other policies such as direct government investment or nationalization of foreign investment formed the core of industrial policy from the 1970s to 1986. However, macroeconomic policies such as exchange rate, monetary policy, trade policies, still shape investment decisions.

The development of the Nigerian industrial policy involved through two key stages. They are as follows:

a) The first period (1970 – 1985) covers the state-led import substitution industrialization strategy. The main focus is on the economic role of government through direct investments, administration of a protectionist trade regime, and the introduction of schemes such as indigenisation and preferential credit to nurture indigenous entrepreneurs (Adekoya, 1987). It is argued that the roles assumed by the government, gave it a leadership role in the economy and direct control over the welfare of individual private businesses.

The government's strategy during this period simply involved attracting and encouraging foreign capital to engage in manufacturing activities. The role of the government was limited to providing infrastructure and other public utilities, as well as administering industrial incentives. Immediately after the civil war, a new approach became manifest. The Nigerian government emerged with a new nationalistic vigour. This was embodies in the Second National Development Plan. The government would now pursue a policy of progressive elimination of foreign dominance, both in terms of ownership, management and technical control. To this effect the Nigerian Enterprise Promotion Decree was enacted. Government investments would no longer be limited to public utilities and dying industries, but would be directed into other dynamic sectors.

The government increased its participation in industry through new investments and nationalization of some categories of foreign-owned businesses. Expansion of agro-industry, petroleum and petrochemicals, diversification of the textile industry, development of iron and steel industry, car assembly plants and export oriented industry were top of the list. This new strategy was encouraged and facilitated by the 1973 – 1975 “oil boom’, which saw government’s total revenue increase by 500% in just one year.

b) The second period (1986 – Present) lays emphasis on the economic liberalization policies that replaced the state-led import substitution industrialization strategy and nationalization policy (Adekoya, 1987). Government’s policy in this period focuses on privatization, deregulation of foreign investments, trade liberalisation, deregulation of credit policy and the introduction of the Foreign Exchange Market (FEM). Privatisation and deregulation has resulted in the reliance of market, rather than state regulation, and is reducing the role and power of government relative to the private sector.

Economic liberalization in Nigeria was introduced as part of the Structural Adjustment Programme (SAP). This was necessitated by a balance of payment crisis, which was caused by a world oil market glut in the early 1980s. At that stage, government had invested heavily in a diversified portfolio of industrial

projects. The poor returns of these projects, however, could not justify the enormous public funds that had been committed to their execution. In fact, many industrial projects in which huge amounts had been expended remained largely uncompleted. This led to government's realization that its accelerated industrial development hinges critically on increased private sector participation.

Industry provides a typical example of a sectoral aspect of sustainable development: industrial issues - cutting across the environmental, economic and social dimensions - figure prominently in the sustainability debate.

Environmental constraints to development are acutely felt in the industrial sector in relation to both production and consumption of manufactured goods. While most problems arising from the consequences for the environment of the consumption of industrial products are an economy-wide concern, environmental effects of industrial production fall within the purview of the industrial sector alone. Here the key to solving many of the problems lies in technology. Since environmental problems caused by industrial production are due to so-called external effects - outside the realm of the market mechanism - corrective policy measures are needed to reduce or eliminate such effects. The response of industry to such policies is in almost all cases of a technological nature. Hence industrial technology and its continuous innovative change - if

properly shaped by market and policy incentives - makes an important contribution to solving the environmental sustainability problem.

Economic development is crucially dependent on industrial development, both with respect to the industrial sector's pivotal contribution to economic growth and - even more conspicuously - with regard to the structural transformation of an economy. The importance of the latter is underlined by the fact that economic development is largely thought of as being synonymous with industrialization.

2.7 THEORETICAL FRAMEWORK

The economic theory of production provides the analytical framework for most empirical research on productivity. At the core of the theory is the production function, which postulates a well-defined relationship between a vector of maximum producible outputs and a vector of factors of production. Historical analyses of total factor productivity change conceptualize it as the change in output level controlling for input levels, i.e., the vertical shift of the production function. Consequently, factor productivity has been given such labels as the “residual”.

