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### Effect of exchange rates on performance of Dangote Cement Manufacturing Company

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#### Abstract

This study is conducted to examine the effect of exchange rates on performance of Dangote cement manufacturing company. The specific objectives are to: (i) determine the effect of exchange rates volatility on return on equity of Dangote cement manufacturing company, and (ii) examine the effect of interest rate on return on equity of Dangote cement manufacturing company. The methods of data analysis range from Argument dickey-fuller unit root test, Johansen co-integration test and finally error correction method. The summary of the findings is: foreign exchange rate has negative significant impact on return on equity output in Nigeria ( $t - \text{statistics } (3.5663) > t_{0.05} (1.684)$ ). foreign exchange rate has 52 percent negative significant impact on return on equity output in Nigeria. A percent change in foreign exchange rate result to 52 percent decrease in return on equity output in Nigeria; Interest rate has negative insignificant impact on return on equity output

in Nigeria ( $t - \text{statistics } (-1.2746) < t_{0.05} (1.684)$ ), interest rate has 25 percent negative insignificant impact on return on equity output in Nigeria. A percent change in interest rate result to 25 percent decrease in return on equity output in Nigeria, and Foreign direct investment has positive significant impact on return on equity output in Nigeria ( $t - \text{statistics } (6.0022) > t_{0.05} (1.684)$ ), foreign direct investment has 11 percent positive significant impact on return on equity output in Nigeria. A percent change in foreign direct investment result to 11 percent increase in return on equity output in Nigeria. The study concluded that there is significant effect of exchange rates on performance of Dangote cement manufacturing company. The study recommends that Nigerian monetary authority or CBN should make the monitoring of exchange rate system a priority since it explains high proportion of variation in Nigerian manufacturing output.

**Keywords:** Exchange Rate, Performance, Organizational Performance

#### Introduction

Exchange rate is a prominent determinant of Nigerian manufacturing activities and world trade, receiving much attention in the context of national and global imbalances. It is obvious fact that the Nigerian manufacturing sector highly import dependent for input factors and as such, must be mindful of the exchange rate system that governs import and export activities. The subject of exchange rate movement and volatility came to be burning issues in Nigeria because of the interest of every economy to have a stable rate of exchange with its trading partners (Uruakpa, Okorontah & Ede, 2021) <sup>[31]</sup>.

Exchange rate is the price of one currency in terms of another currency (Fagbemi, 2006) <sup>[12]</sup> and government are exceptional interest in price of exchange between two or more countries. Choosing the right exchange rate or maintaining relative stability in exchange rate is essential for both internal and external balances and economic growth in the long run. Insufficient management of the exchange rate causes distortions in the patterns of consumption and manufacturing (Mordi, 2006) <sup>[22]</sup>. Similarly, excessive fluctuation in exchange rate creates uncertainty and risks for manufacturing agents with destabilizing effect on the macro-economy. Private sector operators in manufacturing activities are concerned with exchange rate fluctuation and the volatility because of its impacts on their portfolios which may result in capital losses (Mordi, 2006) <sup>[22]</sup>.

Export volume depicts quantity of goods that domestic market would not clear and also denotes surplus quantity of domestic output from different industrial sectors that is gazette to earn foreign exchange. Export volume in any sector also reported in a country element of domestic full or near full employment of capital, labour and labour efficiency in that sector. In support of this statement, Lages and Montgomery, (2014) <sup>[19]</sup> asserts that export performance is of paramount importance because it

contributes to the economic development of nations by influencing the amount of foreign exchange reserves as well as the level of imports a country can afford. It enhances societal prosperity and help national industries to develop improve productivity and create new jobs.

Exporting provides an opportunity for firms to become less dependent on the domestic market. By reaching new customers overseas, the firm may also explore economies of scale and achieve lower production costs while producing more efficiently. By export it means goods produced domestically are sold abroad. When goods are sold abroad, payment is made in the currency of the buyer; hence, there is a need for exchange of currency at a given rate (Stephen, 2017) [30].

Exchange rate is the price of units of currency of one country expressed in terms of units of currency of another. In other words, it represents the number of units of the currency of one country that can be exchanged for another. The Exchange rate is also seen as a measure of the value of the national currency against other countries, which reflects the economic situation of the country compared to other countries (Obadan, 2004). The efficacy of currency devaluation to improve output in Nigeria is under debate, and coupled with an unsatisfactory result in the behaviour of the manufacturing sector performance regenerated interest of this study to investigate the impact of exchange rate on performance of Dangote Cement manufacturing companies in Nigeria.

### Statement of the problem

In developed economies, manufacturing companies play a pivotal role in the growth and development of a nation. Darell and West (2018) emphasized the financial performance of manufacturing companies in the United State of America. The authors noted that in terms of financial performance, China, the United State of America, and Japan comprise 48 percent have seen renewed growth over the years. Furthermore, in China, manufacturing companies contribute twenty-seven (27) percent of China's overall national output, which accounts for 20 percent of the world's manufacturing output. Haile, Getacher, and Tesfay (2014) stated that the financial performance of manufacturing companies in the United State of America is of paramount importance since manufacturing firms play an important role in stimulating entrepreneurial growth and reflects operational efficiencies of management in inducing growth in earnings.

