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## Productivity Improvement and Profitability: A Comparative Analysis between Dangote and Lafarge Cement

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### Abstract:

*This article examined the comparative analysis between productivity improvement and profitability of Dangote Cement and Lafarge Cement from 2008 to 2017 in Nigeria. Regression analysis was used to carry out the connection between productivity improvement and profitability where profit after tax was used to proxy profitability (dependent variable), while turnover, number of employees, fixed asset and production capacity were used as the productivity improvement (independent variable). The findings revealed that the two company's turnover exhibited positive and significant impact on profit after tax, while Fixed asset (FA) revealed negative and insignificant to influence profit after tax (PAT). Meanwhile, production capacity (PC) was positive but not significant to profit after tax (PAT) in the case of Dangote while Lafarge Cement production capacity exhibited negative and insignificant to influence profit after tax (PAT). The study concluded that turnover and production capacity have been majorly focused to influence profit after tax of the two companies while number of employees and fixed asset have not been significantly employed as a driving force for profitability during the study period.*

**Keywords:** Productivity, profitability, turnover, and fixed asset

### 1. Introduction

Productivity measurement cannot be belittled in the economics of any organization, especially manufacturing industries like Dangote Cement industry in Nigeria and others. More so, performance indicators of any manufacturing organization are firm productivities which describes division of services rendered individually of the input while cost utilized is the ratio of the products (Demings, 1982). Consequently, the imperative role of productive improvement and improvement are very definite, this has provided the need for the utilization of reserves in the improvement of production effectiveness (Nevins, 2002). It, therefore, contributes to the economic utilization of labor requirements, categorizing and applying worldwide standard practices, regulations, an arrangement of work processes, new-fangled equipment, and modern technology, to reduce or totally prevent any form of wastage, etc. According to Seppo (2006), Productivity improvement implies doing the things that are right in a better way and incorporate it as part of the continuous organizational process. Due to this reason, implementing an expert in productivity development measure to ensure that organizational improvement is guaranteed.

Productivity is a very vital tool to the economy, government, business administrators, policymakers, and investors in measuring organizational efficiency. An economy can use productivity measurement to evaluate its efficiency in relation to other economies of the world. It can also be used by firms, investors and sub-sectors in ascertaining the relative efficiency or performance (Nevins, 2008). An innovation towards the relative effectiveness of manufacturing structures and their profitability could assist the government in setting up its programs, policies and regulations, particularly in deciding on which manufacturing company should be given exclusive priority (Bailey, 2004). Additionally, production improvement will help the governing body of an organization in determining remuneration echelon as input and output of production assessed and measured (Baumol et al, 2007). On the micro echelon, productivity improvement will, including other things, assist planning of production and sales, particularly in checkmating cost, as well as salaries, replacement of indicators of production, a decrease of the wastes, etc.

Although, research on the productivity measurement and improvement is gradually becoming more important for organization especially manufacturing firms. However, this current research shall provide an analysis of the productivity improvement and profitability of Dangote Cement and Lafarge Cement. This will justify the importance of scheduling increase in the level of productivity of the employees. Specific methods will also be utilized in identifying, analyzing and measuring the level of productivity in the manufacturing companies.

### 2. Literature Review

#### 2.1. Productivity

The basis for productivity in relation to growth is increasing changing in manufacturing organization, production and administration. This has made possible the improvement in the arrangement of the administration and internal

control systems in the industrial sector, the extensive introduction and advancement of automatic internal control systems, enhanced economic, technological and employee training, industrial production improvement and subsidiary components, enhance allocation and labor collaboration, extension of associative works and functional presentation of techniques and methods, enhance organization and services, improve presentation of progressive principles, standards of labor. Damira and Miroslav (2017) described productivity as a ratio that measures output by an index of input. It could be understood that productivity refers to the numerical connection between quantity produced and the resources employed in the process. Furthermore, Damira and Miroslav (2017) wrote that productivity means a key element of economic growth and development.

Attar *et al.* (2015) further wrote that the ratio generated from productivity output are the factors which were imputed to generate the output. The factors or resources which are imputed in generating the output are labor, capital, energy and raw materials. Productivity shows the measure of how individual or company uses its limited resources in production of output from input. Mohammed and Farz (2013) using panel data approach, relative index of TFP in Iran, Turkey, South Korea and USA to check the productivity in the cement industry from 1990-2007. The result shows that there is a wide gap in productivity by Iran's cement industry and the United States and the trend is not a proper one. Oyepata and Obodeh (2015) investigated cement production optimization modeling using particle swarm optimization and the result was compared with genetic algorithm and pattern search. The modeling took into account mixtures of primary fuel in cement manufacturing. The results show that the cost of cement production can be reduced by 30-70% with the use of alternative fuel.