A number of studies have attempted to characterize productivity change as embracing technological advance, changing composition of the work force, investments in human capital, reallocation of resources from lower to higher productivity activities, and economies of scale (Nelson, 1981). To Nadiri (1970: 12), “productivity change is both the cause and the consequence of the evolution of dynamic forces operating in an economy - technical progress, accumulation of human and physical capital, enterprise and institutional arrangements”.

Despite the confusion underlying the broad issue of productivity, the specific theme of trade policy and productivity growth has much more robust and clear-cut theoretical formulations underpinning it. One such theoretical construct is the x-efficiency argument.

Development economists for a variety of reasons routinely argue that trade protection reduces industrial sector efficiency. In markets characterized by entry barriers, the absence of foreign competition allows domestic producers to enjoy monopoly power and excess profits. Consequently, these firms may fail to produce at minimum efficient scale (achieve “scale efficiency”) and/or to get the maximum possible output from their input bundles (achieve “technical efficiency” or “x-efficiency”).

This scenario is reversed when there is more liberalization and greater opening up to international competition. There is an implicit "challenge response" mechanism induced by competition, forcing domestic industries to adopt new technologies to reduce xinefficiency and generally to reduce costs wherever possible. According to this argument, export expansion is good and so too is import liberalization. While the policy of increasing imports may restrict the market for domestic goods, it also increases competition and hence induces greater efficiency (Nishimizu and Robinson, 1983).

Increasing returns formulation provides another line of argument common in the development literature. The contention here is that production costs will decline when markets are widened as a consequence of freer trade. Kaldor (1967) attributed this to the presence of scale economies, while Vedroom (1947) expressed it in terms of labour productivity (the phenomenon was subsequently called "Vedroom's law" after him). The argument is usually cast in terms of the benefits of expansion in demand through increased exports.

A third theoretical postulate linking trade and productivity is based on the literature on foreign exchange constraints. In developing countries, intermediate and capital goods imports are not readily substitutable with domestically produced goods. In a sense, these imported inputs embody technologies that are unavailable to domestic producers and can only be

obtained through imports. Consequently, policies that curb the availability of such imports, or make them more expensive, will lead to poor productivity performance.

By contrast, policies that increase the availability of imported inputs or lower their cost (e.g., increased foreign aid or an export-led development strategy) will lead to cost reductions to domestic industries and hence to better productivity performance.

Technological catch-up models constitute another strand of the theoretical framework. Rodrik's (1988) work contains a framework in which the representative firm's rate of catch-up to international productivity levels depends positively on its market share. In his view, trade reforms would likely accelerate the transition to state-of-the-art technologies among exportables and decelerate the process among import competing sectors. Another formulation by Rodrik (1988) contends that one way domestic producers compete is through choice of technique. Hence, producers could tacitly collude when protected from foreign competition by failing to modernize their plants; trade liberalization may induce defection from the collusive equilibrium.

It is pertinent to note that the foregoing theoretical formulations are not mutually exclusive. The current state of knowledge does not make it possible to discriminate finely among them. Indeed, it may not be possible to state with

any real confidence what is the direction of causation, as the possible relationships are countless.

2.8 THE PROBLEM OF CAPACITY UTILIZATION IN ECONOMIC GROWTH.

The Nigerian Manufacturing sub-sector depends excessively on importer inputs. Its performance therefore, depends on the cost and availability of foreign exchange needed for the importation of raw materials, spare parts and machinery with much reduced foreign exchange earnings in the 1990s, brought about by the substantial fall in crude oil prices, the capacity of Nigeria local industries to import inputs declined sharply with a corresponding fall in manufacturing output. During the 1990 to 2001 period, manufacturing output declined, on annual average by 0.4 percent, attributable to the negative growth rate recorded in 1993 (20.4%), 1994 (0.9%), 1995 (5.5%) and 1998 (3.9%). The positive growth recorded in the other years was not sufficient to offset the negative growth.

