EFFECT OF MACRO-ECONOMIC VARIABLES ON THE FINANCIAL PERFORMANCE OF QUOTED CONSUMER GOODS MANUFACTURING FIRMS IN NIGERIA

[1]Romanus Onuche Ajefu, [2]James Ihemeje Ph.D
[3]Esther Bagobiri Yimi Ph.D

[1,2,3]Department of Business Administration
Bingham University
Karu, Nasarawa State
Correspondence: derocheventure@yahoo.com

Abstract

The performance of manufacturing firms is affected by both macroeconomic and microeconomic variables. It is imperative therefore that businesses are aware of these factors to reduce the impact of these variables on their future cash flows and profitability. This study examines the effect of macroeconomic variables on the financial performance of quoted consumer goods manufacturing firms in Nigeria, with a particular focus on the relationship between the dependent variable, return on assets (ROA), and the independent variables exchange rate, money supply, and interest rate. Utilizing an ex post facto research design, the study adopts a cross-sectional time-series approach through panel data covering 2013 to 2022. Employing statistical tools such as E-Views 12.0, the research delves into the complex interactions between these macroeconomic determinants and the financial outcomes of consumer goods manufacturing firms. The study's findings reveal that the exchange rate holds a statistically significant negative impact, money supply exhibits an insignificant positive effect, and the interest rate demonstrates a significant negative influence on the financial performance of quoted consumer goods manufacturing firms in Nigeria. Given these outcomes, the study recommends that Nigerian consumer goods manufacturing companies should carefully manage their exposure to exchange rate fluctuations due to their substantial impact on financial performance. Additionally, manufacturing firms should not ignore the broader economic context. Fluctuations in money supply can still influence the overall business environment, affecting consumer spending patterns, demand for goods, and macroeconomic stability. Firms should stay attuned to economic indicators and policy changes that might impact the money supply.

Keywords: *Macroeconomic Variables, Manufacturing firms, Financial Performance, Consumer Goods*

INTRODUCTION

The role of the manufacturing sector is crucial for the progress of any country, particularly those that are underdeveloped. Countries like Nigeria, which are in the category of less developed nations, aspire for swift industrialization. This aspiration stems from the recognition that industrialization, encompassing the

production of consumer goods and the establishment of essential societal infrastructure, is a fundamental requirement for economic advancement. Moreover, it serves to tackle issues like unemployment, improve poverty rates, and income disparities, and foster national self-sufficiency, confidence, and societal cohesion (Lawal, 2016).

Both microeconomic and macroeconomic factors exert influence on a business's performance. Firms must be cognizant of these issues to mitigate their impact on future cash flows and profitability (Ruth et al., 2023). Nevertheless, management typically lacks control over macroeconomic elements, including social, environmental, and political circumstances, suppliers, rivals, and government rules and policies. According to Adidu and Olanye (2006), microeconomic elements, such as demand and production factors, are highly predictable and manageable. The economic factors of significance include the Consumer Price Index (CPI), unemployment rate, Gross Domestic Product (GDP), stock market index, corporate tax rate, and interest rates (World Bank Group, 2015; Broadstock et al., 2011). These macro factors can either favorably or adversely impact the performance of manufacturing firms. Therefore, businesses must predict the diverse influence of several macroeconomic variables on future corporate performances (Dioha et al., 2018).

The macroeconomic environment often exerts a significant impact on many operational and strategic choices made by organizations, including aspects such as finance, investment, and operations (Owolabi, 2017). Consequently, the evaluation of success often relies on the stability of the macroeconomy, which encompasses factors such as government expenditure, money supply, fluctuations in inflation, and interest rates. Nevertheless, emerging nations exhibit significantly more macroeconomic volatility in comparison to industrialized ones (Owolabi, 2017). For example, the Nigerian economy has shown instability in the money supply, interest rate, inflation, and currency rate, among other aspects (Agu et al., 2014).

The exchange rate had a significant surge, rising from 1 USD = 300 NGN to above 1 USD = 741.1 NGN as of April 2023. Additionally, the Central Bank of Nigeria (CBN) revised its money supply growth projection for 2023 from 18.5 percent to 18.75 percent, as stated in the CBN statement of the 292nd meeting in April 2023.The currency rate is a crucial factor that affects both Nigerian industrial activity and worldwide commerce. It has received much attention in discussions about national and international imbalances. Nigeria's manufacturing industry is strongly dependent on imported input elements, which requires careful study of the currency rate framework that governs import and export activities. The fluctuation and instability of currency exchange rates have become significant issues in Nigeria, as both economies strive to uphold a steady exchange rate with their trading counterparts.