## 2.2. Productivity Improvement

Mass production is becoming widespread among the developed nations, the quantity and diversity obtainable improved. In modern enterprises, the environments where businesses are carried out consist of several factors which cannot be predicted. The success in businesses today is not a factor of putting emphasis on the need for giant company or to improve and advocate the need of sole proprietorship. It is a function of individual circumstances and the business nature. These factors bring about the need of continuous improvement in productivity whereby cost is cut, and efficiency is achieved (Mustafa *et al.*, 2015). Kulkarmi (2014) explain the process of productivity improvement using work study techniques. The method succeeds as a means of the systematic ways in the examination of the issues considered in the development of solution. This is done by continuous opinion and in the area where the activity is taking place that the facts can be obtained.

## 2.3. Dangote Cement

Dangote Group of companies is one of the most diversified business conglomerates in Africa with a well-known reputation for outstanding business activities and productions with the operation having its headquarters in the axis of Lagos, Nigeria. The company was created in 1981 as an exchanging organization which focus on cement, the Group expand after some time into a mix, exchanging cement, sugar, flour, and many other products. By the beginning of the 1990s the Dangote Group had developed prominently into a great part of the ostensibly biggest trading combined organization working in the nation. However, the Cement section is now working towards a truculent development intends to solidify its production not only in Nigeria but targeting to export market all over Africa.

## 2.4. Lafarge Cement

Lafarge cement was formerly known as West Africa Portland Cement plc established in 1960. The company's brand, Elephant cement is of great standard and quality. The company's name was officially changed to Lafarge WAPCO from West African Portland Cement in February 2008. The change of name reflected the rebirth of the company as part of an international organization strategically positioned for greater height.

## 3. Regression Model Specification

To achieve the broad objective of the relationship between productivity improvement and profitability of Dangote Cement and Lafarge Cement in Nigeria, a multiple regression model is being formulated below:

$$PAT = f(TN, NEM, FA, PC) \dots\dots\dots 1$$

Where

PAT = Profit after tax

TN = Turnover

NEM = Number of Employee

FA = Fixed Asset

PC = Production Capacity

F = functional notation

However, the econometric form of the equation is presented as:

$$PAT = \beta_0 + \beta_1 TN + \beta_2 NEM + \beta_3 FA + \beta_4 PC + \epsilon_t \dots\dots\dots 2$$

The time series format is shown below

$$PAT_t = \beta_0 + \beta_1 TN_t + \beta_2 NEM_t + \beta_3 FA_t + \beta_4 PC_t + \epsilon_t \dots\dots\dots 3$$

### 3.1. Source of Data

Data were collected from the annual report/ financial report of the two cement companies. Annual reports of Dangote Cement and annual reports of Lafarge cement. The time series data was collected from 2008-2017.

#### 4. Regression Result

Dependent Variable: PAT				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.24E+09	2.45E+10	0.335972	0.7505
TN	0.612753	0.171251	3.578089	0.0159
NEM	-1311440.	4944236.	-0.265246	0.8014
FA	-0.117703	0.075487	-1.559241	0.1797
PC	5.93E+08	1.61E+09	0.369326	0.7270
R-squared	0.926126	F-statistic		15.67072
Adjusted R-squared	0.867027	Prob(F-statistic)		0.004918
Durbin-Watson stat	2.775949			

*Table 1: Regression Result (Dangote)  
Source: Author's computation (2019)*

The above table reveals that turnover (TN) has the coefficient value of 0.612753 with p-value of 0.0159 implying that turnover has a positive and significant impact on profit after tax (PAT), number of employee (NEM) shows the coefficient value -1311440 and p-value 0.8014 indicating that number of employees has a negative but not significant to influence profit after tax of Dangote Company. Fixed asset (FA) reveals the coefficient value of -0.117703 and its p-value is 0.1797 meaning that FA has a negative and insignificant to influence profit after tax (PAT) while production capacity (PC) has the coefficient value of 5.93E+08 with the p-value of 0.7270 indicating that production capacity of Dangote Cement Company has a positive impact but not significant to influence profit after tax (PAT). The R-squared and the adjusted R-squared values are 0.926126 (92.6%) and 0.867027 (86.7%) respectively. This indicates that the independent variables have 92.6% variation in the dependent variable while the 7.4% is being explained by other factors.

