INTRODUCTION

Prolonged economic recession occasioned by the collapse of the world oil market from the early 1980 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. 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 has taken 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. 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, the Philippines, India, Mexico and Brazil 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, its measurement cannot but be of importance to both policy markers and researchers. Productivity measurement can be used to evaluate the efficiency of an economy in relation to others. It will also be useful in ascertaining the relative efficiency of firms, sub-sectors and sectors. A knowledge of the relative efficiency of industries and their profitability could aid government in planning its programmes and policies, especially in deciding on which industries should be accorded priority. In addition, it will help the government in deciding the wage level as the input and output of labour will be well quantified. At the micro level, productivity measurement will, among others, aid production planning and sales, especially in checking cost, including wages, substitution of factors of production, reduction of wastes, etc.

In view of the foregoing, the objective of this paper is to attempt a review of the level of productivity in Nigeria’s manufacturing industry over the years. In order to address this and other related issues, the paper is divided into five sections. Following the introduction, Section II reviews the concept and measurement of productivity, while productivity in the Nigerian manufacturing industry, including identified constraints, is addressed in Section III. The necessary conditions for achieving high productivity in industry are the subject matter of Section IV, while Section V concludes the paper.

II. The Concept and Measurement of Productivity

Concept of Productivity

Enterprises produce goods and services for sale with the aim of making returns on their investments. The goods and services are the output of the enterprises. In the process of production, an enterprise makes use of scarce resources which are called factors of production, namely land, labour and capital. These factors of production are generally referred to as inputs in the production process and their owners are rewarded from the returns generated by the enterprise. How to combine the inputs to have a maximum result - greatest output with a given input - is the problem of productivity. Unfortunately, there is no universal definition of the term, 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. Business Managers, on the other hand, see productivity not only as a measure of efficiency, but also connotes effectiveness and performance of individual organisations. For them, productivity would incorporate quality of output, workmanship, adherence to standards, absence of complaints, customer satisfaction, etc (Udo-Aka, 1983).

The administrator is more concerned with organisational effectiveness, while the industrial engineer focusses more on those factors which are more operational and quantifiable, work measurement and performance standards (Adekoya, 1989). Productivity can be computed for a firm, industrial group, the entire industrial sector or the economy as a whole. It measures the level of efficiency at which scarce resources are being utilised. Higher or increasing productivity will, therefore, mean either getting more output with the same level of input or the same level of output with less input. Let us look at the sub-concepts.

Total-Factor Productivity: This is the ratio of output to the aggregate measure of the inputs of all the factors of production. Theoretically, this is the true measure of productivity as it incorporates the contribution of all the factor inputs.

Partial Productivity: There are many problems that are associated with measuring total-factor productivity. For example, it is difficult to construct an index number that will serve as the input. It will mean adding hours done by labour to units of investments, the contributions of land, technology, etc. to get a single index. Even to quantify them all in monetary terms is very cumbersome. The construction of total-factor productivity index is, therefore, not appealing. In its place, therefore, partial productivity is used. This estimates the ratio of total output to a single input, usually labour. In most discussions, especially in economics, productivity is taken to be synonymous with labour productivity. This is because it is a simpler concept to estimate and it is a rough measure of the effectiveness with which we use the most important factor of production-labour (Business Week, 1975). However, it is noteworthy that productivity is not determined by the efforts of labour alone, but in combination with land, capital, technology, management and even the environment.
Measurement of Productivity

The productivity of labour can be measured either as output per operator or output per man-hour, expressed in money value (economic productivity) or in quantities (physical productivity). Because of the heterogeneity of output, it is more usually expressed in value terms which, for the manufacturing sub-sector, is easily calculated from ex-factory prices of finished products, estimated value of semi-finished products and other works and services of an industrial nature. When productivity is measured in physical units, the following formulae can be used to calculate productivity index:

\[ X_t = \frac{Q_t}{L_t} \div \frac{Q_o}{L_o} \]

given that

- \( X_t \) = productivity index
- \( Q \) = Output in physical units
- \( L \) = labour inputs
- \( t \) and \( o \) are current and base periods, respectively.

On the other hand, if the value of output is used to measure productivity, the following formula is used:

\[ X_t = \frac{P_o Q_t}{P_o Q_o} \div \frac{L_t}{L_o} \]

where \( P_o \) is the base period unit price of output and other variables are as defined above.

III. PRODUCTIVITY IN THE NIGERIAN MANUFACTURING INDUSTRY

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. Ad hoc studies conducted during 1989 indicated that, on the average, there was little rise in productivity (Enisan and 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). From Table 1, it can be seen that 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 industrialisation 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 (Table 2). 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 (Table 2).