The manufacturing sector plays a catalytic role in a modern economy and has many dynamic benefits that are crucial for economic transformation. In an advanced country, the manufacturing sector is a leading sector in many respects. It is a quest for increasing productivity in relation to import substitution and export expansion, creating foreign exchange earning capacity, raising employment, promoting the growth of investments at a faster rate than any other sector of the economy, as well as wider and more efficient linkage among different sectors (Fakiyesi, 2013) [13]. However, the Nigerian economy is under-industrialized and its capacity utilization is also low. This is in spite of the fact that manufacturing is the fastest growing sector since 1973/74 (Obadan, 2012) [23]. The effect of exchange rate on manufacturing output is still an issue for research and debate and had not receives

adequate attention. This paper seeks to contribute to the debate and attention to the issue. Hence the broad objective of this study is to investigate the effect of exchange rate on the performance of Dangote Manufacturing Company.

### Objectives of the study

The broad objective of this study is to examine the effect of exchange rates on performance of Dangote cement manufacturing company. The specific objectives are to:

1. Determine the effect of exchange rates volatility on return on equity of Dangote cement manufacturing company.
2. Examine the effect of interest rate on return on equity of Dangote cement manufacturing company.

### Conceptual framework

#### Exchange Rates

A foreign exchange rate is the price of the domestic currency stated in terms of another currency. In other words, a foreign exchange rate compares one currency with another to show their relative values. Since standardized currencies around the world float in value with demand, supply, and consumer confidence, their values change relative to each other over time. For instance, one US dollar in 2011 was worth about .68 Euros. In 2014, one US dollar is worth .75 Euros. This means the dollar has increased in value over this three-year span, but the Euro is still 25% more valuable (Mensah, Awunyo-Vitor & Asare-Menako, 2013) [20].

An exchange rate is the value of one nation's currency versus the currency of another nation or economic zone. For example, how many U.S. dollars does it take to buy one euro? As of September 24, 2021, the exchange rate is 1.1720, meaning it takes \$1.1720 to buy €1 (Mohammad, Morteza & Nadia, 2018) [21].

In finance, an exchange rate (also known as a foreign-exchange rate, forex rate, FX rate or Agio) between two currencies is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country's currency in terms of another currency foreign exchange rates. This rate depends on the local demand for foreign currencies and their local supply, country's trade balance, strength of its economy, and other such factors. An exchange rate is how much it costs to exchange one currency for another. Exchange rates fluctuate constantly throughout the week as currencies are actively traded. This pushes the price up and down, similar to other assets such as gold or stocks (Fagbemi, 2006) [12].

If the USD/CAD exchange rate is 1.0950, that means it costs 1.0950 Canadian dollars for 1 U.S. dollar. The first currency listed (USD) always stands for one unit of that currency; the exchange rate shows how much of the second currency (CAD) is needed to purchase that one unit of the first (USD). This rate tells you how much it costs to buy one U.S. dollar using Canadian dollars. To find out how much it costs to buy one Canadian dollar using U.S. dollars use the following formula:  $1/\text{exchange rate}$ . In this case,  $1 / 1.0950 = 0.9132$ . It costs 0.9132 U.S. dollars to buy one Canadian dollar. This price would be reflected by the CAD/USD pair; notice the position of the currencies has switched (Fagbemi, 2006) [12].

## Calculating the Real Exchange Rate

$$\frac{\$20 \text{ USD}}{\text{US bottle}} \times \frac{0.8 \text{ EUR}}{\text{USD}} \times \frac{1 \text{ Euro bottle}}{15 \text{ EUR}} = 1.07 \frac{\text{Euro bottles}}{\text{US bottle}}$$

$$\text{domestic price} \times \text{nominal exchange rate} \times \frac{1}{\text{foreign price}} = \text{real exchange rate}$$

$$\text{real exchange rate} = \frac{\text{nominal exchange rate} \times \text{domestic price}}{\text{foreign price}}$$

Foreign exchange (Forex or FX) is the conversion of one currency into another at a specific rate known as the foreign exchange rate. The conversion rates for almost all currencies are constantly floating as they are driven by the market forces of supply and demand (King, 2019)<sup>[17]</sup>.

Foreign exchange rate is the price at which one currency can be converted into another. It represents the rate at which a firm may exchange one currency for another. Thus, the exchange rate is simply the amount of a nation's currency that can be bought at a given time for a specified amount of the currency of another country (Ezenwa, Ogbenor & Alalade, 2021)<sup>[10]</sup>. The actual amount received in conversion or the effective exchange rate, usually differs from the stated rate because it takes into account all taxes, commissions and other costs that the public must pay to complete the transaction and actually receive the foreign funds.

