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Effect of Stock Market on Manufacturing Sector Output in Nigeria

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Abstract: *This study investigated the effect of stock market on manufacturing sector output in Nigeria between the period of 1981-2018. The data used were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin 2018. The variables were the performance of manufacturing sector output as the dependent variable, while, Market capitalization, Total new issues, Volume of transaction & Equity Stock as the independent variables. The study employed unit root test, to determine the stationarity of the variables, co-integration approach to determine the long run equilibrium relationship of the variables and Error Correction Model (ECM) to determine the speed of adjustment. Ordinary Least Square (OLS) method of data analysis was adopted. From the model it was conclude that stock market has a positive significant effect on the performance of manufacturing sector out. The study recommends that Policies guiding capital market should be maintained since they foster growth of the manufacturing sector in Nigeria. The funds raised by government in the form of government securities in the capital market should be put into productive sectors of the economy that will necessitate to growth in all facets of the economy.*

Keywords: *manufacturing sector output, Market capitalization, unit root test Total new issues, Volume of transaction & Equity Stock*

1. INTRODUCTION

The role of the capital market in manufacturing sector development of the country has continued to generate a lot of debates among experts, economists and policy makers. Some scholars have maintained that the Nigerian Capital Market had performed below expectation as a supplier of cheap and stable funds for manufactures (Ubesie, & Ude, 2019).

John, Wekesa and Peter (2015), maintained that financial markets in Nigeria is structured into several components amongst which are the money market in which short term financial instruments are traded and the capital market which caters for long term funding. The stock market which forms the focus of this study is a part of the capital market.

Following the work of Nnanna, Englama and Odoko (2004), the stock market in Nigeria is structured into two segments; the primary market and the secondary market. The primary market is the segment of the stock market where funds are sourced directly by investors from individuals, corporate organizations and specialized development financial institutions. They explain further that sourcing of funds in this segment of the market can either be in form of equity participation of listed and unlisted industrial loans and government bonds/stocks. The

secondary segment is where existing securities are traded (Eze, Ini, Ugwu, & Onwe, 2019).

Eze, Atuma & Ogbonna, (2019) argue that Growth in the manufacturing sector is no doubt, the major factor that leads to economic diversification of most economies of the developed countries of the world. These economies therefore, are known for their involvement in the transformation of raw materials into finished goods. It helps countries to embark on productive ventures that eventually result to increase in the domestic consumption and the foreign exchange earnings of nations.

Manufacturing sector plays an important role in the global economy as a driver of productivity growth innovation and technological change. Manufacturing sector provide key inputs to the wider economy and satisfies a broad range of final and intermediate demands (Ben, 2006).

Industrial development therefore represents a deliberate and sustained application and combination of suitable technology, management technologies and other resource to move an economy from the traditional low level of production to a more unformatted and efficient system of mass production of goods and services. Industrial financial therefore became one of the main focuses of the government based on potential benefits. In order to promote industrial financing, bank offers financial assistance to private enterprise which by virtue of their size make a significant contribution to the economic development of Nigeria (Udoh & Udeaja, 2011).

The successive government's effort to promote the industrial development in the country has also remained negligible. Manufacturing sector which has been identified as the engine room of economic growth and the major determinant in achieving macroeconomic goal, has continued to decline progressively over the period. This is attributed partly to lack of long-term funds that is required to galvanize the sector in providing impetus for inclusive growth and job creation. Long-term funding which is the bane of the manufacturing sector could be achieved through an active capital market that mobilizes long term funds for the development of small and medium scale industries in Nigeria (Kwode, 2015).

Often times, capital market operators and investors have decried the non-reflection of companies performance in the market price of their shares traded on the Nigerian Stock Exchange. They have variously complained of the exchange adopting faulty pricing methods, over-pricing, under-pricing or even stagnation when juxtaposed with reported earnings, profits, dividends, growth potentials and other variables that should affect share prices. However the vital role of the Nigerian stock exchange in industrial sector has not been empirically investigated thereby creating a research gap in this area. The study is undertaken to examine the impact of stock market on manufacturing sector output.

