

Trend Analysis of Capacity Utilization of Agro-Based Industries in Nigeria

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Abstract: The trend of capacity utilization of food- beverage sector was the focus of the study. Secondary data on capacity utilization of agro-based industries covering 25 years (1975-1999) as compiled by the Central Bank of Nigeria (CBN) and the raw material research and Development Council of Nigeria (R.M.R.D.C) were used in the study. Time trend analysis and variability index were the analytical tools. The time trend analysis revealed declining average capacity utilization over the period of study while the coefficient of variation signified an overall instability in the raw material utilization. It is inferred that there was over-dependence by home industries on imported resources. These local materials were under utilized and consequent under-development. It is therefore recommend that importation restriction on material that could be produced locally be enforced. While enabling facilities be made available to the producers/users, research centers should also be more funded.

Key words: Capality, utilization, analytical tool, instability

INTRODUCTION

Nigeria is traditionally an agricultural country, which accounts for about 70% of the total employment of her populace. It has a land area of about 923,769 square kilometers^[1] with ecological features that favours the cultivation of numerous agricultural produces. Agriculture contributes only about 25% to the GDP and a negligible amount to foreign exchange earnings^[2]. Up till the time of independence, Nigeria depended on export of agricultural produces such as cocoa, palm oil, palm-kernel, various timber species, hides and skin and processing of tin-ore for its foreign exchange. The development of resources was rigorously pursued for export purposes by the British Trading firms since the continued existence of 'home' industries in their country depended on the continued availability of these primary raw materials. The implicit policy then favoured export of the raw materials with the little or no efforts made towards encouraging local processing and import of finished goods^[3].

Although, while emphasis was placed on development of agro-resources for export, concerted efforts were in addition made to identify available mineral resources by the colonialists. This informed the information on large mineral distribution in the country on which subsequent exploration exercises were based.

Between 1960 and 1966, the country was self-sufficient in food, except for wheat and dairy products, which were imported. Since 1972, however, food shortages have become a national problem due to neglect of the agriculture sector, and food imports rose dramatically throughout the 1970s^[2] Nigeria consumed only 69 kilograms of grain per capita in 1990 compared with 151 kilograms in 1960. Further decline is predicted largely because population growth, which currently exceeds 3% per year^[4]. The agricultural sector's share in the total Gross Domestic Product (GDP) increased from 0.5% in 1960 to 8% in 1969. In 1972, study also showed that food, beverage and tobacco industries contributed as much as 34% of the value added of the manufacturing sectors in Nigeria, while textile and associated activities accounted for 17%. According to RMRDC^[5], the export of agro-raw material by quantity between 1988 and 1996 witnessed improvement over the years. For instance, there was increased tonnage and value of palm-produce, cashew nuts, rubber, gum Arabic, cotton and yarn, fish and shrimps. However, the observed low export volumes of certain commodities within the period reflected largely attempt to stock-piling them of subsequent processing. Though, these seemingly improvement were probably consequents to a number of programmes embarked upon by the government to encourage the sectoral linkages, the

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Table 1: Average capacity utilization (percent) of the food-beverage sector of agro-based industries in Nigeria (1975-1999)

Year	MDP	VGM	BP	SD	SCC	MFP	Average/year
1975	48.7	83.9	64.4	65.3	65.0	82.4	68.6
1976	48.3	81.6	68.2	64.0	64.6	86.8	68.9
1977	48.3	74.2	70.2	60.1	62.5	90.4	67.5
1978	47.4	99.3	71.3	70.0	67.8	63.8	69.9
1979	47.0	93.3	73.3	75.2	56.6	42.8	64.7
1980	46.6	84.5	74.4	72.5	54.3	41.3	62.3
1981	46.1	70.7	55.3	50.1	84.2	39.2	57.6
1982	73.7	67.5	73.9	56.2	62.3	37.9	61.9
1983	63.6	30.0	60.4	36.4	50.0	61.1	51.1
1984	48.3	65.7	60.9	26.1	37.5	49.9	48.1
1985	37.8	51.2	42.7	27.7	31.6	22.5	35.6
1986	33.1	29.4	41.5	26.7	32.9	32.2	34.4
1987	33.0	42.1	38.9	35.6	33.0	26.4	34.8
1988	43.0	28.7	35.1	29.8	50.9	30.0	36.3
1989	42.6	31.8	31.7	28.6	51.6	31.0	36.1
1990	24.1	25.0	42.3	47.0	42.6	35.8	36.1
1991	36.6	34.0	57.2	38.6	47.5	58.7	45.4
1992	29.3	20.5	32.2	35.4	45.6	43.5	47.6
1993	42.5	45.3	55.1	53.4	45.6	43.5	47.6
1994	30.6	37.5	25.9	38.5	18.7	31.5	30.5
1995	12.7	40.4	25.9	50.4	27.8	43.6	34.9
1996	21.3	40.4	25.9	50.4	27.8	43.6	34.9
1997	37.1	8.3	0.0	12.0	35.5	52.8	24.2
1998	60.6	23.7	26.8	28.5	62.5	62.8	44.2
1999	84.0	39	53.5	45.0	89.5	73.8	64.0