As expected, the manufacturing capacity utilization rate moved in the same direction as output growth. From an average of 40.3 percent in 1990 and a pack of 42.0 percent in 1991, it trended downwards to 29.3 percent in 1995, rose marginally to 32.5 percent in 1996, and fell marginally to 30.4 percent in 1997, and thereafter risen continuously to 39.6 percent in 2001.

Many reasons have been advanced for decreasing capacity utilization level; these include increased cost of production, raw materials, and increased cost of borrowing which limit employment. Lack of foreign exchange to produce raw materials. General decreasing demand which occasioned an accumulation of finished goods and unfavourable changes in the tariff system.

2.9 EMPIRICAL REVIEW

Different studies have been conducted on manufacturing capacity utilization, its determinants and how it impacts growth in different economies of the world. However, a number of such studies have been selected as essential for elaborating research done in the area of manufacturing capacity utilization.

Corrado and Mattay (1997) researched on how manufacturing capacity utilization impacts on real growth, inflation, and short run costs. In their report on the United States Industrial Sector, they showed how capacity utilization can impact on economic growth using the non- parametric tool of correlation analysis. Their empirical findings were that a correlation of 0.9 existed between annual changes in the real output of goods and the index of capacity utilization for manufacturing. More importantly, they posted that movements in capacity utilization can be taken as stemming primarily from shocks to aggregate

demand, which pushes the economy along an upward-sloping aggregate supply curve. They found that capacity utilization in the manufacturing sector was indicative of the cyclical state of overall aggregate demand and for this reason the predictive power factory operating rates for inflation had long endured. Most fluctuations in aggregate output came from changes in the demand for goods and new structures. In short, capacity utilization in manufacturing was found to be indicative of the fact that the final demand for services contributed little to overall business fluctuations.

Gajanan and Malhotra (2007), conducted a study on the measure of the capacity utilization and its determinants on the Indian economy between 1976 and 1996 and discovered that there were substantial variations in capacity utilization both across industries and overtime. Their conclusions and findings are worth flagging. They noted substantial variations in capacity utilization both across industries and overtime. In general they found that capacity utilization rates were higher in earlier time period, dropped in the mid 80s and started rising in the early 90s. They confirmed a standard deviation result that variations in demand are a significant driving force for variations in capacity utilization and found capacity utilization to be positively related to the magnitude of labour intensity in production. The capacity utilization of Indian firms were sensitive to all input prices except the price of labour, that is, other factors of production like land and capital excluding labour. Their empirical

results also indicated that traditional measures of capacity utilization such as minimal capital output ratio and peak – to – peak ratio are not appropriate proxies for the short run decision making of the firm regarding capacity utililization. This latter evidence is one of the contributions of the research to mainstream economics because they made it clear that minimal capacity output ratio and peak – to – peak ratio are long term proxies for decision making of a firm, thus they should not be confused with short term policy measures for capacity utilization.

Youn Kin (1999), who develop and estimated a model of economic capacity utilization and its determinants by allowing for the firm's full optimization behavour while considering the endogenous output choice is worth flagging. The model was used to derive the short run output supply function which generated optimal and capacity output. Optimal capacity utilization was determined as the ratio of optimal to capacity output. The evidence from U.S manufacturing showed that capital expansion not accompanied by market growth and higher materials and capital prices contributed to lower capacity utilization. The cost of acquiring energy (or energy price increase) had exerted a stimulating impact on capacity utilization. In conclusion, conventional capacity utilization measures were found to be biased and failed to capture the influences of changes in economic conditions facing firms. In the context of this particular review work, I noted that capital expansion not accompanied by

market growth and higher materials and capital prices contributed to lower capacity utilization in the U.S manufacturing firms. Although the study did not cover the entire economy of the U. S it contributed immensely to the practice of capacity utilization measurement and what factors should be firmly considered if te manufacturing firm wants to raise capacity utilization growth so both should not be seen as trade-offs.

Lecraw (1978), developed the factors which influence the capacity utilization decision of 200 firms in the light manufacturing sector of Thailand during the period 1962 to 1974. The profit maximizing capacity utilization rate for each firm was calculated using the projected balance sheets and income statement prepared by the firms at the time of their initial investment. Firm's optimal capacity to be roughly twice the capacity utilization rates chosen by firms meaning that there was excess capacity resulting in insufficient demand to warrant the expansion of output in the light industries.