STATEMENT OF PROBLEM

According to academics, the manufacturing sector's growth is badly impacted by high lending rates, which are typically to blame for the high cost of production (Rasheed, 2010). In industrialized countries, the effect of macroeconomic conditions on corporate performance has been thoroughly studied (Barakat et al., 2016; Broadstock et al., 2011; and Kandir, 2008;). However, there is little empirical evidence to

support the claim that macroeconomic factors affect Nigerian manufacturing enterprises' performance (Owolabi, 2017). Major macroeconomic indices in Nigeria have fluctuated significantly over time, especially as the nation is coming out of a recession. For instance, as of July 2023, the CPI's measure of inflation was double-digitally high at 24.08 percent.

An exchange rate denotes the value of one currency in terms of another (Fagbemi, 2006) and holds a special significance for governments. Selecting an appropriate exchange rate or ensuring relative stability in exchange rates holds crucial importance for both internal and external equilibrium and sustained economic growth. Inadequate management of exchange rates can lead to disruptions in consumption and manufacturing patterns (Mordi, 2006). Furthermore, excessive fluctuations in exchange rates introduce uncertainty and risks for manufacturing stakeholders, exerting destabilizing effects on the broader macroeconomic landscape.

Stakeholders within the private sector engaged in manufacturing activities express apprehension regarding exchange rate fluctuations and volatility due to their impacts on financial portfolios, which could potentially result in capital losses (Mordi, 2006). These fluctuations invariably affect the performance of manufacturing firms as most of them depend on the importation of materials for functioning. Therefore, the thrust of this study is to examine macroeconomic factors and the financial performance of quoted consumer goods manufacturing firms in Nigeria.

RESEARCH QUESTIONS

The study is guided by the following research questions:

i. To what extent does exchange rate affect Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.
ii. To what extent does money supply have a positive and significant effect on Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria?
iii. To what extent does interest rate have effect on Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria?

OBJECTIVES OF THE STUDY

The study's main goal is to investigate effect of macroeconomic variables on the financial performance of listed manufacturing companies in Nigeria. The following objectives are to:

i. Examine the effect of exchange rate on Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.
ii. Investigate the effect of money supply on Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.
iii. Evaluate the effect of interest rate on Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.

RESEARCH HYPOTHESES

i. **Ho_1**: exchange rate has no significant effect on the Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.
ii. **Ho2:** money supply has no significant effect on the Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.
iii. Interest rate has no significant effect on the Return on Assets (ROA) of quoted consumer goods manufacturing firms in Nigeria.

LITERATURE REVIEW

Macroeconomic Variables

Macroeconomic variables serve as primary indicators or signposts for identifying economic trends. Macroeconomics is said to have been developed by John Maynard Keynes (Hunjra et al., 2014). Keynes claimed that without periodic significant increases in government spending, the market cannot produce enough savings (capital) to sustain investment at full employment levels. Like any professional, the government needs to study, analyze, and comprehend the key factors that influence the macroeconomy's current behavior to macro-manage the economy effectively. Therefore, to successfully address an economy's problems, the government must comprehend the factors driving economic growth, the reasons why and when recession or inflation occurs, and forecast these patterns.

John (1936) defined macroeconomic variables as the four most significant economic aggregates in a country's economy: total production, employment, investment, and general price level. Macroeconomic variables are viewed by Milton (1963) as a summary of a country's economic activity. These include the overall output (GDP), the price level (CPI), the Interest Rate, and the money supply. Richard (1997) The term "macroeconomic variables" refers to quantifiable values that express how an economy is doing. These include the level and pace of output growth (real GDP), as well as inflation, unemployment, and interest rates.

According to Hunjra et al. (2014), the average prime rate, consumer price index, Dow Jones average, foreign balance of payments, inflation rate, money supply, and exchange rate are the main factors that affect the macroeconomic environment at the moment. In this situation, supply-side economies, monetary policy, and fiscal policy are all used by the government to alter macroeconomic variables in order to control and stabilize the economy over time. The key macroeconomic indicators are the same across all countries, although the degree to which they are used varies. This is so because every nation has a distinct political system from which its laws are derived. Microeconomics and macroeconomics differ primarily on three points. First off, while macroeconomics examines the economy as a whole, microeconomics focuses on specific aspects of the economy. Second, notwithstanding the dispute, the role of the government in microeconomics is limited to welfare, regulation, and public goods. However, disagreement aside, government engagement in macroeconomics is quite significant, if not nearly entire; only the government is responsible for creating and enforcing monetary and fiscal policies. Thirdly, macroeconomics only started as a response to the Great

Depression over time, but microeconomics has existed since the middle of the eighteenth century.