Source: CBN Statistical Bulletin and RMRDC^[7]

performance of agricultural sectors had been earlier relegated due to discovery of oil in the 1970s and further less emphasis that was placed on agro-allied industries-food, beverages, textile, paper and paper products, plastic and rubber products among others. Two of these policies are relevant to this study, the industrial and agricultural policies. The industrial policy is aimed at achieving greater efficiency in the allocation of resources and also to attract foreign capital investment into the economy with the private sector taking the lead among others while the agricultural policy is aimed at attaining self-sustaining growth in all the sub-sectors of agricultural through attaining self-sufficiency in basic food commodities and increased production of agricultural raw materials to meet the growing needs of industries among others. The industrial development policies prior to 1986 were structured to depend on imported raw materials, plants and machineries. However, this became costly to the economy due to dwindling foreign exchange. CBN^[6] indicated that 36% of the total annual importation was the industrial raw materials. Despite these, capacity utilization of most industries was low^[3,5]. Generally, growth of agro-allied industries is hampered by high dependency on foreign technology for productions, high production cost, smuggling and high cost of raw materials despite the staged policy environment. The consequence of which is high price products that could not be afforded by ordinary consumers^[7]. The foregoing thus calls for trend analysis of capacity utilization in Nigeria especially as far as food beverage is concern. Obviously, studies of this kind are very rare in the literature and an attempt to fill this void is what necessitates the study.

The general objective of the study is to examine the capacity utilization of the agro-based industries in Nigeria with special reference to the food beverage sub-sector.

The specific objectives are to:

- Investigate the installed capacities of the food beverage industries in Nigeria.
- Examine the utilization of local agricultural raw-materials by the industries.

MATERIALS AND METHODS

The food sub sectors covered in the study were fat and oil (Vegetable and Grain Mill, VGM), Soft Drinks (SD), Sugar-Cocoa Confectionary (SCC), Bakery Products (BP), Meat and Dinning Products (MDP) and miscellaneous food products MFP-spices, flavouring and colouring etc. A time series data and capacity utilization of the industries for the period of 1975-1999 was used for the analysis. Secondary data used in the study were obtained from Annual reports and statistical bulletins of CBN, Publications of Raw material Research and Development Council (RMRDC) and similar studies. The analytical tools employed in the study were time trend, and growth rate as well as coefficient of variation.

Time trend analysis: With the aid of Ordinary least square procedure; a time trend was established for the utilization. This is specified below.

$$Y = a + bT \tag{1}$$

Where; Y = Average capacity utilization of the industries Table 1.

Table 2: Projected average capacity utilization for food-beverage industries in Nigeria (2000-2015)

Year	Projection
2000	22.23
2001	27.82
2002	26.41
2003	2.5
2004	23.59
2005	22.18
2006	20.77
2007	19.36
2008	17.95
2009	16.54
2010	15.13
2011	13.72
2012	12.31
2013	10.9
2014	9.49
2015	8.08

Sources: Estimated from the regression result

Table 3: Variability indices (%) for Food-beverage industries in Nigeria

Sub-sector	MDP	VGM	BP	SD	SCC	MFP	Overall food beverage
Variability Index	36.2	50.1	41.4	37.7	37.3	38.5	32.1

Source: Calculated from the average capacity utilization data

T = time trend from 1975-1999

a = intercept

b = slope or gradient

A time trend equation provides the projecting future performances of the industries.