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.

**Lingering Problems of the Manufacturing Sector**

High productivity in the Nigerian manufacturing sector has been constrained by many factors which include the following:

(a) **Low Level of Technology**: This is perhaps the greatest obstacle constraining productivity in Nigeria as developments in technology and innovations are the primary forces propelling industrialisation today. New processes and procedures of doing old things, and automation have revolutionised the manufacturing industry and multiplied productivity in the industrialised nations. Unfortunately, industries in Nigeria cannot acquire modern machines that have reduced processes. Most of them, especially textiles, cement, bakery, leather, paper manufacturing and many others are all producing with machinery that were procured in the 1960s and 1970s, giving rise to frequent breakdown and reduction in capacity utilization rates. Low technology is responsible for the inability of local industry to produce capital goods such as raw materials, spare parts and machinery, the bulk of which are imported. Hence there is very low value added and low productivity.

(b) **Low Level of Capacity Utilization Rate**: Capacity utilization rate in the manufacturing sector is between 30 and 40 per cent, indicating gross underutilisation of resources. This has been blamed largely on frequent power outages, lack of funds to procure inputs, fallen demand for manufactures and frequent strikes and lockouts by workers and their employers.

(c) **Low Investments**: Lack of funds has made it difficult for firms to make investments in modern machines, information technology and human resources development which are critical in reducing production costs, raising
productivity and improving competitiveness. Low investments have been traced largely to banks unwillingness to make credits available to manufacturers, owing partly to the mis-match between the short-term nature of banks' funds and the medium to long-term nature of funds needed by industries. In addition, banks perceive manufacturing as a high risk venture in the Nigerian environment, hence they prefer to lend to low-risk ventures, such as commerce, in which the returns are also very high. Even when credit is available, high lending rates, which were over 40 per cent at a time, made it unattractive, more so when returns on investments in the sub-sector has been below 10 per cent on the average.

(d) High Cost of Production: Since the introduction of SAP, high and increasing cost of production has been recorded by most business organisations as a major constraint on their operations (CBN Business Surveys). Increased cost, traced largely to poor performing infrastructural facilities, high interest and exchange rates and diseconomies of scale, has resulted into increased unit price of manufactures, low effective demand for goods, liquidity squeeze and fallen capacity utilization rates.

(e) Inflation: which can be described as persistent increase in the general price level constitutes a disincentive to saving for future use and thereby retards investments and growth. It also encourages speculative activities and diverts resources from productive ventures.

(f) Poor Performing Infrastructure: Poor performance of infrastructural facilities, characterised by frequent disruption in electric power and water supplies and inefficient telecommunication and transportation systems, is a major constraint on productivity. As firms have to invest huge capital to provide alternative infrastructural facilities to run their businesses, enterprises are forced to carry high cost structure which reduces efficiency and results in loss of competitiveness for their products.

IV. ACHIEVING HIGH PRODUCTIVITY IN THE NIGERIAN MANUFACTURING INDUSTRY
High productivity in the Nigerian manufacturing industry is a necessary condition for the sectors’ recovery, achieving competitiveness, boosting the GDP and uplifting the standards of living of the people. Achieving high productivity will require a frontal attack on the problems that were discussed in the previous section. The steps that must be taken will include the following:

(I) **Upgrading of Technological Capacity**

The manufacturing sector needs to improve productivity through upgrading of its technologies. Technology can help to improve productivity in **four major ways**: better machinery that can reduce production time and costs; better methods and process controls; breakthrough into completely new ways of doing things and product designs that can improve competitive edge and reduce costs. Most machines that are now in use are obsolete and the cost of maintaining them is very high. They should be replaced with modern machines that have better product designs and faster in processes. Computerisation of processes and procedures should be embarked upon to save time and costs. The machine tools industry at Oshogbo which was designed to produce industrial machinery should be completed and made functional so that the economy will depend less on imported machinery and equipment. Simultaneously, building local capacity to produce appropriate technology should be encouraged through continuous on the job training, enhanced research and development efforts and the promotion of technological education in the school system.

(ii) **Reducing Cost of Production**

Controlling production costs should be given priority attention in productivity management. It should aim at reducing waste and optimising the use of resources. Adoption of strategic planning is one sure way of reducing costs and boosting productivity. This is a medium to long-term framework for allocating resources, putting the external environment into consideration. It starts by evaluating the organisations current products, processes and procedures with the aim of determining strengths and weaknesses; sets new targets, finds the gaps and
designs measures to fill them. One major objective of strategic planning is to reduce cost through the re-engineering of the operations of the organisation. Work study is also used to reduce costs and boost productivity. It involves analytical study of work processes and procedures for the purpose of knowing exactly what has to be done; the optimum conditions of work in terms of methods, layouts, batch size, equipment, etc. (Akinyemi, 1983). A careful application of works study helps to reduce ineffective operations or uneconomic processes and makes for better planning and optimum costing; as well as good control and reward systems.