Concept of Manufacturing

The concept of manufacturing involves the transformation of raw materials into final consumer goods or intermediary and producer goods. This industrial process not only generates employment opportunities but also contributes to agricultural growth, economic diversification, and the accumulation of foreign exchange, thereby enhancing the skillset of local labor. It mitigates the risks associated with relying heavily on foreign trade and maximizes the efficient utilization of available resources (Duplinskaya, 2022). In contemporary times, manufacturing methods are characterized by advanced technology, improved managerial and entrepreneurial abilities, and enhanced technical skills, all of which enhance productivity and living standards. In the view of Fashola (2004), industrialization is marked by significant technological advancements, managerial proficiency, and technical expertise, resulting in increased productivity and improved living conditions. Additionally, Ayodele and Falokun (2003) posit that a country achieves industrialization when at least twenty-five percent of its gross domestic product is internally produced and when there is substantial growth in manufacturing output, accompanied by a proportional rise in industrial sector employment equating to around ten percent of the total population. This occurrence signifies that the manufacturing sector holds a predominant position in terms of its contribution to the overall gross domestic product of the economy.

Money supply

Money supply pertains to the total quantity of all monetary forms in circulation within a specific country during a given time frame as defined by Jhingan (2005) and Abdullahi (2009). The entirety of the money supply can be categorized into three overarching groups, defined by the Central Bank of Nigeria as narrow money (M1) and broad money (M2) (CBN, 2003). M1 encompasses currency in circulation along with current account deposits held in commercial banks, while M2 includes M1 as well as savings and time deposits. In scenarios where the central bank seeks to limit money supply by constraining participant capacity (Deposit Money Banks), interest rates are elevated. Conversely, during an expansionary monetary policy, the opposite approach is taken (Yunana & Amba, 2016). M3, which includes M2 plus near money as per Gurley and Shaw's definition, is also present, but the Central Bank of Nigeria opts for the M2 definition, referring to it as the total money aggregate (Akomolafe, et al, 2015).

Moreover, the concept of money supply is closely linked to the concept of inflation, as an increase in the money supply can lead to higher inflation. Recent research has highlighted the importance of considering the role of expectations in the relationship between money supply and inflation. For example, research has shown that if consumers and businesses expect prices to rise in the future, an increase in the money supply may not lead to a corresponding increase in inflation (Ball, et al, 2021). This emphasizes the importance of central bank communication and credibility in shaping inflation expectations and the effectiveness of monetary policy

Interest Rate

Interest rates represent the cost of borrowing or the return on lending capital over a specified period. They are expressed as a percentage and reflect the compensation received or paid for the use of money. Interest rates can be influenced by various factors, including monetary policy decisions, market conditions, inflation expectations, and risk considerations (Gürkaynak et al., 2018). Central banks utilize interest rates as a tool to manage monetary policy and stabilize the economy. Research by Clarida et al. (2019) highlights the significance of interest rate targeting frameworks, such as inflation targeting or Taylor rules, which guide central banks in setting interest rates based on economic conditions and policy objectives. Clarida et al. (2019) argue that interest rate adjustments impact various economic variables, including inflation, employment, and investment.

Interest rates have a profound influence on financial markets, particularly bond markets, and stock markets. Studies by Duffee (2019) and Campbell et al. (2021) emphasize the relationship between interest rates and asset prices. Lower interest rates tend to stimulate borrowing and investment, which can drive up stock prices. Conversely, rising interest rates may lead to higher borrowing costs, dampening investment, and impacting asset valuations. The level and changes in interest rates can significantly affect economic activity. A study by Christiano et al. (2020) explores the transmission mechanism of monetary policy through interest rates. The authors find that changes in interest rates influence consumption, investment, and aggregate demand, impacting economic growth and inflation dynamics.

Inflation expectations play a crucial role in the determination of interest rates. Research by Gürkaynak et al. (2018) emphasizes the importance of inflation expectations in understanding the behavior of nominal and real interest rates. Gürkaynak et al. (2018) suggest that inflation expectations influence the risk premium embedded in interest rates and affect the conduct of monetary policy. Interest rates incorporate various risk considerations, including credit risk and liquidity risk. A study by Duffie (2017) investigates the relationship between interest rates and credit risk spreads. The research highlights that changes in interest rates can impact the pricing of credit risk, affecting borrowing costs for businesses and individuals.