It is worth flagging that the manager's perceived risk of multi shift operations (Mr) has been criticized based on its weakness in influencing the capacity utilization of the firm growth theories of the firm suggest that managers desires commission and other benefits so they are willing to increase the sales of the firm because their commission is also important. In increasing output there would be some degree of multi – shift operations so that his commission can be

raised; but saying that the manager considers some risk implies that he is unable to raise the projected output that paves way for sales maximization and the raising of his commission.

James and Ragan (1979), investigated short term projections of manufacturing capacity utilization and used an equation linking growth in manufacturing output to growth in GNP and estimated additions to manufacturing capacity based on projections of investment. The model was then used to project capacity utilization from third –quarter of 1977 to fourth – quarter of 1978. Their results were that changes in capacity utilization from one period to the next depended positively on the volume of investment and negatively on the extent of depreciation which in turn depended on the level of capacity in the last period. As many economists have observed, investment accelerates as the volume of unused capital shrinks, that is, as the capacity utilization rises. Changes in investment were therefore specified to be a function of past changes in capacity utilization. The result showed estimates over the period 1954 to 1976. From the first equation, it was apparent that manufacturing output was more volatile than GNP, the large coefficient for GNP indicated that rapid GNP growth is on average accompanied by even GNP growth in manufacturing output. The coefficient of the second equation indicated that, in the absence of investment, capacity declines 3.35 percent, which was seen as the result of depreciation and obsolesce. Finally, equation

three indicated how investment accelerates as capacity utilization rises. The goodness of fit of all three equations was good and all coefficients were statistically significant from zero.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter is devoted to the research methodology adopted in this project. The chapter specifies the research design, sources of data analysed, data analysis procedure, data analysis technique, models specification etc.

3.2 RE-STATEMENT OF RESEARCH QUESTIONS

This study examines the following research questions:

1. To what extent has the Nigerian manufacturing sector contributed to the economic growth and development of the country?
2. What has been the performance of the Nigerian manufacturing sector?
3. What are the constraints that are confronting the manufacturing sector?
4. What policy measures could be adopted to redress the persistent decline in the manufacturing production?

3.3 RE-STATEMENT OF RESEARCH HYPOTHESIS

The hypothesis tested in the course of the analysis is stated below:

H_0: that the manufacturing sector does not contribute significantly to Nigerian economy.

H_1: that the manufacturing sector contributes significantly to Nigerian economy.

3.4 RESEARCH DESIGN

This study was designed to investigate empirically, the role of manufacturing sector in Nigerian economy. The research is necessitated by the dwindling performance of the manufacturing sector over the years. It adopts both the historical and ex-post facto research deign. While the former was used to study and appraise the chronological level of manufacturing output in Nigeria, the latter was used to establish a cause and effect relationship among the variables that correlate i.e manufacturing output, investment, government expenditure and money supply.

3.5 SOURCES OF DATA

Secondary data is the basis of data used in this study. They were sourced mainly from the publications of the Central Bank of Nigeria (CBN) namely; CBN Statistical Bulletin, CBN Statement of Accounts and Annual Reports, and Bureau of Statistics publications. The variables for which data were sourced include: manufacturing output, Gross Domestic Product and investment for the period 1981 to 2010.Government expenditure and money supply have been included as control variables.

3.6 DATA ANALYSIS TECHNIQUE

The analysis that was made in this study is based on time series data for the Nigerian manufacturing sector, and macroeconomic data. Due to the linearity nature of the model formulation, Ordinary Least Square (OLS) estimation techniques of regression analysis was employed in obtaining the numerical estimates of the coefficients in the model using Statistics/data analysis(stata) econometric software.

A multiple regression model was used in the estimation. The model seeks to investigate the effect of manufacturing output on the Gross Domestic

Product (GDP). The estimation period is restricted to the period from 1981 to 2010.

