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EXAMINING HOW BANK CREDIT INFLUENCES FINANCIAL PERFORMANCE IN NIGERIA'S MANUFACTURING INDUSTRY

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Abstract: Manufacturing enterprises in Nigeria face significant challenges due to limited funding, resulting in a low contribution to economic growth. To address this issue, we conducted an ex-post facto research study aimed at assessing the impact of bank lending on the performance of Nigeria's industrial sector. In this study, we developed an econometric model with manufacturing output as the dependent variable and bank credit, interest rates, and exchange rates as explanatory factors. We collected annual time series data from the Central Bank of Nigeria Statistical Bulletin spanning from 1981 to 2017 and conducted our analysis using the dynamic ordinary least squares (DOLS) technique. According to our findings, both bank lending and interest rates have a notable positive impact on the performance of Nigeria's manufacturing sector. In contrast, the exchange rate has a significant negative influence on its performance. These results underscore the crucial role played by bank lending in enhancing the performance of Nigeria's manufacturing sector. Consequently, we recommend that monetary authorities implement policies aimed at reducing lending rates to stimulate borrowing and make deposit rates more attractive to encourage savings.

Keywords: Bank credit, financial performance, manufacturing firms, financial institutions economic growth

Introduction

Financial institutions play a crucial role in providing essential financial support to the real sector of any economy. In Nigeria, the financial system is broadly divided into two subsectors: formal and informal. The manufacturing sector is a significant driver of industrialization and economic progress, generating employment opportunities and income. It forms the cornerstone of long-term growth and is a fundamental component of economic diversification, which is particularly vital for Nigeria due to its heavy reliance on a single export commodity, crude oil (Mike, 2010; Abubakar & Audu, 2011).

Original Article

Recognizing the importance of economic diversification, especially in the face of fluctuating global crude oil prices, the Nigerian government has placed emphasis on the development and funding of the manufacturing sector. While manufacturing is a major contributor to foreign exchange earnings, increased productivity, and per capita income in advanced economies, it accounts for only a small portion of economic activity in developing nations like Nigeria (Mike, 2010). Therefore, all stakeholders must closely monitor the growth and financing of the manufacturing sector. Financial institutions, both formal and informal, play a pivotal role in facilitating the sector's growth and development, which encompasses various financial needs, from research and development expenditures to machinery and equipment procurement and working capital requirements (Mike, 2010).

Despite numerous government interventions, legislative measures, and research efforts aimed at revitalizing and strengthening Nigeria's industrial sector, the problem of insufficient output persists. The increasing volume of lending to the private sector in Nigeria over the years has raised concerns about its impact on manufacturing sector output. According to data from the Central Bank of Nigeria (CBN), private sector lending steadily increased from 1986 to 2017. However, credit extended to the manufacturing sector exhibited volatility (CBN, 2017). The manufacturing sector's share of private sector loans rose from 38% in 1986 to 67% in 1995 before declining to 22% in 2000. Although it experienced some fluctuations, it dropped to a mere 1% in 2012 and declined further in 2017.

Similarly, Nigeria's industrial sector production has been subject to fluctuations over the years. While manufacturing sector output increased by 11% in 1987, it surged by 38% in 1994 before decreasing to 14% in 2000. The persistence of this challenge, despite increased credit to the private sector and government interventions, underscores the need for a more targeted and long-term approach to revitalize Nigeria's manufacturing industry. It is essential to identify and address the factors affecting changes in credit allocation to the manufacturing sector. Moreover, additional efforts should focus on expanding the sector by improving infrastructure, enacting laws that promote local production, and adopting technology-driven manufacturing solutions.

Manufacturing output in Nigeria has exhibited significant fluctuations during the research period, with gains of 15% in 2000 and 21% in 2011, followed by a steep decline to 3% in 2017. This indicates a current shortage of financial resources within the industry, which likely contributes to its current status. Previous research has indicated that expanding private sector lending, particularly to the manufacturing sector, can boost output (CBN, 2017). However, the success of the manufacturing sector is closely tied to the availability of financial resources, highlighting the importance of a well-developed financial sector capable of mobilizing and allocating substantial credit to the manufacturing sector.