Exchange rate.

The exchange rate represents the price at which the currency of one nation may be traded for the currency of another one. According to Harvey (2012), the exchange rate is the relative worth of two currencies. The exchange rate is the valuation of one currency to another. The exchange rate represents the expense involved in converting one currency to another. Exchange rates are either fixed or variable. Fixed currency rates are determined by the central banks of a nation, whereas floating exchange rates are determined by market factors such as supply and demand (The Economic Times, 2017). Exchange rates are influenced by several variables like interest rates, inflation, trade balance, political stability, internal harmony, general economic health, and governance standards. Comprehending the impacts of foreign exchange risk is crucial for company valuation and risk management (Mauer 2003). Barnor's (2014) analysis reveals that the exchange rate has a substantial impact on the stock market results of Ghana's listed firms.

Financial Performance

The assessment of corporate performance is contingent upon the nature of the firm and the objectives of the evaluation (Kaguri, 2013). Product market performance, financial performance, and shareholder return are the three components that constitute a company's overall success (Richard et al., 2009). Product market performance include metrics such as sales and market share. Financial performance includes measures like profitability, return on assets (ROA), and return on investment (ROI). Shareholder return refers to indicators such as total shareholder return and economic value added. According to Lebans and Euske (2006), performance refers to a collection of financial and non-financial measures that offer insights into the degree of goal attainment and outcomes. Performance is a complex and ever-changing process that necessitates the exercise of discernment and the use of a causal model that elucidates the potential impact of present activities on future results. There are two forms of performance: financial performance and non-financial performance. The evaluation of the business's performance is conducted across three aspects. The initial determinant is the efficiency of the firm, which refers to its ability to effectively transform inputs into outputs. The second dimension is the profitability aspect, which refers to the point where a company's earnings surpass its expenditures. The market premium refers to the proportion by which a company's market value surpasses its book value. This concept is sometimes referred to as the third dimension, as stated by Walker (2001).

Financial performance pertains to the evaluation of a company's capacity to earn profits and effectively manage its financial resources within a certain timeframe. It includes a range of financial measures, such as profitability, liquidity, solvency, and efficiency, which together indicate the overall well-being and performance of the organization in meeting its financial goals (Bodie, Kane, & Marcus, 2014).Financial performance, as defined by Mutende et al. (2017), pertains to a company's capacity to attain its desired financial outcomes in comparison to its expected outputs. Financial performance is often assessed by the utilization of financial statistics, such as ROE (Return on Equity), ROA (Return on Assets), return on capital, return on sales (ROS), and operating margin (Gilchris, 2013). Ratios offer a more comprehensive comprehension of a company's performance as they are derived from data extracted from the company's financial records. Therefore, the primary focus of financial performance lies predominantly on factors that are directly associated with financial reporting. Financial performance of Quoted Consumer Goods Manufacturing Firms in Nigeria is a metric used to assess their capacity to effectively handle external macroeconomic factors, including exchange rate volatility, changes in money supply, and fluctuations in interest rates. These variables have a direct influence on important financial indicators like as revenues, costs, and profitability. Changes in the currency rate can have a direct impact on a firm's revenue and cost structure, as well as its export/import costs and international competitiveness (Agyapong & Obeng, 2016).

Empirical Review

Zhenhui and Pal (2022) evaluated the productivity of India's manufacturing sector by examining the influence of financial liberalization, revealing

noteworthy consequences over the period from 1990 to 2000. Doytch and Narayan (2021) conducted a calibration of the impact of renewable energy on the growth of the manufacturing and service sectors. They saw a beneficial influence, especially in the use of energy in industrial settings. Lin and Zhu (2020) examined the contributions of China's construction firms to both economic and green growth by employing estimation techniques and supply chain frameworks. Meanwhile, Moutinho et al. (2020) explored the relationship between economic and environmental factors in driving sustainable economic growth, with a particular focus on the importance of the manufacturing sector. Zuhaib and Nizam (2015) found that inflation and interest rates had a beneficial effect on return on equity.

Issah and Antwi (2017) examined the impact of macroeconomic conditions on the performance of UK enterprises. The data were examined by the application of multiple regression analysis. The researchers employed principal component analysis to diminish the quantity of variables in their investigation, including a total of 59 macroeconomic aspects. The adjusted R2 value for the model using the whole sample was 0.91, indicating a strong relationship between the variables. Furthermore, the lagged return on assets (ROA), adjusted unemployment rate, benchmarked unit labor costs, real GDP, and exchange rate were all shown to be statistically significant components. Furthermore, out of the six industries that were analyzed, five of them had significant F-values.