3.7 MODEL SPECIFICATION

The model to investigate the role of the manufacturing sector on Nigerian economy is stated below with the dependent variable as Gross Domestic Product (GDP), while the explanatory variables are: manufacturing output, investment,government expenditure and money supply.

MODEL

$$gdp = a_0 + a_1\, mangdp + a_2\, inv + a_3\, govexp + a_4\, M_2$$

Where gdp - Gross Domestic Product

Mangdp - Manufacturing output

Inv- Investment

Govexp- Government expenditure

M_2- money supply

a_0 , a_1 ,a_2 , a_3 and a_4 - Parameters

3.8 A' PRIORI EXPECTATION

Economic Criteria

This refers to the sign and size of the parameters in economic relationships. The expected relationship between the dependent and each of the explanatory variables shall be based on macro-economic principles.

$gdp = a_0 + a_1 mangdp + a_2 inv + a_3 govexp + a_4 M_2$

It is expected that $a_0 > 0$, $a_1 > 0$,$a_2 > 0$, $a_3 > 0$, $a_4 > 0$.

However, if the estimates of the parameter turn up with signs or size not conforming to economic theory, they should be rejected, unless there is a good reason to believe that in the particular instance, the principles of economic theory do not hold.

Statistical Criteria

This aims at the evaluation of the statistical reliability of the estimates of the parameters. In this line, the "t-statistics" will be employed to test the hypotheses concerning the true values of the population parameters. The "R^2 - Statistics is also employed as the coefficient for determination to measure the goodness of fit of the regression line to the observed samples values of the variable while the "F-statistics" will also be used to test the overall significance of the regression.

Econometric Criteria

It aims at detecting the violation or validity of the assumption of the econometric technique employed (i.e. OLS). For instance to test the validity of the assumption of non-correlated disturbances, the “Durbin Watson Statistic” would be used in the evaluation of the results of estimates.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1. PRESENTATION OF REGRESSION RESULT

The result of the OLS model is presented in the table below

Table 4.1.

Lrgdp	Coefficient	Standard Error	t-statistic	t-probability
Mangdp	.0000432	.0000121	3.58	0.001
Inv	2.63e-08	5.23e-08	0.50	0.619
Govexp	6.58e-07	8.31e-08	7.92	0.000
M2	-2.06e-07	3.18e-08	-6.47	0.000
constant	11.74754	.1588535	73.95	

R^2 =0.9584, F(4,25)=143.95(0.0000), DW=1.254677

4.2.INTERPRETATION OF REGRESSION RESULT

4.2.1. **ECONOMIC APRIORI TEST**

Manufacturing Output(mangdp)

From the result, manufacturing output has a positive coefficient of 0.0000432. The positive sign shown by this variable proves that it does conform to the theoretical expectation. Thus, it shows that manufacturing output is an incentive to economic growth. A unit increase in manufacturing output will increase economic growth by 0.0000432 unit.

Investment (inv)

The result shows a positive relationship between investment and economic growth. Investment has a coefficient of 2.63e-08, implying that a unit increase in investment will increase economic growth by 2.63e-08 unit.

Government expenditure (govexp)

With a positive coefficient of 6.58e-07, government expenditure is shown to be positively related to economic growth. A unit increase in government expenditure increases economic growth by 6.58e-07.

Money Supply (M_2)

Contrary to apriori expectation, money supply displays a negative coefficient of -2.06e-07. This is perhaps attributable to the influence of inflation considering the fact that log of real GDP has been used as proxy to economic growth. The foregoing can be safely ignored since money supply is not a major variable of interest in this study.

4.2.2. **STATISTICAL TESTS**

These tests are determined by statistical theory and aim at evaluating the statistical reliability of the estimates and parameters of model. From the sample observations, the first order test is carried out based on the following: R^2, t-test statistic and F-test.

Coefficient of Determination (R^2)

From the result, the coefficient of determination R^2 which is 0.9584 shows that the explanatory variables adequately explained the behaviour of the dependent variable (log of Real Gross Domestic Product). The result shows that approximately 96% of the variation in the dependent variable is explained by the explanatory variables.