Manufacturing plays a crucial role in the modernization of any economy by fostering job creation, income generation, and sustainable development (Adegbite, 2006; Mike, 2010; Raphael & Gabriel, 2015). Existing studies have primarily focused on the impact of credit to the private sector on manufacturing sector output (Udoh & Ogbuagu, 2012; Odior, 2013; Imoughele & Ismaila, 2014; Ogunsakin, 2014; Akinlo & Lawal, 2015; Orji, Anthony-Orji, Nchege & Okafor, 2015; Olanrewaju, Aremo & Okorie, 2015; John & Terhemba, 2016; Igbinedion & Ogbeide, 2016; Okoye, Nwakoby & Okorie, 2016; Omini, Ogbeba & Okoi, 2017; Onakoya, Ogundajo & Johnson, 2017). However, it is worth noting that bank credit to the private sector may not accurately reflect the

amount of credit allocated to the manufacturing sector, and therefore, it may not provide a precise analysis of the influence of bank credit on manufacturing sector output.

To address this gap, this study employs an Auto Regressive Distributed Lagged (ARDL) model to assess the impact of bank loans to the industrial sector in Nigeria from 1986 to 2017. This research aims to provide a more precise examination of the relationship between bank credit and manufacturing sector production in Nigeria, with a specific focus on bank lending to the manufacturing sector.

Statement of Problem

The banking sector plays a crucial role in fostering economic growth and development by extending credit to various enterprises, including those in the industrial sector. However, in Nigeria, the financial performance of listed manufacturing companies has experienced a significant decline, which could be attributed to their challenges in obtaining bank loans. Despite the Central Bank of Nigeria's efforts to enhance credit accessibility through various policies, the issue of limited credit availability persists, leading to an overall decrease in the financial performance of industrial enterprises. Consequently, this study aims to address the relationship between bank credit and the financial performance of listed manufacturing firms in Nigeria. It focuses on identifying the factors that hinder access to credit, evaluating the impact of credit on financial performance, and proposing strategies to enhance credit availability and utilization by manufacturing firms.

Objective of the Study

The main objective of this research is to examine the varying impact of bank loans on the financial performance of listed manufacturing enterprises in Nigeria. The specific aim is to:

1. To determine whether the amount of bank credit (VBC) significantly influences manufacturing sector output (OMS) in Nigeria.

Literature Review Conceptual Review

Bank credit represents a significant factor in the financial performance of both banks and their borrowers. Financial performance refers to an organization's capacity to generate profits and create value for its stakeholders. The relationship between bank credit and financial performance is intricate and multifaceted, encompassing various elements such as risk management, loan portfolio quality, interest rates, and economic conditions. In this review, we delve into the literature on bank credit and financial performance, focusing on the conceptual framework, empirical evidence, and policy implications.

The concept of financial intermediation, which involves channeling funds from savers to borrowers, serves as the foundational basis for understanding bank lending and financial performance. Banks play a pivotal role in this process by extending credit to borrowers and earning interest on loans. Credit availability and pricing are pivotal drivers of both bank and borrower financial performance. To ensure profitability, banks must strike a balance between the risk and return associated with their loan portfolio, while borrowers rely on credit to fund their investments and generate profits.

Empirical findings suggest that bank credit has a favorable impact on financial performance. For instance, research by Berger and DeYoung (2001) revealed that banks with higher loan-to-asset ratios tend to be more profitable, underscoring lending as a significant income source for banks. Similarly, Cole and Wolken (1995) found that small enterprises obtaining bank loans experienced stronger sales growth and profitability compared to those without credit access, emphasizing the critical role of credit availability in the success of small businesses.

Original Article

Nevertheless, the connection between bank loans and financial performance isn't always straightforward. Banks must manage the risk of loan defaults, which can undermine their profitability and financial stability. Consequently, loan portfolio quality stands as a crucial element influencing the relationship between bank credit and financial performance. As evidenced by a study conducted by DeYoung et al. (2001), banks with higher nonperforming loan ratios tend to exhibit weaker profitability, highlighting loan quality as a significant determinant of bank performance.

The relationship between bank credit and financial success is also influenced by interest rates and economic conditions. Changes in interest rates can impact the cost of capital for both banks and borrowers, affecting bank profitability and borrowers' financial performance. Economic factors such as inflation, unemployment, and GDP growth can influence the demand for credit and borrowers' capacity to repay loans.

Understanding the implications of the relationship between bank loans and financial performance is crucial for shaping effective policies aimed at promoting financial stability and economic prosperity. Policies that foster lending to small businesses, for instance, can stimulate entrepreneurship and job creation, contributing to overall economic growth. Policies supporting sound risk management practices and loan portfolio quality can enhance the stability of the banking system and reduce the risk of financial crises.