## Types of Foreign Exchange Rate

### 1. Fixed and Floating Rates

When Government of a country fixes the rate of exchange for its own currency, it is termed as 'Fixed Exchange Rate'. This is also known as official rate of exchange. Fixed exchange rates are fixed by the respective Governments from time to time for the betterment of their economy. In contrast exchange rates move, as in any other market place, depending on the demand and supply pressure and are further influenced by the market forces and economic conditions of the respective countries. Floating exchange rate may be free floating or a managed floating (Okigbo, 2010; Obandan, 2004)<sup>[25, 24]</sup>. A currency is freely floating if there does not exist a system of fixed exchange rates and if the Central Bank of the country in question does not attempt to influence the value of the currency. However, in reality this kind of situation does not exist. In most of the countries Governments attempt to influence movements of exchange rate either through direct intervention in the exchange market or through a mix of fiscal and monetary policies. Under such circumstances, floating is called as 'managed' or 'dirty float'. A number of countries use a pegged float as a system of exchange rates. The value of one currency is pegged to the value of another currency that itself floats. In a joint float, currencies in a particular group have a fixed exchange value in terms of each other, but the group of currencies floats in relation to other currencies outside the group (Okigbo, 2010; Obandan, 2004)<sup>[25, 24]</sup>. The fixed exchange rate system has inbuilt advantage of simplifying exchange transactions. It imbibes self-discipline for economic policies by participating countries. In India the exchange rate regime of rupee has evolved over a period of time moving in the direction of less exchange controls and current account accountability. The RBI manages the exchange rate of the rupee (Obandan, 2004)<sup>[24]</sup>.

## 2. Spot and Forward Rates

Spot rates refer to those rates which are applicable on the day of transaction in which physical delivery is made within two working days after the date of transaction the spot exchange between two currencies should be the same across the various banks engaged in rendering foreign exchange services. In case of large discrepancy customers or other banks would buy large amounts of a currency from whatever banks quoting relatively low price and sell the same immediately to a bank quoting a relatively high price. This will cause adjustments in the exchange rate quotations that would offset the existing discrepancy (Obandan, 2004)<sup>[24]</sup>. In Forward rates, exchange rates are fixed in advance for a transaction which matures at some specified future date. The exchange at the date in future will be at the price agreed upon now. Foreign exchange rates are function of forward demand and forward supply of various currencies.

## 3. Dirty/Managed Exchange Rate Policy (or Dirty Float)

This is an arrangement whereby the government fixes the rate of exchange but still allows it to depreciate within a reasonable margin. From time to time, government will be managing the exchange rate so as to ensure that a reasonable rate is maintained for the domestic currency.

## Organizational Performance

Organizational performance is used as one indicator of effectiveness for small and large businesses and is a fundamental concern of many practicing managers. Ultimately, success and growth will be gauged by how well a firm does relative to the goals it has set for itself. HR is a key driver of organizational growth, since it has to emerge as a strategic business partner helping the top management build an organization that is good not just for today, but for tomorrow and beyond. It is now working with the top management to propel the organization forward. HR should be reviewed and we stopped looking at what is happening in other strategies and start looking at best HR practices in large co-operates (Odongo & Owuor, 2015). Odongo and Owuor, (2015) points out that such growth can be particularly disorienting for employee and owner alike: "often the people involved may not realize that anything significant has occurred until they discover by experience that their familiar procedures no longer work and that their familiar routines have been bizarrely transformed. Business owners, then, face a dizzying array of organizational elements that have to be revised in accordance with changing realities. Maintaining effective methods of communications with and between employees and departments, for example, become ever more important as the firm grows.

## Theoretical Review

### Purchasing Power Parity Theory

The purchasing power parity theory was propounded by Professor Gustav Cassel of Sweden in 1932. According to this theory, rate of exchange between two countries depends upon the relative purchasing power of their respective currencies. Such will be the rate which equates the two purchasing powers. For example, if a certain assortment of goods can be had for £1 in Britain and a similar assortment with Rs. 80 in India, then it is clear that the purchasing

power of £ 1 in Britain is equal to the purchasing power of Rs. 80 in India. Thus, the rate of exchange, according to purchasing power parity theory, will be £1 = Rs. 80.

Let us take another example. Suppose in the USA one \$ purchases a given collection of commodities. In India, same collection of goods cost 60 rupees. Then rate of exchange will tend to be \$ 1 = 60 rupees. Now, suppose the price levels in the two countries remain the same but somehow exchange rate moves to \$1=61 rupees. This means that one US\$ can purchase commodities worth more than 46 rupees. It will pay people to convert dollars into rupees at this rate, (\$1 = Rs. 61), purchase the given collection of commodities in India for 60 rupees and sell them in U.S.A. for one dollar again, making a profit of 1 rupee per dollar worth of transactions.

This will create a large demand for rupees in the USA while supply thereof will be less because very few people would export commodities from USA to India. The value of the rupee in terms of the dollar will move up until it will reach \$1 = 60 rupees. At that point, imports from India will not give abnormal profits. \$ 1 = 60 rupees and is called the purchasing power parity between the two countries.