The t-Test Statistic

This test is conducted to ascertain the significance status of each of the parameters or variables. In doing this, we consider the t-probability for each of the explanatory variables.

Hypothesis

H_0: The parameter is not statistically significant

H_1: The parameter is statistically significant.

variables	coefficient	t-values	t-probability	observation
mangdp	.0000432	3.58	0.001	significant
Inv	2.63e-08	0.50	0.619	Not significant
govexp	6.58e-07	7.92	0.000	significant
M_2	-2..06e-07	-6.47	0.000	significant
constant	11.74754	73.95	0.000	significant

Table 4.2 (t-statistic)

At 5% level of significance the above result in the table shows that manufacturing output (mangdp) which is the major explanatory variable of the study is statistically significant. Government expenditure (govexp) and money supply (m_2) are also statistically significant while investment is not.

This finding implies that manufacturing output (mangdp) has significant impact on economic growth in Nigeria within the period under study.

F-Test

To find out whether or not the model is adequate and well specified, we use the F-test. F(4,25)=143.95, F-Probability=0.0000. The model results show that at 5% level of significance the overall regression is statistically significant implying

that the model is well specified and adequate for forecasting and policy analysis.

4.2.3 EVALUATION BASED ON ECONOMETRIC CRITERIA (SECOND ORDER TEST)

Autocorrelation Test

The Durbin – Watson test shall be employed to test for autocorrelation

Hypothesis

H_0: The U's are not autocorrelated

H_1: The U's are autocorrelated

Decision Rule:

If d*<2, reject H_0 and accept H_1.

If d* $\geq$2,accept H_0 and reject H_1.

d*= 1.254677

Since d*>2,we reject H_0 and accept H_1 that the U's are auto correlated

Test for heteroscedasticity

We shall employ the White's heteroscedasticity test

H_o: there is no heteroscedasticity

H_1: there is heteroscedasticity

Prob(chi_2) = 0.3418

Since Prob(chi_2)> 0.05

We accept the H0 that there is no heteroscedasticity. We therefore conclude that there is no homoscedasticity at 5% level of significance. This implies that there is constant variance of the error term.

Multicollinearity

The table below shows the level of multicollinearity existing among the explanatory variables.

Table 4.3 (Multicollinearity)

Variables	Mangdp	M_2	Inv	Govexp
Mangdp	1.0000			
M_2	0.9566	1.0000		
Inv	0.8261	0.8008	1.0000	
Govexp	0.9556	0.9758	0.8368	1.0000

It can be seen from the above table that mangdp and M_2 are correlated (95.66%), mangdp and inv (82.61%), mangdp and govexp (95.56%), m_2 and inv (80.08%), m_2 and govexp (97.58%),inv and govexp (83.68%).

However, multicollinearity may not pose a serious problem. This is the case when R^2 is high and the regression coefficients are individually significant as revealed by the high t values (Gujarati and Porter, 2009).

Normality Test

The normality test adopted is the Jarque-Bera (JB) test of Normality.

Hypothesis

H_o: The error term follows a normal distribution

H_1: The error term does not follow a normal distribution at 5% level of significance with 2 degrees of freedom.

This test computes the skewness and kurtosis measures of the OLS residuals and it follows the chi-square distribution (Gujarati and Porter, 2009).

Decision Rule

Reject the null hypothesis if

Prob (Chi – square) ≤ 0.05

Accept the null hypothesis if

Prob (Chi – square) > 0.05.

Prob (Chi – square) = 0.4369

We therefore accept the null hypothesis that the error term follows a normal distribution.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

This research work seeks to assess the impact of manufacturing sector on economic growth in Nigeria. The dependent variable is log of Real Gross Domestic Product (Lrgdp) used as proxy for economic growth. The major explanatory variable is manufacturing output (Mangdp) which has been used as major proxy for manufacturing sector. Other explanatory variables are investment (inv), government expenditure (govexp) and money supply (M_2)

In line with the a priori expectation, the result shows a significant positive relationship between manufacturing output and economic growth. A positive relationship is also shown between investment and economic growth, though insignificant. Government expenditure is shown to have a significant positive relationship with economic growth. This also meets the a priori expectation. Contrary to a priori expectation in which an increase in money supply (M_2) leads to an increase in economic growth the result shows a negative relationship between the two variables. This has been attributed to the influence of inflation especially considering the fact that real GDP has been used as against nominal values.