Coefficient of variation (variability index): This is employed to determine the level of inconsistency in the total raw material utilization. The higher the index, the more the variability or inconsistency in the capacity utilization by the industries and the more the need for increased productivity in the sector. This is given by:

$$\text{Coefficient of Variation (CV)} = \frac{(\sum(R_t - R)^2 / n - 1)^{1/2}}{R} \cdot 100\% \quad (2)$$

Where

R_t = Capacity utilization in the year under consideration

R = Mean capacity utilized under the period of 25 years.

RESULTS AND DISCUSSION

Time trend analysis: Result of the ordinary least square (Linear Regression) established the following relationship between the average capacity utilization of the agro-based industries (Food-Beverage Sector) and the time trend over a period of 25 years (1975 and 1999).

$$Y = 65.89 - 1.41T \quad (3)$$

From Eq. 3, a negative relationship existed between the variables contrary to a positive “a priori” expectation of a developing sector of economy. However, it has significant meaning in the model. This implies that capacity utilization of the locally sourced raw materials by the Food Beverage industries in Nigeria is decreasing over time. This, in essence, enhances or encourages importation of raw materials and perhaps explains why government policy has been consistent towards restricting importation of raw materials by the indigenous industries in order to aid the production and utilization of locally sourced raw materials.

The projection of the raw material capacity utilization:

Base on the relationship established via the regression result between time trend and average capacity utilization over the years. Table 2 below shows projected capacity utilization by the Food-Beverage industries in Nigeria between year 2000 and 2015 covering a total of 16 years.

From the projection above it could be observed that by the year 2015 Capacity utilization would be as low as 8.08%, if the current trend is maintained. This means that the agro-allied industries would be at the lowest ebb. By inference, agriculture would have been reduced to a lack luster sector. Therefore there is urgent need to arrest the situation as the monoprodukt nature of the country is on the abyss while the potentially in agriculture is giving a green-light. So, a “revival” of the agricultural sector would invariably resuscitate the agro-based industries in particular and the nation’s economy in general.

Coefficient of variation (variability index): From Table 3 it could be observed that the MDP, SD and MFP have low variability indices compared to the VGM with 50.1% being the highest followed by BP with 41.4%. This points to the fact that there is higher inconsistency in the use of capacity in the vegetation grain mill sub-sector. That is, the country still imports most of her vegetable mill products such as vegetable and groundnut oils as well as grains. This indeed depicts the effect of the “disappearance” of the then groundnut pyramid prior to independence and the abandonment of the strategic grain reserve project. Similarly, in the BP sub-sector, the index, though relatively lower than the VGM case. This could also be explained in the light of high prices and fluctuation on Bakery Products such as bread in the recent times which is warranted by the importation of wheat flour as inputs in the industries from the foreign countries as earlier on mentioned.

Therefore, to stabilize these industries, there is need to look inwardly for local substitute for these raw materials. This would go a long way in reviving the wheat producing industries (farms) and likewise the sugar-producing firms via increase sugar case production. Meanwhile, the overall variability index of the Food Beverage Sector is relatively high and signifies under development in the sector with respect to the raw material potentiality of the agricultural setting of the nation. It also implies relative instability in the sector, which is indicative of other agro-allied sector. However, it is envisaged that in the next few years, things could change for better i.e., the variation would drastically reduce with increase utilization of local resources provided more priority is given to agriculture being the primary source, and more importantly, as one of the major contributors to the Gross Domestic Product (GDP) and foreign exchange earnings in the country.

CONCLUSION

The study show that on aggregate, the capacity utilization of food-Beverage sector of agro-based industries in Nigeria from 1975-1999 was decreasing/reducing with time as revealed in the time trend analysis. To this end, the projected capacity utilization potential for the country would be far less than half (8.08) by year 2015 as compared to 22.23 in year 2000. Finally, the variability indices among the sub-sectors were high implying inconsistencies in the capacity utilization over the period of study. All these results are indicators to under utilization of resources (local raw materials) in the food beverage industries and under development of the industrial sectors of the economy.

The following are thus recommended.

- Importation restriction programmes should be put in place for the materials the country has a comparative advantage for, while facilities be made available towards these production.
- Local machines for industries are very essential. These should be made available, accessible, affordable and repairable by indigenous industries.
- Existing research centers should be founded and encourage to develop local breeds (crops and animals) of high productive capacity.

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