Thus, while the value of the unit of one currency in terms of another currency is determined at any particular time by the market conditions of demand and supply, in the long run the exchange rate is determined by the relative values of the two currencies as indicated by their respective purchasing powers over goods and services. In other words, the rate of exchange tends to rest at the point which expresses equality between the respective purchasing powers of the two currencies. This point is called the purchasing power parity. Thus, under a system of autonomous paper standards the external value of a currency is said to depend ultimately on the domestic purchasing power of that currency relative to that of another currency. In other words, exchange rates, under such a system, tend to be determined by the relative purchasing power parities of different currencies in different countries. In the above example, if prices in India get doubled, prices in the USA remaining the same, the value of the rupee will be exactly halved. The new parity will be \$ 1 = 120 rupees. This is because now 120 rupees will buy the same collection of commodities in India which 60 rupees did before. We suppose that prices in the USA remain as before. But if prices in both countries get doubled, there will be no change in the parity.

In actual practice, however, the parity will be modified by the cost of transporting goods (including duties etc.) from one country to another.

The Purchasing Power Parity (PPP) theorem explains the relationship between relative prices of goods and exchange rates. The PPP theorem propounds that under a floating exchange regime, a relative change in purchasing power parity for any pair of currency calculated as a price ratio of traded goods would tend to be approximated by a change in the equilibrium rate of exchange between these two currencies (Shapiro and Rutenberg, 1976).

### Empirical Review

Uruakpa, Okorontah and Ede (2021) <sup>[31]</sup> ascertain the impact of exchange rate on the performance of manufacturing firms in Nigeria. Specifically, the examined the effect of exchange rate movement and exchange rate volatility on the performance of manufacturing firms in Nigeria from 1985 to 2019. Data on exchange rate, Nigerian manufacturing

output, bank loans and advances and interest rate were sourced from the central bank of Nigerian statistical bulletin. Method of data analysis were Augmented Dickey Fuller (ADF), ordinary least square log - log model, and Generalized Autoregressive Conditional Heteroscedastic (GARCH) model to capture the research objectives. The results show that appreciation of Nigerian domestic currency has significant positive effect on Nigerian manufacturing performance while exchange rate volatility has significant negative effect on Nigerian manufacturing output. It was recommended among other things that Nigeria, through the monetary authority, should embark on monetary policies that will make exchange rate less volatile so as to reduce its negative effect on manufacturing output in Nigeria. Nigerian government should also encourage manufacturing activities especially the manufacturing of export, so as to encourage appreciation of value of Naira against foreign currencies especially the US dollar.

Asaleye, Maimako, Inegbedion, Adedoyin, and Adeyemi, (2021) <sup>[4]</sup> investigate the impact of exchange rate on manufacturing performance in Nigeria. The study examines impact of employment in the manufacturing sector (MEMP), credit of private sector (MCAP), interest rate (INTR), exchange rate (EXCR) and trade openness in the manufacturing sector (MROP) on manufacturing performance in Nigeria. The methods of data analysis were error correction model (ECM) and Johansen Co-integrating Regression. The findings show that changes in the exchange rate are fairly elastic with output and employment both in short and long-run. However, changes in the exchange rate are insignificant with employment in the short run. The variance decomposition forms the SVAR shows that forecast error shock of the exchange rate is more prolong on employment than output. Consequently, the result of the estimation of the Impulse Response Function from the Monte Carlos shows that one standard deviation of the exchange shock adversely affect employment. The outcome of the result indicates that the Nigerian exchange rate has not improved output and employment in the manufacturing sector. Several factors may be accounted for this, although, it may be due to cost-push inflationary pressure and unfavourable competitiveness. The study suggests the need to encourage long-term supply-side policies among others to improve the situation.

Ezenwa, Ogbekor and Alalade, (2021) <sup>[10]</sup> examine the effect of exchange rate volatility on return on assets of consumer goods manufacturing companies listed in Nigeria. The study ascertains the effect of exchange rate volatility, financial performance, firm size, leverage on return on assets over the he periods of 2010 to 2019. The study engaged an ex-post facto research design. A purposive sampling technique was used to select a sample size of fourteen (14) consumer goods firms from the listed firms. The methods GARCH and panel data regression models estimated was in respect to the fixed-effect model and random effect model, Hausman test indicated the appropriate model. The inferences were drawn at 1%, 5%, and 10%. The findings of the study showed that exchange rate volatility was negative and had statistically significant effect on return on assets [coefficient = - 0.454; P - value = 0.013]. Firm's Size was found to be negative and had statistically significant effect on return on assets at 1% level [coefficient = - 0.057; P - value = 0.000]. Leverage had negative and statistically significant effect on return on assets [coefficient = - 0.089; P - value = 0.091]. The study



concluded that exchange rate volatility has a significant influence on return on assets. The study recommended that the monetary authorities should employ various policies to steer the exchange rate downward. This will help boost local firm return on assets and at the same time increase firms' productivity.