R^2 value of 95.84% shows high goodness of fit implying that the explanatory variables adequately explained the behaviour of the dependent variables.

5.2 RECOMMENDATION

The study recommends as follows:

- That manufacturing outfits be encouraged by the government through policy packages such as tax holiday and other helpful concessions in order to enhance manufacturing output in the country.
- That financial authorities in Nigeria specify guidelines that will increase credit accessibility for investment in the manufacturing sector.
- That more emphasis be placed on technical education in Nigeria so as to strengthen the country's industrial base thereby enhancing manufacturing output.
- That strategies be put in place to increase the participation of the private sector in the economy.
- That industrial policy implementation be made consistent enough to impact appropriately on economic growth in Nigeria.

5.3 CONCLUSION

The impact of manufacturing sector on economic growth in Nigeria has been evaluated by a proper introduction of the subject, an extensive review of related literature and empirically addressing relevant hypotheses. In spite of the fact that the Nigerian economy is dualistic, more or less traditional, with a large rural agricultural sector and relatively small manufacturing sector on one hand, and monoculturally dependent on crude oil exports, it has been possible to specify appropriate model, whose parameter estimates have facilitated the estimation of the impact of manufacturing sector on economic growth in Nigeria.

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Notes:
      1.  You are running Small Stata.

. use "C:\Users\PETER\Documents\project_1.dta", clear

. reg lrgdp mangdp inv govexp m2

      Source |       SS       df       MS              Number of obs =      30
-------------+------------------------------           F(  4,    25) =  143.95
       Model |  5.71986669     4  1.42996667           Prob > F      =  0.0000
    Residual |  .248339098    25  .009933564           R-squared     =  0.9584
-------------+------------------------------           Adj R-squared =  0.9517
       Total |  5.96820579    29    .2058002           Root MSE      =  .09967

------------------------------------------------------------------------------
       lrgdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mangdp |   .0000432   .0000121     3.58   0.001     .0000184    .0000681
         inv |   2.63e-08   5.23e-08     0.50   0.619    -8.14e-08    1.34e-07
      govexp |   6.58e-07   8.31e-08     7.92   0.000     4.87e-07    8.30e-07
          m2 |  -2.06e-07   3.18e-08    -6.47   0.000    -2.71e-07   -1.40e-07
       _cons |   11.74754   .1588535    73.95   0.000     11.42038    12.07471
------------------------------------------------------------------------------

. tset year,yearly
        time variable:  year, 1981 to 2010
                delta:  1 year

. estat dwatson

Durbin-Watson d-statistic(  5,    30) =  1.254677

. estat imtest,white

White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(14)     =     15.55
         Prob > chi2  =    0.3418

Cameron & Trivedi's decomposition of IM-test

---------------------------------------------------
              Source |       chi2     df      p
---------------------+-----------------------------
  Heteroskedasticity |      15.55     14    0.3418
            Skewness |       6.02      4    0.1978
            Kurtosis |       0.38      1    0.5391
---------------------+-----------------------------
               Total |      21.94     19    0.2871
---------------------------------------------------

. predict residual, res
```

```
. sktest residual

                    Skewness/Kurtosis tests for Normality
                                                              ------- joint ------
    Variable |    Obs   Pr(Skewness)   Pr(Kurtosis)  adj chi2(2)     Prob>chi2
-------------+-------------------------------------------------------------------
    residual |     30      0.2156         0.9684         1.66         0.4369

. corr mangdp m2 inv govexp
(obs=30)

             |   mangdp       m2      inv   govexp
-------------+------------------------------------
      mangdp |   1.0000
          m2 |   0.9566   1.0000
         inv |   0.8261   0.8008   1.0000
      govexp |   0.9556   0.9758   0.8368   1.0000
```