2. LITERATURE REVIEW

The random walk model

The theory of random walk suggests that changes in stock prices have the same distribution and are independent of each other. Therefore, the past movement or trend of a stock price or market cannot be used to predict its future movement. In short, this is the idea that stocks take

a random and unpredictable path. Accordingly, proponents of the theory believe that the prices of securities in the stock market evolve according to a random walk. A "random walk" is a statistical phenomenon in which a variable follows no discernible trend and moves seemingly at random. The random walk theory as applied to trading, most clearly laid out by Burton Malkiel, an economics professor at Princeton University, posits that the price of securities moves randomly (hence, the name of the theory), and that, therefore, any attempt to predict future price movement, either through fundamental or technical analysis, is futile (Florenceet al., 2017).Invariably, the random walk model suggests that the price fluctuations at time„ should be independent of the sequence of price changes in previous time periods (Afego, 2012). This is in tandem with the postulations of the weak-form version of the Efficient Market Hypothesis (EMH) that technical analysis, based on historical price information is worthless since current prices always adjust to all historical information.

Empirical Review

Kwode, (2015) examined the role of the capital market in financing the manufacturing sector in Nigeria between1970- 2012. Precisely, the study sought to determine the extent to which the Nigerian capital market contributes to the development of manufacturing industries. Using secondary data, the ordinary least square method, co-integration test and error correction method; the study reveals that there is a long – term relationship between capital market and the development of the manufacturing firms in Nigeria but the growth in capital market activities did not impact significantly on the manufacturing sector during the period under review. In fact, the Nigerian manufacturing sector has been on the decline because of non-access to long-term funds from the capital market, high interest rate, volatile foreign exchange and unstable electricity.

Owui, (2019) examined the impact of capital market indicators (industrial loan, equity, market capitalization) on industrial sector financing in Nigeria. The data were obtained mainly from Central Bank statistical Bulletin and Nigerian stock Exchange fact book on Industrial production index, Industrial loan, Equity, and Market capitalization. The work adopted ordinary least squares of multiple regression statistical technique based on the analysis. The following findings were made; .there is a significant impact between industrial loan and the growth of industrial sector financing in Nigeria, there is a significant impact between market capitalization and the growth of industrial sector financing in Nigeria, there is no significant impact between equity and the growth of industrial sector financing in Nigeria.

Egbe, Joshua, Eja, & Uzezi, (2015) examined the relationship between capital market and industrial sector development in Nigeria, utilizing annual time series data covering the period from 1980 to 2012. The study adopted both descriptive and analytical methodology in its investigation. The descriptive methods were used to analyze trend performances of the variables captured in the study. The analytical methodology employed modern econometric techniques such as the unit root test, co-integration test, granger causality test and the error correction mechanism (ECM) in the estimation of the relevant relationships.. The results of the short run dynamics revealed that capital market has positive and significant impact on industrial output in Nigeria via market capitalization and number of deals. On the other hand,

value of transaction has negative and significant impact on industrial output in Nigeria during the evaluation period. The results also showed that real gross domestic product has a positive and significant impact on industrial output in Nigeria, while exchange rate and gross domestic investment have negative and significant relationship with industrial output in Nigeria.

Okoye, Modebe, Taiwo, & Okorie, (2016) investigated the relationship between capital market development and economic growth using data on GDP (proxy for economic growth), market capitalization ratio, value traded ratio and stock market turnover ratio (proxies for capital market development) over the period 1981-2014. Employing the econometric methodology of the vector error correction model, the study shows that in the short-run, market capitalization ratio and turnover ratio have significant negative effect on aggregate national output (GDP). The Granger causality test shows evidence of causal impact of market capitalization ratio, value traded ratio and turnover ratio on aggregate national output. The study further shows uni-directional causality from GDP to inflation. The paper established therefore that stock market development constitutes a significant determinant of economic growth in Nigeria.

Okoye Nwisienyi & Eze, (2013) examined whether the growth of the Nigerian capital market has impacted in any significant way to the growth and development of the industrial sector and hence the economic development of the country in general. To achieve this objective; the study examines a number of relationships between the capital market and the industrial sector, such as the proportion of the manufacturing sector in the total market capitalization, or the relationship between the GDP and market capitalization, manufacturing index, New issues, market access to credit, trading values etc to determine the types of influence exerted on the industrial sector by the capital market. The significance of this study is that it well help the policy makers to really know the relationship between capital market and industrial sector.