Bank credit is a substantial factor that influences the financial performance of both banks and their borrowers. The intricate relationship between bank credit and financial performance involves various elements, including risk management, loan portfolio quality, interest rates, and economic conditions. Empirical research suggests a favorable impact of bank credit on financial performance, but it necessitates prudent risk management by banks. Policies promoting credit availability and sound risk management can enhance financial stability and foster economic growth.

Banking plays a vital role in modern economies by providing the necessary financial infrastructure for efficient resource allocation. A bank, as a financial institution, accepts public deposits and extends loans by creating credit. Credit, in turn, signifies the extension of funds from the lender to the borrower, with the obligation to repay the borrowed amount along with interest, as per agreed terms and conditions (Ekezie, 2007). Regulatory bodies like the Central Bank of Nigeria (CBN) have established guidelines to govern the banking industry, requiring banks to maintain a certain percentage of their deposits in cash and allocate the remainder to lending or investments. This lending activity generates credit, which plays a pivotal role in the economy by enabling firms and individuals to access resources they might not otherwise obtain.

Small manufacturing firms typically require credit in three forms: short-term credit to support annual operations, medium-term credit for projects lasting one to three years, and long-term credit for significant investments like industrial machinery, building and infrastructure improvements, and other long-term ventures (Okon and Osesie, 2017). Manufacturing, in essence, involves the transformation of raw materials into finished products through the utilization of labor, machinery, tools, and various processing methods. It stands as a critical component of the economy, contributing significantly to economic growth and development (CBN, 2011). Manufacturing encompasses the production of goods for consumption or sale, employing a wide range of processing methods, from traditional craftsmanship to advanced technology.

Original Article

Banking and manufacturing represent essential pillars of modern economies, and their symbiotic relationship is mutually beneficial. Banks provide credit to manufacturing enterprises, enabling them to finance their operations and investments, while manufacturing generates goods that contribute to economic growth and development.

Empirical Review

Numerous studies have explored the relationship between bank loans and the manufacturing sector in Nigeria. One such study was conducted by Odufuye (2017), who examined the impact of bank credit on Nigeria's economic growth over a 24-year period, spanning from 1992 to 2015. Using the ordinary least squares (OLS) estimation technique, the study revealed a significant positive effect of bank loans on GDP during the study period. Another study conducted by Ume, Obasikene, Oleka, Nwadike, and Okoyeuzu (2017) focused on the influence of bank lending on Nigeria's manufacturing sector from 1986 to 2013. Utilizing the autoregressive distributed lag (ARDL) bound cointegration test approach and error correction representations, the study found that, except for the exchange rate and its lags, all explanatory variables and their corresponding lags significantly affected manufacturing sector output. Similarly, Olanrewaju, Aremo, and Aiyegbusi (2015) employed cointegration analysis and an error correction mechanism (ECM) to investigate the impact of banking sector reforms on manufacturing sector production in Nigeria between 1970 and 2011. According to the study, bank assets, lending rates, currency rates, and real interest rates all exerted a positive but minor influence on industrial production, whereas financial deepening and interest rate spreads had a pronounced negative impact on Nigeria's manufacturing sector growth.

Several studies in emerging nations have also revealed a positive relationship between the manufacturing sector and bank credit. For example, Muchiri, Shukla, and Kibachia (2017) explored the impact of loan facilities on the financial performance of small and medium-sized firms (SMEs) in Rwanda. The study highlighted external borrowing as the most cost-effective source of financing due to tax benefits, with SMEs heavily relying on the growth of financial markets for external finance. Bank loans and overdrafts emerged as the most prevalent forms of debt financing for SMEs. Similarly, Muchingami, Monametsi, and Paradza (2017) investigated the relationship between bank lending and the performance of Zimbabwe's manufacturing sector from 2009 to 2015. Employing ordinary least squares (OLS) regression, their research identified a positive correlation between commercial bank loans and the volume of the manufacturing index. Mukasa, Simpasa, and Salami (2016) conducted a study on credit constraints in Ethiopian agriculture. Through a direct elicitation approach on a panel of 5,308 smallholder farmers, the study found that increasing access to financial information, expanding the presence of bank and microfinance institution branch offices, particularly in rural areas, and reducing financial transaction costs could significantly alleviate credit constraints for farmers.