(iii) **Increasing Investments**

Effective investments make for growth and productivity. Capital investments are needed to acquire modern machinery and equipment and appropriate technology; as well as upgrade the quality of the labour force and the environment. This will require a lot of funds which is difficult to source from the banking system. A lot need to be done to solve the problem of capital finance. Currently, the Bankers Committee is working on a proposal which will require banks to set aside 10 per cent of their yearly profits for equity investments in small scale industries. This will be complemented with increased bank funding if the government can set up a credit guarantee scheme which will share in the risk of lending to the manufacturing sub-sector. Popularisation of the use of the capital market for long-term financing is also necessary.

(iv) **Reducing Dependence on Imports**

Reducing dependence on imports for industrial goods will have the impact of cutting cost in the long-run, increasing value added and boosting productivity. This will call for improved research and development efforts that are demand driven and the rehabilitation of the core industrial projects (CIPs) most of which have closed down. The CIPs were established by the government to produce raw materials, spare parts and machinery for downstream industries. The optimum solution to their problem would be privatisation.

(v) **Stimulating Demand for Manufactures**
Currently, most firms have their warehouses filled with finished goods, owing to low demand. Salaries and wages have just been increased in the public sector with intention that the private sector will follow suit. This will, all things being equal, boost aggregate demand in the economy, substantially reduce the pile up of finished goods and induce expansion in manufacturing capacity utilization rate. For the economy to realise the full benefits of the wage increase, the current influx of imported goods must be checked.

(vi) **Rehabilitation and Development of Infrastructural Facilities**

Epileptic electric power and water supplies, as well poor telecommunication and transportation services which currently constrain industrial operations should be given priority attention by the government. There is urgent need to rehabilitate and expand them to aid industrial recovery and growth. Good infrastructure raises productivity and lowers production costs. It has been shown that a 1 per cent increase in the stock of infrastructure is associated with a 1 per cent expansion in the gross domestic product (World Bank, 1994). The most effective way of dealing with the problems of infrastructure is to partially privatise the facilities in such a manner that the public sector will own minority holdings, not more than 20 per cent.

V. **CONCLUSION**

High productivity has been acclaimed as a sure means of boosting economic growth and raising the standards of living of the people. Designing and implementing effective productivity schemes have helped to pull many economies out of recession and set them on the course of growth. Information on manufacturing productivity is scanty in Nigeria and there are indications that it has been very low, owing to numerous problems. These problems need to be addressed urgently to put the economy back on the path of growth.
### TABLE 1

**Annual Growth Rate of Industrial Production, 1966-98**

<table>
<thead>
<tr>
<th></th>
<th>All Industries</th>
<th>Manufacturing</th>
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<tbody>
<tr>
<td>1966-75</td>
<td>19.2</td>
<td>12.9</td>
</tr>
<tr>
<td>1976-85</td>
<td>5.3</td>
<td>18.5</td>
</tr>
<tr>
<td>1986-98</td>
<td>6.5</td>
<td>2.6</td>
</tr>
<tr>
<td>1991</td>
<td>6.3</td>
<td>9.3</td>
</tr>
<tr>
<td>1992</td>
<td>7.0</td>
<td>11.8</td>
</tr>
<tr>
<td>1993</td>
<td>12.3</td>
<td>(26.9)</td>
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<tr>
<td>1994</td>
<td>(1.9)</td>
<td>(0.9)</td>
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<tr>
<td>1995</td>
<td>(0.4)</td>
<td>(5.5)</td>
</tr>
<tr>
<td>1996</td>
<td>2.8</td>
<td>1.3</td>
</tr>
<tr>
<td>1997</td>
<td>6.2</td>
<td>0.4</td>
</tr>
<tr>
<td>1998</td>
<td>(4.7)</td>
<td>(3.9)</td>
</tr>
</tbody>
</table>

Source: Computed from CBN Statistical Bulletin.

### TABLE 2

**Capacity Utilization Rate and Share of Manufacturing in GDP (%)**

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Capacity Utilization Rate</td>
<td>53.6</td>
<td>41.1</td>
<td>35.4</td>
<td>31.8</td>
</tr>
<tr>
<td>Share in GDP</td>
<td>9.2</td>
<td>8.3</td>
<td>7.5</td>
<td>6.3</td>
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</table>
REFERENCES