Dependent Variable: PAT				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.83E+10	7.08E+09	2.579978	0.0494
TN	0.975329	0.289612	3.367711	0.0199
NEM	17412331	9580191.	1.817535	0.1288
FA	-0.454065	0.193178	-2.350505	0.0655
PC	-3.71E+09	1.76E+09	-2.109215	0.0887
R-squared	0.896663	F-statistic		10.84632
Adjusted R-squared	0.813993	Prob(F-statistic)		0.011128
Durbin-Watson stat	1.372526			

*Table 2: Regression Result (Lafarge)  
Source: Author's computation (2019)*

This table reveals that turnover (TN) has the coefficient value of 0.975329 with p-value of 0.0199 indicating that turnover has a positive and significant impact on profit after tax (PAT) that is, a unit increase in turnover will lead to 0.975329 increase in PAT during the study period. Number of employee (NEM) reveals the coefficient value 17412331 and p-value 0.1288 indicating that number of employees has a positive but not significant to influence profit after tax of Lafarge Cement Company. Fixed asset (FA) reveals the coefficient value of -0.454065 and its p-value is 0.0655 meaning that FA has a negative and insignificant to influence profit after tax (PAT) while production capacity (PC) has the coefficient value of -3.71E+09 and its p-value is 0.0887 indicating that production capacity has a negative impact and insignificant to influence profit after tax (PAT). The R-squared and the adjusted R-squared values are 0.896663 (89.7%) and 0.813993 (81.4%) respectively. This indicates that the independent variables have 89.7% variation in the dependent variable while the 10.3% is being explained by other factors.

Graphical Illustration.

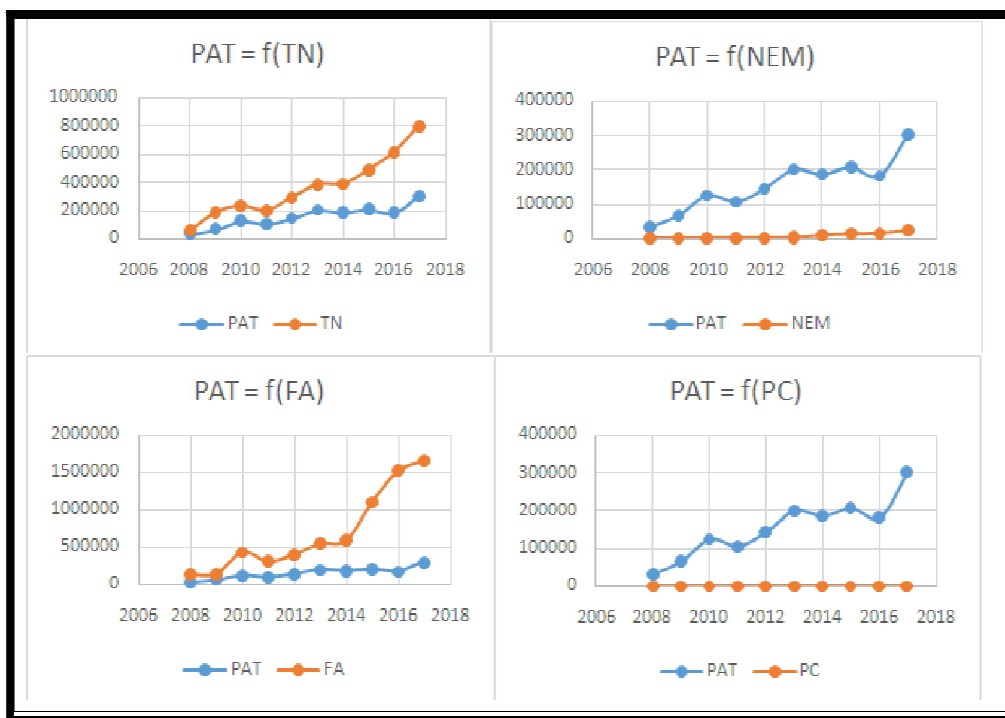


Figure 1: Graphical Illustration of Dangote Cement Data  
Source: Author's Design (2019)

The above illustration shows the movement of each independent variable against the dependent variable profit after tax (PAT) and it revealed that each of the variables move free to each other in a fluctuating direction during the study period. Dangote Cement Company has been introducing different means of maintaining efficiency in its operations, thereby increasing the input to acquire more output, which leads, to firm's expansion of the organization.