Owolabi (2017) conducted a study in Nigeria to investigate the correlation between economic characteristics and financial success. The economic elements were government expenditure, inflation, interest rates, and currency rates. The sample consisted of 31 manufacturing businesses that were listed on the Nigeria Stock Exchange. The study was conducted from 2010 to 2014. Government expenditure, inflation, interest rates, and currency rates did not significantly affect EPS and ROA. Although several factors such as government expenditure, inflation, interest rate, and currency rate were all significant in determining the return on equity (ROE).

Mwangi and Wekesa (2017) examined the impact of Kenyan economic conditions on company performance. The study's sample, employing a descriptive research technique, comprised 74 individuals who were workers of Kenya Airways' financial department. The study's dependent variables were efficiency and growth, while interest rates and taxes served as the economic drivers. The investigation relied on primary data. The assumptions were evaluated using several regression methods. It was shown that the performance was greatly influenced by economic factors.

Rao (2016) examined the correlation between macroeconomic indicators and the financial performance of Nairobi. The sample consisted of five firms that were registered in the energy and petroleum sector of the Nairobi Stock Exchange. The study was conducted from 2004 to 2015. The analysis revealed that both interest rates and oil prices had a significant adverse influence on financial performance. The GDP growth, exchange rate, and inflation rate were unremarkable.

Otambo (2016) examined the influence of macroeconomic conditions on the financial performance of Kenyan banks. The study was done from 2006 to 2015. ROA was used to measure financial

performance, whereas quarterly GDP, USD/KSH exchange rates, and quarterly inflation rates were used to monitor GDP, inflation, and interest rates, respectively. The study indicates that GDP positively influences financial performance, but interest rates and exchange rates have a detrimental effect. The inflation rate was negligible.

In a study conducted by Gado (2015), the impact of Nigeria's macroenvironment on performance was examined. The sample consisted of the twenty firms with the highest market capitalization. The research utilized ordinary least squares and correlation methods. The results indicated that the macro-environmental variables collectively exert a significant and beneficial impact on performance. Government expenditure and inflation have a favorable impact, whereas currency exchange rates and interest rates have an unfavorable impact.

Theoretical Framework

The study is based on systems theory to describe how the firm's performance interacts with the external environment, and on Solow Growth Model to explain how internal elements (firm characteristics) affect the firm's performance.

Systems theory.

Nwachukwu (2006) provided a concise definition of a system as "a collection of interconnected and interdependent components organized in a way that generates a cohesive entity." In 1974, Kühn defined a system as a "pattern in which the elements are interconnected consistently, making it worthy of consideration." The author expanded the idea to encompass the notion that understanding one component of a system aids in comprehending another component. A system can be categorized as either cybernetically controlled or uncontrolled. A regulated system detects data through a detector, employs regulations to determine actions based on the detected data through a selector, and facilitates transactions or communication between the systems through an effector. Kühn (1974) posits that the purpose of decisions made in the context of systems communication and transaction is to attain equilibrium. A system may be classified as either closed or open. In a closed system, interactions are limited to the elements inside the system and do not involve any external systems. On the other hand, an open system allows for interactions both within the system and with external systems. Closed systems tend to decrease in entropy over time and are prone to decay because they lack interactions with external systems.

Laszlo and Krippner (1998) argue that systems theory provides a robust conceptual framework for understanding the interconnectedness between human people, their cognitive structures, and the processes that are unique to them in both society and nature. It focuses on the comprehensive and unified investigation of phenomena and occurrences. The phrase denotes a system consisting of interconnected components and their interactions, which enable the identification of a boundary-maintaining entity or process. The general systems theory seeks to analyze the global landscape as a combination of mutually existent, interacting, and interrelated components. The intention here is not to diminish or underestimate the importance of researching individual units, subsystems, or even systems within a wider framework (using a reductionist approach) as is done in

specialization. Rather, the aim is to position all disciplines within the appropriate viewpoint of the entire system.

Solow Growth Model

The Solow Growth Model, sometimes referred to as the Solow-Swan model, was formulated by economist Robert M. Solow in the year 1956. The model under consideration is a neoclassical economic framework that centers its attention on the factors of long-term economic growth inside a closed economy. The contributions of Solow, which were acknowledged by the awarding of the Nobel Prize in Economic Sciences in 1987, have had a profound influence on the comprehension of economic development and progress. The Solow Growth Model is predicated on the premise that the level of economic production (Y) is determined by the interplay of physical capital (K), human capital (H), and technological advancements (A). The production function is conventionally denoted as $Y = A \cdot F(K, H)$, where Y represents the output, A denotes the total factor productivity, K represents the capital input, and H represents the labor input.