Courage, (2020) <sup>[7]</sup> sought to examine the impact of the exchange rate on manufacturing performance in SACU states. The study specifically evaluates the impact of exchange rate, interest rate, inflation rate, imports, FDI is foreign direct investment and exports on manufacturing sector output over a period 1995–2016. The method of data analysis was Ordinary Least Squares (OLS) regression technique. Results showed that the exchange rate, imports and FDI have a negative relationship with manufacturing performance. Exports and inflation had a positive relationship with manufacturing performance. Based on the findings of the study, it is recommended that SACU countries need to formulate informed policies that align the exchange rate to the actual needs of the manufacturing sector. Policymakers need to know which subsectors of the manufacturing sector will be affected by an exchange rate change and they also need to know the magnitude of the impact so that they can make informed decisions.

Ezenwakwelu, Okolie, Attah, Lawal and Akoh, (2019) <sup>[11]</sup> examine the effects of exchange rate management on performance of Nigerian Manufacturing Firms. The specific objectives sought to assess the effect of exchange rate fluctuations on productivity of the manufacturing firms; ascertain the effect of flexible exchange rate on performance of the manufacturing firms; and determine the effect of bureau de change (BDC) on performance of the manufacturing firms over a period of 2015–2017. The methods of data analysis were panel data regression. The results from the multiple regression test revealed that exchange rate fluctuations had significant negative effect on productivity of the manufacturing firms; flexible exchange rate had not significantly enhanced performance of the manufacturing firms; and bureau de change had not significantly enhanced performance of the manufacturing firms. Nigerian manufacturing sector depends heavily on import of inputs and capital goods which are paid for in foreign exchange and which rate of exchange is unstable. Under fixed exchange rate regime, performance of fiscal policy is effective and ineffective under flexible exchange rate regime. The manufacturing firms did not have sufficient foreign exchange required to procure inputs and capital goods because of the high exchange rates provided by the bureau de change.

Kenny, (2019) <sup>[16]</sup> assessing the impact of manufacturing productivity, exchange rate volatility on inclusive growth in Nigeria using the time series data from 1981 to 2015. The study investigates the long run agriculturally driven

economic inclusive growth using Johansen Co-integration test and Normalized Co-integration. This study found out there is a long run relationship between these variables. While manufacturing sector exact more long run effect on per capita income. The study recommended that manufacturing output 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. Also, that financial authority in Nigeria specifies guidelines that will increase credit accessibility for investment in the manufacturing sector.

Buabeng, Ayesu, and Adabor, (2019) <sup>[6]</sup> examine the effect of exchange rate fluctuations on the performance of manufacturing firms in Ghana. Specifically, the study determines the effect of exchange rate, inflation, trade openness, fixed gross investment on performance of manufacturing firms in Ghana over the period 1990 to 2018. The study uses the bounds test approach to cointegration within the framework of autoregressive distributed lags model as the estimation strategy. The results reveal that exchange rate and monetary policy rate has a negative and significant relationship with manufacturing firm performance. It was also found that inflation, trade openness, and investment have significant positive relation with manufacturing firm performance in Ghana. Based on the negative and significant relationship with exchange rate and manufacturing firm performance. It is recommended that government and private partnership should ensure effective management of the exchange rate fluctuation and also encourage manufacturing firms to patronize locally made capital goods for their production in the face of a depreciating exchange rate. Further, the study recommends that monetary authorities should reduce interest rate to increase investment by firms. This will enhance manufacturing firms' performance.

### Methodology

The study employs historical research design which measure the effect or relationship between dependent variable and explanatory variables using time-series secondary data. The population of the study constitutes the number of Dangote cement located all over Nigeria as a whole. The method for data analytical techniques is Augmented Dickey-Fuller Unit Root test statistic, Johansen co-integration test statistic, Heteroscedasticity White Test, Ramsey Reset, Jarque Bera, Breuch-Godfrey Serial Correlation LM Test, Granger-causality test Error Correction Model and Granger Casualty Test.

### Results and Discussion

#### Results of Stationarity (Unit Root) Test.

**Table 1:** Stationarity (Unit Root) Test

| Variables | Variable Name         | ADF- Statistics | Critical Value  | Lag Number | Order of integration |
|-----------|-----------------------|-----------------|---|------------|----------------------|
| ROE       | Return on Equity      | -5.817708       | 1% level = -3.621023<br>5% level = -2.963427<br>10% level = -2.610263 | 1          | I (1)                |
| FER       | Foreign Exchange Rate | -6.454584       | 1% level = -3.621023<br>5% level = -2.963427<br>10% level = -2.610263 | 1          | I (1)                |
| INTR      | Interest Rate         | -4.912954       | 1% level = -3.621023<br>5% level = -2.963427                          | 1          | I (1)                |

|       |                           |           |  |   |       |
|-------|---------------------------|-----------|--|---|-------|
|       |                           |           | 10% level = -2.610263<br>1% level = -3.621023<br>5% level = -2.963427<br>10% level = -2.610263 |   |       |
| FDI   | Foreign Direct Investment | -6.543014 |  | 1 | I (1) |
| TRADE | Trade Openness            | -6.115310 | 1% level = -3.621023<br>5% level = -2.963427<br>10% level = -2.610263                          | 1 | I (1) |
| INFL  | Inflation Rate            | -4.903364 | 1% level = -3.621023<br>5% level = -2.963427<br>10% level = -2.610263                          | 1 | I (1) |
| TIV   | Total Import Value        | -5.263429 | 1% level = -3.621023<br>5% level = -2.963427<br>10% level = -2.610263                          | 1 | I (1) |