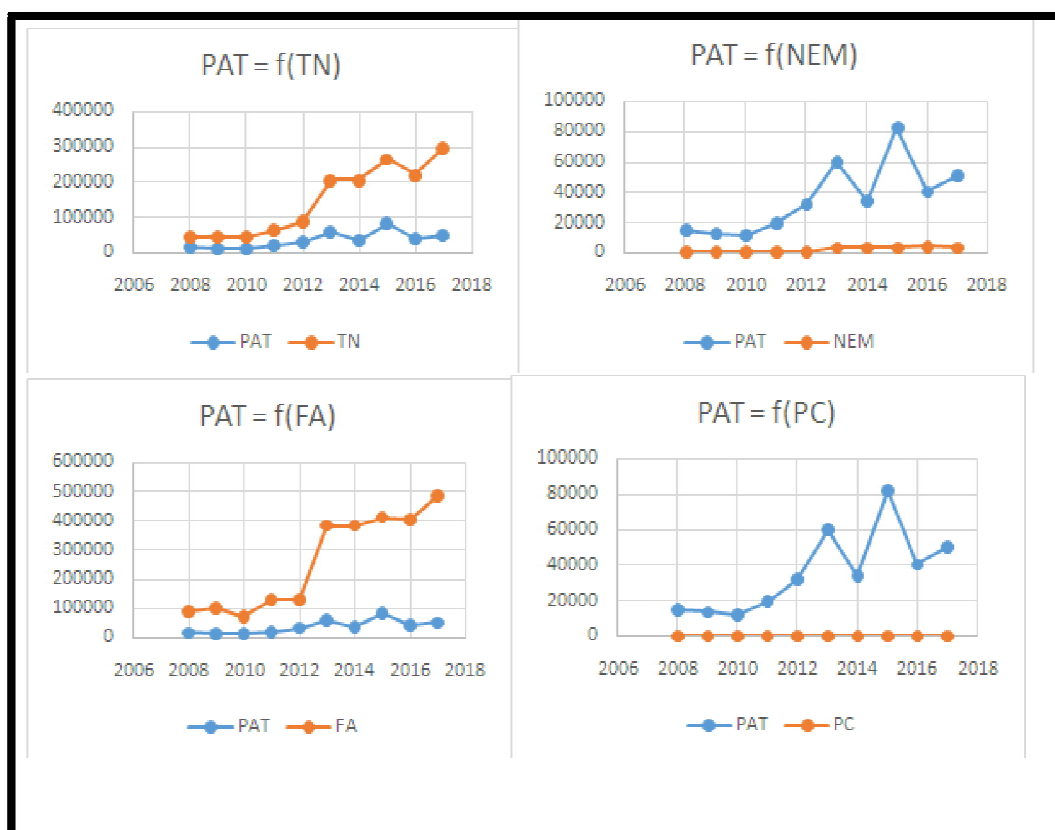


Figure 2: Graphical Illustration of Lafarge Data  
Source: Author's Design (2019)

The illustration in figure 5.2 shows the connection of each independent variable against the dependent variable profit after tax and it revealed that each of the variables move free to each other in a fluctuating direction during the study

period. Lafarge Cement Company has been also applied different means of sustaining performance in its operations, thereby increasing the input to acquire more output, which leads, to firm's expansion of the organization.

#### 4.1. Comparative Analysis

In Dangote Cement, the findings showed that turnover has a positive and significant impact on profit after tax (PAT), number of employee (NEM) has a negative but not significant to influence profit after tax of the company. Fixed asset (FA) revealed a negative and insignificant to influence profit after tax (PAT) while production capacity (PC) has a positive impact but not significant to influence profit after tax (PAT). In Lafarge Cement, the findings showed that turnover has a positive and significant impact on profit after tax (PAT), Number of employee (NEM) revealed a positive but not significant to influence profit after tax of Lafarge Cement Company, Fixed asset (FA) showed a negative and insignificant to influence profit after tax (PAT) while production capacity (PC) has as a negative impact and insignificant to influence profit after tax (PAT).

### 5. Conclusion and Recommendations

According to the findings of this study, it was concluded that turnover and production capacity have been majorly focused to influence profit after tax of the two companies while number of employees and fixed asset have not been significantly employed as a driving force for profitability during the study period. However, the study recommended that managers and the stakeholders of the manufacturing firms are encouraged to energize production capacity to expand and produce quality output to stimulate productivity improvement. It is also recommended that fixed asset and number of employees should be used as one of the major instruments which should be increased to arouse productivity improvement.

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