In the given context, the variable A denotes the degree of technological advancement, K represents the aggregate quantity of physical capital, and H symbolizes the amount of human capital. The underlying assumption of the model is that there exists a phenomenon known as diminishing returns to capital, whereby the gradual increase in production resulting from the addition of each new unit of capital gradually reduces.

The Solow Growth Model encompasses a fundamental understanding of steady-state equilibrium as a pivotal idea. Over time, the economy attains a state of equilibrium characterized by the stabilization of the growth rates of output per capita (Y/L) and capital per capita (K/L). The concept posits that the sustained expansion of an economy is contingent upon technical advancements, whereas improvements in the savings rate or investment can only yield transient enhancements to the growth rate. The Solow Growth Model posits that over time, economies will approach a state of equilibrium characterized by a constant amount of income per person. This equilibrium is influenced by external variables like as technical advancements and the rate of savings. However, it may also be inferred that long-term economic growth is contingent upon technical advancements, given that the influence of capital accumulation reduces as time progresses.

The examination of the impact of macroeconomic variables on the financial performance of consumer goods manufacturing enterprises necessitates an exploration of the Solow Growth Model, whereby the significance of capital accumulation, technical advancement, and labor force growth is taken into account. In the domain of consumer goods manufacturing, several critical elements come into play, including investment in machinery and technology (represented by the K term in the Solow model), innovation in production methods, and the magnitude and proficiency of the labor force. The financial performance of consumer goods manufacturing firms can be influenced by macroeconomic variables, including interest rates, inflation, and government regulations that impact capital investment and research & development. Increased capital accumulation and enhanced productivity in the long term can be facilitated by higher savings rates,

favorable technical policies, and a trained labor force.

Methodology

The study employed an ex post facto research design. Kerlinger and Rint (1986) noted that an ex post facto inquiry aims to uncover potential linkages by analyzing a pre-existing state or scenario and retrospectively examining conceivable contributory elements. The ex post facto approach is suitable for this study since it is non-experimental and aims to examine the causal link between the dependent and independent variables (Owolabi, 2017). The population of the study is made up of firms quoted on the floor of the NEG as at the end of 2022.

The study specifically examined companies operating in the consumer products industry within the Nigerian Exchange Group. The study utilized a modified kind of non-probability sampling, namely the purposive sampling approach, which involved including all the companies in the consumer products industry in the sample. The investigation utilized preexisting data. These are referred to as preexisting data collected for objectives unrelated to the current investigation. The sources employed comprise the annual financial reports, namely the statement of comprehensive income and the statement of financial status, of the chosen enterprises spanning from 2012 to 2021. The macroeconomic variables' secondary data were acquired from the Statistical Bulletin of the CBN (2022).

Method of Data Analysis and Model Specification

This study employed the multiple linear regression statistical approach, which calculates coefficients for a straight line equation, to examine the correlation between a dependent variable and many independent variables (Hair et al., 2006). In order to understand the relationships between the dependent variable and the independent components, a multiple linear regression model was utilized (Malhotra, 2000).

Model Specification

$ROA = \alpha + ExcR_t + MSP_t + INTR + \mu$

Where:

ROA = Return of Assets

ExcR = Exchange Rate

MSP = Money Supply

INTR = Interest Rates

α = constant

μ = error term

Regression Analysis Results

Table 2: Descriptive Statistics

	ROA	EXCR	MSP	INTR
Mean	1.441505	-19.26941	1.503492	1.350194
Median	0.099848	1.053757	1.181939	0.983538
Maximum	543.4673	47.92299	36.41061	47.14933
Minimum	-7.078740	-8396.481	0.001982	-35.42407
Std. Dev.	26.84385	414.9546	2.484824	5.206042
Skewness	20.15243	-20.14233	10.05328	1.880597
Kurtosis	407.4158	407.1299	127.0783	32.55256
Jarque-Bera	2821767.	2817790.	269911.6	15161.46
Probability	0.000000	0.000000	0.000000	0.000000
Sum	591.0172	-7900.457	616.4317	553.5796
Sum Sq. Dev.	294722.2	70424624	2525.309	11085.07
Observations	210	210	210	210

ROA = Return on Assets, EXCR = Exchange Rate, MSP = Money Supply, INTR = Interest rate
Source: E-view version 12 output 2023

This table provides descriptive statistics for four variables: Return on Assets (ROA), Exchange Rate (EXCR), Money Supply (MSP), and Interest Rate (INTR). The mean (average) values show the central tendency of each variable .ROA has a mean of approximately 1.44, EXCR has a mean of around -19.27, MSP has a mean of about 1.50, and INTR has a mean of approximately 1.35.The median (middle value) provides information about the central point of the data distribution. EXCR has a negative median, indicating a left-skewed distribution.