Idyu, Ajekwe, & Johnmark (2013) determined the impact of the Nigerian capital market on the industrial sector component of the Nigerian gross domestic product, ascertain the impact of the Nigerian capital market on industrial loans issued by stock exchange and determine the impact of the Nigerian capital market on average capacity utilization rates of the Nigerian manufacturing sector. An ex-post facto research design was adopted using secondary data to determine the level of impact on the growth of the Nigerian industrial sector for the period 1990 – 2009. The ordinary least square (OLS) estimation technique was adopted using SPSS version 16.0) statistical computers software to evaluate the three objectives. The results showed (i) a positive significant impact of the market capitalization on industrial sector component of the gross domestic product and (ii) a positive significant impact of the market capitalization on average capacity utilization rates of the manufacturing sector. The result however showed (iii) a positive but non- significant impact of the annual market capitalization on industrial loans of the stock exchange.

3. METHODOLOGY

In line with objective of this study, the effect of capital market on the manufacturing sector output is represented in equation below. The function indicates that capital market can have positive effect on manufacturing sector output. This postulation was adapted from the models

as used in previous studies such as in Owui, (2019) **which** examined the impact of capital market indicators on industrial sector financing in Nigeria. Below are the mathematical equations
IND = f(INL, EQ, MC)

Where

IND = industrial sector

INL = Inflation

EQ = equity

MC = market capitalization

Then the model is modified as

PMSO = f(MC, TNI, VOT, EQS) Equation (3)

Where:
MSO = Manufacturing sector output
MC= Market capitalization
TNI= Total new issues
VOT= Volume of transaction
EQS= Equity Stock

The relationship can be explicitly formulated into an econometric equation thus:
$MSO=f\ Co + Co_1\ MC + Co_2\ TNI + Co_3\ VOL + Co_4\ EQS + p$ Equation (4)

Where Co is a constant or intercept, c_O, $c_{O,}$ $c_{O,}$ and c_O are the coefficients of the explanatory variables, p is stochastic error term.

4. DATA ANALYSIS

The method employed was the Ordinary Least Square (OLS) regression method, this method was chosen over others because of its "BLUE" properties "Best Linear unbiased Estimates, it is also efficient and consistent, when compared with other linear unbiased estimator.

Table 1 Unit Root Test

variables	ADF	Integration	%
MSO	-5.685669	I(1)	1%
CAP	-4.6006413	I(1)	1%
TNI	-5.624756	I(1)	1%
VOT	-5.624756	I(1)	1%
EQU	-6.412923	I(1)	1%

The result of unit root test shows that all the variables were stationary at first difference.

Co-Integration Test

Granger states that for one to avoid spurious regression situation, there is need for Co-integration analysis. To conduct co-integration test, this study uses the method developed by Johansen and Juselius. The Johansen-Juselius test gives better results and test co integration by applying maximum like Likelihood estimation procedure.

Table 2 Co-integration Result

Unrestricted co-integration Rank Test (Trace)

Hypothesized No.of CE(s)	Eigenvalue	Statistic Trace	Critical Value 0.05	Prob.**
None *	0.819520	118.8869	88.80380	0.0001
At most 1	0.538449	60.67434	63.87610	0.0903
At most 2	0.402295	34.38684	42.91525	0.2711
At most 3	0.282805	16.88844	25.87211	0.4233
At most 4	0.151523	5.586608	12.51798	0.5145

Source: Author's Computation using e-view version 9.

Trace test Indicates 1 co integrating equ (s) at the 0.05 level denotes rejection of the hypothesis at the 0.05 level mackinn on – Haug – michelis (1999) p- values.

Unrestricted co-integration Rank Test (maximum Eigen value)

Hypothesized No.of CE(s)	Eigenvalue	Statistic Trace	Critical Value 0.05	Prob.**
None *	0.819520	58.21260	38.33101	0.0001
At most 1	0.538449	26.28750	32.11832	0.2178
At most 2	0.402295	17.49839	25.82321	0.4166
At most 3	0.282805	11.30183	19.38704	0.4827
At most 4	0.151523	5.586608	12.51798	0.5145

Source: Author's Computation using e-view version 9

Johansson co-integration result shows that there is long-run equilibrium relationship between the dependent and independent variables.