Source: Author's computation

In the table 1, the variables that were tested with unit root are shown, the values for Augmented Dickey Fuller (ADF) statistics are presented, the lag level of each variable was identified, and the Mackinnon critical values at 5% level of significant were pointed out. The order of integration of each variable was enumerated, and finally the stationarity position of each variable was also stated. The research work based the level of augment whether the variable was stationary or not stationary on 5 percent significance level. When Augmented Dickey Fuller statistic is greater than

Mackinnon 5 percent critical value in absolute term, it is concluded that the variable is stationary. These variables namely Return on Equity (ROE), foreign exchange rate (FER), interest rate (INTR), foreign direct investment (FDI), trade openness (TRADE), inflation rate (INFL), total import value (TIV) is stationary at first difference respectively. It is now referable to use error correction model to estimate the parameters.

### Descriptive Statistics of the Variables

Table 2: Descriptive Statistics of the Variables

|              | ROE      | FER       | INTR     | FDI      | TRADE     | INFL     | TIV      |
|--------------|----------|-----------|----------|----------|-----------|----------|----------|
| Mean         | 94266.33 | -51303.47 | 1503927. | 31913.59 | 344049.5  | 432387.8 | 2550865. |
| Median       | 1851.300 | -5000.000 | 8793.200 | 15218.08 | 91136.10  | 5719.100 | 1309543. |
| Maximum      | 984268.7 | 32049.40  | 30878864 | 212729.4 | 1567864.  | 6776776. | 6500024. |
| Minimum      | 0.000000 | -301401.6 | 119.8000 | 41.31000 | -143189.5 | 0.000000 | 7502.500 |
| Std. Dev.    | 227986.3 | 85166.34  | 5068674. | 45232.06 | 534235.3  | 1290486. | 2571581. |
| Skewness     | 2.876042 | -1.621383 | 5.216085 | 2.121201 | 1.304483  | 3.752318 | 0.361455 |
| Kurtosis     | 10.46595 | 4.554859  | 30.51248 | 8.092267 | 3.027468  | 17.18444 | 1.358884 |
| Jarque-Bera  | 144.3438 | 21.01632  | 1406.871 | 71.38489 | 11.06212  | 418.4666 | 5.225769 |
| Probability  | 0.000000 | 0.000027  | 0.000000 | 0.000000 | 0.003962  | 0.000000 | 0.073323 |
| Sum          | 3676387. | -2000835. | 58653135 | 1244630. | 13417931  | 16863122 | 99483725 |
| Sum Sq. Dev. | 1.98E+12 | 2.76E+11  | 9.76E+14 | 7.77E+10 | 1.08E+13  | 6.33E+13 | 2.51E+14 |
| Observations | 20       | 20        | 20       | 20       | 20        | 20       | 20       |

Source: e-view's Result

The table 2 shows descriptive statistics of the variables. In the model established in the study, there is one dependent variable and six independent variables. All these variables have different value for mean, sum of variable, minimum, maximum, median and standard deviation which are showed above.

### Estimation of Regression Model

Table 3: Empirical Results of the error correction Model (ECM)

| Dependent Variable: D(ROE,1)                |             |            |             |        |
|---|-------------|------------|-------------|--------|
| Method: Least Squares                       |             |            |             |        |
| Date: 27/11/21 Time: 13:37                  |             |            |             |        |
| Sample (adjusted): 2000 2020                |             |            |             |        |
| Included observations: 20 after adjustments |             |            |             |        |
| Variable                                    | Coefficient | Std. Error | t-Statistic | Prob.  |
| C   | 17375.00    | 9214.540   | 1.885606    | 0.0691 |
| D(FER,1)                                    | -0.524056   | 0.146945   | -3.566345   | 0.0004 |
| D(INTR,1)                                   | -0.256941   | 0.201571   | -1.274693   | 0.5636 |
| D(FDI,1)                                    | 0.114030    | 0.018998   | 6.002230    | 0.0008 |
| D(TRADE,1)                                  | 0.341262    | 0.065994   | 5.171115    | 0.0008 |
| D(INFL,1)                                   | -0.036217   | 0.028413   | -1.274693   | 0.5903 |

|                    |           |                       |           |        |
|--------------------|-----------|-----------------------|-----------|--------|
| D(TIV,1)           | 0.090498  | 0.016761              | 5.399320  | 0.0008 |
| ECM-1              | -0.491469 | 0.127617              | -3.851130 | 0.0006 |
| R-squared          | 0.914996  | Mean dependent var    | 25901.81  |        |
| Adjusted R-squared | 0.801828  | S.D. dependent var    | 64239.31  |        |
| S.E. of regression | 49683.71  | Akaike info criterion | 24.64941  |        |
| Sum squared resid  | 7.41E+10  | Schwarz criterion     | 24.99416  |        |
| Log likelihood     | -460.3387 | Hannan-Quinn criter.  | 24.77207  |        |
| F-statistic        | 12.50729  | Durbin-Watson stat    | 1.905872  |        |
| Prob(F-statistic)  | 0.000071  |                       |           |        |