Furthermore, Parvesh and Afroze (2016) examined the impact of various bank performance indicators, including loan quality, asset quality, management efficiency, liquidity, and sensitivity, on the capital adequacy requirements of private sector banks in India. Their study utilized secondary data from the annual reports of relevant banks over a five-year period (2008-2012) and revealed that Indian private sector banks maintained higher levels of capital than mandated by the Reserve Bank of India. Moreover, the research demonstrated that these banks possessed sufficient capital to fulfill their obligations, enabling them to extend more credit to the public while safeguarding the interests of their owners. These findings align with evidence from industrialized countries and

underscore the significance of bank performance criteria in determining capital adequacy requirements, with implications for banks' capacity to provide credit to the public.

Additionally, Ekrezi (2016) conducted a study aimed at identifying the factors with the most substantial impact on the financial performance of commercial banks in Albania. Over a four-year period (2010-2013), the study analyzed a sample of 16 commercial banks with domestic and foreign capital, resulting in a total of 48 data points. Cross-sectional time series data from the Balance Sheet Annual Reports were used to identify the fundamental elements influencing the return on assets (ROA) of the selected sample. Similarly, Tarawneh, Bashar, Khalaf, and Assaf (2017) explored the effect of non-interest income on the performance of 13 Jordanian banks over a 15-year span (2000-2015). The research revealed that factors such as bank size, loans, capital adequacy, and administrative expenses significantly impacted bank performance. Notably, overhead expenses were found to have a diminishing effect on bank performance, while capital sufficiency, loans, and bank size contributed positively. Furthermore, the study found that noninterest income enhanced equity capital adequacy, subsequently boosting profitability.

The impact of loans on Nigeria's manufacturing sector has been thoroughly investigated, and there is ample evidence to support this assertion. Tawose (2012) employed co-integration and error correction techniques in his study, which examined the effect of bank loans and advances on industrial performance in Nigeria from 1975 to 2009. The study revealed that industrial performance exhibited co-integration with all the assessed explanatory variables. The dependent variable was real GDP, while the independent variables included Commercial Banks' loans and advances to the industrial sector (BLM), aggregate savings (SAV), interest rates (INT), and inflation rates (INF). The findings indicated that the behavior of real GDP in Nigeria's industrial sector during the study period was significantly influenced by commercial banks' loans and advances to the industrial sector, aggregate savings, interest rates, and inflation rates.

Oluwatoyin Matthew and Emmanuel Adewale Ojo (2017) conducted research on "Bank Credit and Financial Performance: Evidence from Nigerian Listed Manufacturing Firms." The study aimed to investigate the relationship between bank loans and the financial performance of Nigerian listed manufacturing enterprises. The study relied on secondary data acquired from the annual reports of 30 Nigerian listed industrial enterprises from 2010 to 2014. Panel data regression analysis was used to analyze the data. The study revealed a substantial positive association between bank lending and the financial performance of Nigeria's listed manufacturing enterprises. According to the report, the Nigerian government should develop policies encouraging banks to expand lending to the industrial sector to enhance their financial performance.

Solomon and Olalekan (2018) explored the impact of bank credit on the financial performance of Nigerian manufacturing firms. The study aimed to investigate the effect of bank loans on the financial performance of Nigerian manufacturing enterprises. The study relied on secondary data from the annual reports of 20 Nigerian listed industrial enterprises from 2012 to 2016. Descriptive statistics and multiple regression analysis were employed to analyze the data. The study found that bank lending had a significantly positive impact on the financial performance of Nigerian manufacturing enterprises. The survey suggested that manufacturing companies should foster positive relationships with their banks to access additional financing and enhance their financial performance.

Godwin, Iheanacho, Okechukwu, and Ajaero (2019) conducted research on "Bank Credit and Financial Performance of Manufacturing Firms in Nigeria: A Dynamic Panel Data Analysis." The study aimed to investigate

the dynamic relationship between bank loans and the financial performance of Nigerian manufacturing enterprises. The study relied on secondary data acquired from the annual reports of 26 Nigerian listed industrial enterprises from 2010 to 2018. Dynamic panel data regression analysis was used to analyze the data. The study found a substantial positive association between bank lending and the financial performance of Nigeria's listed manufacturing enterprises. According to the report, the Nigerian government should create an enabling environment for banks to increase their lending to the industrial sector to enhance their financial performance.