Presentation of the Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.720217	0.074242	77.04811	0.0000
LMC	0.351387	0.055321	6.351728	0.0000
LVOT	0.072525	0.019614	3.697663	0.0008
LEQS	-0.194727	0.041830	-4.655227	0.0001
LTNI	0.334507	3.539808	3.771580	0.0007
ECM(-1)	0.657982	0.145504	4.522079	0.0001

R-squared	0.754002	Mean dependent var	6.071049
Adjusted R-squared	0.746583	S.D. dependent var	0.293737
S.E. of regression	0.067889	Akaike info criterion	-2.394497
Sum squared resid	0.142876	Schwarz criterion	-2.133267
Log likelihood	50.29820	Hannan-Quinn criter.	-2.302401
F-statistic	128.5882	Durbin-Watson stat	1.796025
Prob(F-statistic)	0.000000		

Source: E-view output

The R^2 which is the coefficient of determination or the measure of goodness of fit shows the degree of variation in the dependent variable, as explained by the independent variables all taken together. The closer our R^2 is to 1, the better the goodness of fit of the model. From the result in table 4.3 above, we found out that our R^2= 0.754002. This is closer to 1 and thus indicates that our model displayed a good fit. The adjusted R^2 = 0.74, implies that despite the adjustment in the degree of freedom our variables can still explain about 74% of the changes or variation in the model. Thus, it is in line with the result of the goodness of fit of the model.

The f-statistics is used to test the overall statistical significance of our parameter in the model. If the probability of f in the computed model is greater than the desired level of significance (0.5) we accept the null hypothesis and reject the alternative. From the result in table 4.3 above the computed value of f is 128.5882 while its probability is 0.00000. Since its probability is less than 0.05 we accept alternative hypothesis which states that the independent variables are jointly statistically significant in explaining the dependent variable.

The Durbin Watson statistic is used to test for the presence or otherwise of autocorrelation in our regression model. When the value of our d-w statistics is 1.7, it means the absence of autocorrelation among the explanatory variables in the model.

The a'priori expectation is determined by the existing finance theory and it indicates the signs of the economic relationship under consideration. From the result of our estimated model it was discovered that market capitalization has a positive sign given its value as 0.351387. This implies that increase point of sale in increase the Manufacturing sector output by 35%.

Value of transaction has negative sign given its value as 0.072525, this means that increase in automated teller machine increase the Manufacturing sector output by 0.72%, and this conforms to our a'priori expectation. Equity has a negative sign given its value as -0.194727. This suggests that negative sign also decreases the Manufacturing sector output by 0.19%. This conforms to our theoretical expectation. Total new issues have a positive sign given its value as 0.334507. This suggests that positive sign also increases the Manufacturing sector output by 0.33%.

The t-statistics, helps in detecting the individual statistical significance of parameter from the model. It was discovered that market capitalization, value of transactions and total new issues were positive and statistically significant, which implies that they contributed to Manufacturing sector output. However, equity is negative and significant. The coefficient of the error correction term carries the correct sign and it is statistically significant at 5 per cent level with the speed of convergence to equilibrium of 65 percent. From the findings it was observed that stock market is statistically significant as such the researcher conclude in favour of

alternative hypothesis which states that stock market has significant effect on the manufacturing sector output in Nigeria**.**

5. CONCLUSION

The study found that stock market has a significant positive effect on manufacturing sector output. The need for effective capital market stems from the realization that, through it, savings can be mobilized and channeled for production investment. Apart from that, the ability to mobilize funds easily and cheaply on the capital market has also been found to be an incentive for enterprises to expand their operations and diversify into large scale enterprises. The finding is in line with the study of Aduda. Chogii, and Murayi, (2014) that stock market play an important role in boosting manufacturing sector output and enhance overall organization performance. This also agrees with the study of Alenoghena, (2016) that stock market can significantly influence the performance of manufacturing sector output positively. Policies guiding capital market should be maintained since they foster growth of the manufacturing sector in Nigeria. The funds raised by government in the form of government securities in the capital market should be put into productive sectors of the economy that will necessitate to growth in all facets of the economy.

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