Source: E-view Results

The error correction model was carried out to examine parameters estimates. In testing this hypothesis, foreign exchange rate (FER), interest rate (INTR), foreign direct investment (FDI), trade openness (TRADE), inflation rate (INFL) and total import value (TIV) were regressed against Return on Equity (ROE). The result of the regression analysis represents the model for the impact of foreign exchange rate on return on equity output. The empirical result shows that the coefficient of foreign exchange rate (FER) has negative significant impact on return on equity (ROE) because observed values of t – statistics (3.5663) was

greater than its critical value (1.684). The empirical result shows that the coefficient of interest rate (INTR) has negative insignificant impact on return on equity (ROE) because observed values of  $t$  – statistics (-1.2746) was less than its critical value (1.684). The empirical result shows that the coefficient of foreign direct investment (FDI) has positive significant impact on return on equity (ROE) because observed values of  $t$  – statistics (6.0022) was greater than its critical value (1.684). The trade openness (TRADE) has positive significant impact on return on equity (ROE) because their observed values of  $t$  – statistics (5.1711) was greater than its critical value (1.684). The inflation rate (INFL) has negative insignificant impact on return on equity (ROE) because their observed values of  $t$  – statistics (-1.2746) was less than its critical value (1.684). The total import value (TIV) has positive significant impact on return on equity (ROE) because their observed values of  $t$  – statistics (5.3993) was greater than its critical value (1.684). The result of the  $F$  – statistical test shows that the overall regression of the variables was statistically significance. This is because observed values of the  $F$  – statistics (12.5072) was greater than its critical value (3.830). Again, our empirical result shows that the  $R$ -squared ( $R^2$ ) is 0.9149. The ECM statistics was (-0.4914). The ECMt-1 result indicates that 49% numbers of errors have been corrected from short run adjustment to the long run. In other words, ECM statistics shows that the model has 49 percent degree of adjustment from short-run to long-run equilibrium.

### Result of Ramsey Reset Test

**The null hypothesis; there is Specification Error**

**Table 4:** Result of Ramsey Reset Test

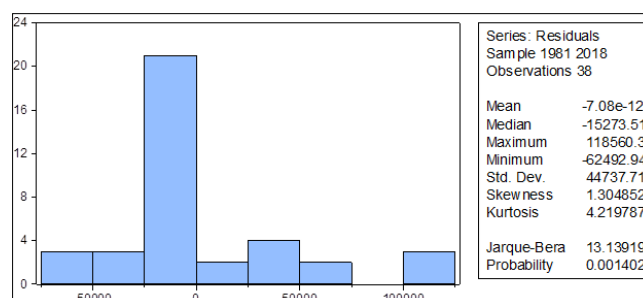
| Ramsey RESET Test  |            |         |              |
|--|------------|---------|--------------|
| Equation: UNTITLED   |            |         |              |
| Specification: D(ROE,1) C D(FER,1) D(INTR,1) D(FDI,1) D(TRADE,1) |            |         |              |
| D(INFL,1) D(TIV,1) ECM-1   |            |         |              |
| Omitted Variables: Squares of fitted values                      |            |         |              |
|  | Value      | Df      | Probability  |
| t-statistic  | 0.022751   | 29      | 0.9800       |
| F-statistic  | 0.641003   | (1, 29) | 0.9300       |
| Likelihood ratio   | 5.080240   | 1       | 0.8200       |
| F-test summary:  |            |         |              |
|  | Sum of Sq. | Df      | Mean Squares |
| Test SSR   | 5.46E+10   | 1       | 5.46E+10     |
| Restricted SSR   | 7.41E+10   | 30      | 2.47E+09     |
| Unrestricted SSR   | 1.95E+10   | 29      | 6.71E+08     |
| LR test summary:   |            |         |              |
|  | Value      | Df      |              |
| Restricted LogL  | -460.3387  | 30      |              |
| Unrestricted LogL  | -434.9375  | 29      |              |

**Source:** E-view Results

This second order test checks whether the model of the study suffers model specification error. The null hypothesis; there is model specification error. The Ramsey reset test showed that there was no specification error because its  $F$ -statistics (0.641003) is less than Probability value (0.9300). It means that model include core variables in the model, does not include superfluous variables, the functional form of the model was very well chosen, there is no error of measurement in the regressand and regressor.

### Histogram Normality Test

Normality test is done to check if the residuals of the error term have a normal distribution. Normality test is conducted using Jacques-Bera (JB) test. In testing for normality, approach used by Paavola (2006) for testing normality using Jacques-Bera test was adopted.