The range between the minimum and maximum values gives an idea of the spread of the data .ROA has a large range (from -7.08 to 543.47), as does EXCR (from -8396.48 to 47.92), which indicates significant variability in these variables.MSP has the smallest range (from 0.002 to 36.41).The standard deviation measures the dispersion of data points around the mean. ROA has a standard deviation of approximately 26.84, indicating a relatively wide spread of data points. EXCR has an extremely high standard deviation (414.95), which suggests a high degree of variability and potential outliers.

Skewness measures the asymmetry of the data distribution. Positive skewness indicates a longer tail on the right side of the distribution. ROA and INTR have positive skewness, indicating a longer right tail. Negative skewness is observed in EXCR and MSP, implying a longer left tail. Kurtosis measures the heaviness of the tails and the peakness of the distribution. All variables have high kurtosis values, indicating heavy tails and potentially more extreme values in the distribution.

The Jarque-Bera test is used to check if the data follows a normal distribution. A low p-value indicates that the data is not normally distributed. The p-values for all variables are extremely low (close to 0), indicating that the data is not normally distributed. The sum provides the total of all values, and the sum of squared deviations reflects the variability within the data. Sum values are in line with the

mean values, and the sum of squared deviations is related to the standard deviation.

Serial Correlation Test

Table 4: Variance Inflation Factors

Date: 08/16/23 Time: 13:45
Sample: 2013 2422
Included observations: 210

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.006081	1.435429	NA
EXCR	2.47E-08	1.002984	1.000821
MSP	0.000688	1.367502	1.000364
INTR	0.000157	1.068097	1.000627

Source: E-View version 12

The table displays Variance Inflation Factors (VIFs) for the variables C (constant term), EXCR (Exchange Rate), MS (Money Supply), and INTR (Interest Rate). These VIF values suggest that there is minimal multicollinearity among the variables, as indicated by relatively low VIFs for EXCR, MS, and INTR, which implies that these variables have little impact on increasing the variance of the regression coefficients due to multicollinearity.

Heteroskedasticity Test

Table 5: Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.079970	Prob. F(2,404)	0.9232
Obs*R-squared	0.162252	Prob. Chi-Square(2)	0.9221

Source: E-View version 12

The table presents the results of the Breusch-Godfrey Serial Correlation LM Test, which assesses whether there is serial correlation up to 2 lags in the model. The calculated F-statistic of 0.079970 and its associated probability (Prob. F(2,404) = 0.9232) indicate that there is no significant evidence of serial correlation, as the probability is high; additionally, the Obs*R-squared value of 0.162252 and its corresponding probability (Prob. Chi-Square(2) = 0.9221) further support the absence of serial correlation.

Hausman test

Table 6: Redundant Fixed Effects Tests

Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.432553	(40,366)	0.0483
Cross-section Chi-square	59.635649	40	0.0236

Source: E-View version 12

The table presents the results of redundant fixed effects tests for the equation labeled "Untitled," showing that the cross-section fixed effects are statistically significant, with both the cross-section F-statistic (1.432553) and the cross-section Chi-square value (59.635649) indicating significance, suggesting that there are significant fixed effects in the model.

Cross-section fixed effects test equation:
Dependent Variable: ROA
Method: Panel Least Squares
Date: 08/16/23 Time: 15:24
Sample: 2013 2022
Periods included: 10
Cross-sections included: 41

Table 7
Total panel (balanced) observations: 210

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.199980	0.077979	2.564542	0.0107
EXCR	-0.064612	0.000157	-411.2641	0.0000
MSP	0.002310	0.026230	0.088060	0.9299
INTR	-0.005176	0.012521	-0.413358	0.0096

Source: E-View version 12

The table provides the results of a panel data regression analysis, specifically a cross-section fixed effects test equation, for the dependent variable Return on Assets (ROA) against several independent variables: a constant term (C), Exchange Rate (EXCR), Money Supply (MSP), and Interest Rate (INTR). The regression is focused on explaining variations in ROA.ROA is the variable of interest, and the independent variables are being tested to determine their impact on Return on Assets (ROA) of manufacturing firms in Nigeria. The coefficient of EXCR is -0.064612. This indicates that holding other variables constant, a unit increase in EXCR is associated with a decrease of approximately 0.0646 in ROA. The very low p-value of 0.0000 suggests that EXCR

is highly statistically significant and has a strong impact on ROA. The coefficient of MSP is 0.002310.The coefficient is positive, but the p-value of 0.9299 indicates that MSP is not statistically significant in explaining variations in ROA. This suggests that changes in Money Supply are not associated with significant changes in ROA, as per the available data. The coefficient of INTR is -0.005176.This implies that a unit increase in INTR is associated with a decrease of approximately 0.0052 in ROA. The relatively high p-value of 0.0096 indicates that INTR is statistically significant in explaining variations in ROA of manufacturing firms in Nigeria.

Discussion of Findings

The coefficient of EXCR is -0.064612, indicating that, holding other variables constant, a unit increase in the exchange rate (EXCR) is associated with a decrease of approximately 0.0646 in return on assets (ROA) of quoted manufacturing firms in Nigeria. The very low p-value of 0.0000 suggests that the exchange rate is highly statistically significant in explaining variations in Return on Assets (ROA). This implies that a stronger domestic currency (higher exchange rate) negatively impacts ROA of manufacturing firms in Nigeria. This finding is in line with the study of Owolabi (2017) who found that exchange rates have a significant effect on return on assets of companies.

The coefficient of MSP is positive (0.002310), indicating that, theoretically, an increase in money supply is associated with a slight increase in Return on Assets(ROA) of quoted consumer goods manufacturing firms in Nigeria. However, the high p-value (0.9299) suggests that the relationship between money supply and ROA is not statistically significant in the context of the available data. This implies that, based on this analysis, changes in money supply do not have a meaningful impact on variations in ROA of manufacturing firms in Nigeria.

The coefficient of INTR is negative (-0.005176), indicating that, holding other variables constant, a unit increase in the interest rate (INTR) is associated with a decrease of approximately 0.0052 in ROA. However, the relatively high p-value (0.0096) indicates that the interest rate is statistically significant in explaining variations in ROA. This suggests that changes in interest rates, do have a significant impact on the Return on Assets ROA of quoted manufacturing firms in Nigeria. This is in agreement with Mwangi and Wekesa's (2017) study conducted in Kenya, which showed that interest rates had a significant effect on performance. And Rao (2016) in Nairobi reported a significant negative effect of interest rates on financial performance.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the panel data regression analysis, the following conclusions can be drawn from the findings:

Exchange Rate with the coefficient of-0.064612, implies that a one-unit increase in the exchange rate is associated with a decrease of around 0.0646 in ROA, holding other variables constant. The highly statistically significant p-value of 0.0000 indicates that EXCR has a strong and significant impact on ROA. The study, therefore, concludes that an increase in the exchange rate negatively affects the profitability of assets, which could have various economic implications on the performance of quoted consumer goods manufacturing firms in Nigeria.

The coefficient of MSP is 0.002310, suggesting that, ceteris paribus, a one-unit increase in money supply corresponds to an increase of approximately 0.0023 in ROA. The high p-value of 0.9299 indicates that the coefficient for MSP is not statistically significant. It was therefore concluded that Changes in money supply do not appear to have a significant impact on the ROA of quoted consumer goods manufacturing firms in Nigeria.

Interest rate coefficient of -0.005176, indicating that a one-unit increase in the interest rate is associated with a decrease of around 0.0052 in ROA. The relatively low p-value of 0.0096 suggests that the coefficient for INTR is statistically significant. The study concludes therefore that Changes in interest rates do seem to have significant explanatory power for variations in the ROA of quoted consumer goods manufacturing firms in Nigeria.

RECOMMENDATIONS

Manufacturing firms should be proactive in managing their exposure to currency risk. While a stronger domestic currency might be beneficial for some aspects of the economy, it could adversely affect the profitability of firms engaged in exports. To mitigate this risk, firms should consider implementing effective currency hedging strategies.

Manufacturing firms should not ignore the broader economic context. Fluctuations in money supply can still influence the overall business environment, affecting consumer spending patterns, demand for goods, and macroeconomic stability. Firms should stay attuned to economic indicators and policy changes that might impact money supply.

Manufacturing firms in Nigeria might not need to make immediate changes to their business strategies solely based on interest rate fluctuations. However, it's important to stay vigilant about interest rate trends as part of the overall economic landscape. Interest rates can influence consumer spending, borrowing costs, and investment decisions across the economy.

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