**Sources:** E-view 9.0 Version

**Fig 1:** presents Normality test for each of the Distribution

Jarque-Bera (JB) test is statistics that compute both skewness and Kurtosis. Skewness shows the degree symmetry (normal distribution). The normal measurement is zero/0. Kurtosis is a statistic that compute degree of peakedness. The normal measurement is three/3. A distribution is skewed if one of its tails is longer than the other. A skewed distribution can be positive or negative. Positive skewed distribution means that it has a long tail in the positive direction. Negative skewed distribution means that it has a long tail in the negative direction.

The null hypothesis is that there is no skewness and Kurtosis in the model. We reject the null hypothesis because the Jarqua-Bera statistics (13.13919) is greater than probability value (0.000). We reject null hypothesis and accept the alternative that there is no skewness and Kurtosis in the model. The skewness is normal because the value was 1.304852. The model of the study produced positive skewed distribution meaning that it has a long tail in the positive direction. The kurtosis was 4.219787 meaning that the degree of peakedness was high that normal value of three (3). This implies that the standardized residuals from the estimated model in the regression framework is normally distributed, which is consistent with the OLS assumption.

### Test of Hypotheses

The results for the various hypotheses testing are presented in the section.

#### Test of Hypothesis one

**H<sub>01</sub> Exchange rates volatility has no significant impact on return on equity of Dangote cement manufacturing company**

In testing this hypothesis, foreign exchange rate (FER) was regressed against return on equity (ROE). The empirical result shows that the coefficient of foreign exchange rate (FER) has negative significant impact on return on equity (ROE) because observed values of  $t$  – statistics (3.5663) was greater than its critical value (1.684).

#### Test of Hypothesis two

**H<sub>02</sub> Interest rate has no significant on return impacts on equity of Dangote cement manufacturing company.**

In testing this hypothesis, interest rate (INTR) was regressed

against return on equity (ROE). The empirical result shows that the coefficient of interest rate (INTR) has negative insignificant impact on return on equity (ROE) because observed values of  $t$  – statistics (-1.2746) was less than its critical value (1.684).

### Test of Hypothesis three

**H<sub>03</sub> Manufacturing foreign direct investment has no significant impact on return on equity of Dangote cement manufacturing company.**

In testing this hypothesis, foreign direct investment was regressed against return on equity (ROE). The empirical result shows that the coefficient of foreign direct investment (FDI) has positive significant impact on return on equity (ROE) because observed values of  $t$  – statistics (6.0022) was greater than its critical value (1.684).

### Summary of the findings

The following are the major findings of the study:

1. Foreign exchange rate has negative significant impact on return on equity output in Nigeria ( $t$  – statistics (3.5663)  $> t_{0.05}$  (1.684). foreign exchange rate has 52 percent negative significant impact on return on equity output in Nigeria. A percent change in foreign exchange rate result to 52 percent decrease in return on equity output in Nigeria.
2. Interest rate has negative insignificant impact on return on equity output in Nigeria ( $t$  – statistics (-1.2746)  $< t_{0.05}$  (1.684). Interest rate has 25 percent negative insignificant impact on return on equity output in Nigeria. A percent change in interest rate result to 25 percent decrease in return on equity output in Nigeria.
3. Foreign direct investment has positive significant impact on return on equity output in Nigeria ( $t$  – statistics (6.0022)  $> t_{0.05}$  (1.684). Foreign direct investment has 11 percent positive significant impact on return on equity output in Nigeria. A percent change in foreign direct investment result to 11 percent increase in return on equity output in Nigeria.

### Conclusion

The study concluded that there is significant effect of exchange rates on performance of Dangote cement manufacturing company. Exchange rate system has been a problem in Nigerian economy especially as it affects the manufacturing activities due to the fact that the Nigerian manufacturing sector is import dependent for input factors. The exchange system and exchange rate volatility is still a subject for debate in Nigerian economy. Hence more effort should be made by monetary authority to avoid unstable exchange rate which creates uncertainty in business decision of the manufacturers, which consequently affect manufacturing output negatively. Nigerian Government should encourage manufacturing activities especially the manufacturing of quality exports, to encourage appreciation of Nigerian domestic currency.

### Recommendations

Based on the findings of this study, the following recommendations were made.

1. Nigerian monetary authority or CBN should make the monitoring of exchange rate system a priority since it explains high proportion of variation in Nigerian manufacturing output.

2. Nigerian government should encourage or fund manufacturing activities especially the manufacturing of export, so as to encourage appreciation of value of Naira domestic currency against foreign currencies especially the US dollar. Nigerian government should grant subsidies and tax holiday to manufacturers to enhance their expansion and quality delivery. This is vital because manufacturing of quality goods for export will result in higher demand for domestic currency, which will result in appreciation of Naira and consequently result in higher accessibility of dollar by manufacturers to import more input factors, since Nigeria is import dependent for manufacturing inputs.

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