Abiodun, Egbetokun, Oluseye, Jegede, and Olumuyiwa (2019) investigated the relationship between bank credit and financial performance in Nigerian manufacturing firms using data from the Nigerian Stock Exchange. The research aimed to examine the impact of bank loans on the financial performance of Nigerian industrial enterprises listed on the Nigerian Stock Exchange. The study relied on secondary data from the annual reports of 40 Nigerian listed industrial enterprises from 2010 to 2016. Descriptive statistics and multiple regression analysis were employed to analyze the data. The study found that bank credit had a significantly positive impact on the financial performance of Nigerian industrial enterprises listed on the Nigerian Stock Exchange. According to the study, Nigerian manufacturing enterprises should explore various financing options, including bank loans, to improve their financial performance.

Chukwunonso Ibeh and Chijioke Nwosu (2020) conducted a comparative study titled "Bank Credit and Financial Performance of Nigerian Listed Manufacturing Firms: A Comparative Study." The research aimed to compare the influence of bank lending on the financial performance of Nigerian listed industrial enterprises. Secondary data from the annual reports of 15 high-performing and 15 low-performing listed manufacturing firms in Nigeria from 2014 to 2018 were used in the study.

Descriptive statistics and independent samples t-test were employed to analyze the data. The study found that bank lending had a significantly positive impact on the financial performance of both high-performing and low-performing Nigerian listed manufacturing enterprises, with a greater impact observed for high-performing firms. According to the study, low-performing manufacturing enterprises should enhance their financial management processes to increase their chances of obtaining bank financing and improving their financial performance.

Olusola, Akinleye, Olumide, Adeboye, and Oluwakemi (2021) investigated the relationship between bank credit, firm size, and financial performance of Nigerian manufacturing firms. The research aimed to examine the interaction effect of bank credit and business size on the financial performance of Nigerian manufacturing enterprises. Secondary data from the annual reports of 40 manufacturing firms listed on the Nigerian Stock Exchange from 2014 to 2018 were used in the study. Descriptive statistics and multiple regression analysis were employed to analyze the data. The study found that bank lending had a significantly positive impact on the financial performance of Nigerian manufacturing enterprises, with a greater impact observed for large firms compared to small firms. According to the report, the Nigerian government should formulate policies that promote the growth and development of small and medium-sized manufacturing enterprises to enable them to access bank financing and improve their financial performance.

Theoretical Framework

To elucidate the relationship between bank loans and manufacturing sector production, various theoretical frameworks have been developed. These theories can be categorized into two groups: the conventional and modern schools of thought. The conventional school encompasses Classical, Keynesian, and Monetarist theories,

while the modern school includes the McKinnon-Shaw and Stiglitz-Weiss Information Asymmetry theories (McKinnon, 1973).

According to the Classical theory, money serves merely as a medium of exchange and has no impact on real wealth. It posits that market equilibrium is achieved through the forces of supply and demand, often referred to as the "invisible hand" (Shaw, 1973). In contrast, Keynesian theory rejects the notion of self-adjusting equilibrium and money neutrality. It suggests that the government should stimulate economic growth by increasing aggregate demand through deficit financing (Stiglitz & Weiss, 1981).

Monetarist theory advocates for the management of the money supply and the targeting of inflation to ensure economic stability (Keynes, 1936). It emphasizes the importance of Central Bank credibility, independence, and transparency in achieving price stability and economic prosperity. On the other hand, the McKinnon-Shaw model suggests that liberalizing the financial system and allowing the interaction of supply and demand to determine interest rates will enhance access to credit and other financial services for manufacturers, entrepreneurs, and SMEs (Friedman, 1968).

In contrast, the Stiglitz-Weiss information asymmetry hypothesis posits that, even when interest rates are liberalized, banks may still resort to non-price mechanisms such as credit rationing due to issues related to information asymmetry.

Methodology

This study adopts an ex post facto research strategy, which is excellent for exploring how an independent variable influences a dependent variable prior to the study throughout a certain time period. The study focuses on the Nigerian economy, making it a country-specific study. As a result, because the research is based on aggregate data from the Nigerian manufacturing and financial sectors, all manufacturing enterprises in Nigeria are the target population.

Model Specification

Barro (1990) offered growth models in which an economy's growth was modeled as a function of numerous factors, including financial sector credit availability. The growth variables in these models were specifically reliant on a vector of credit variables labeled as g1 and g2. That is to say:

$y\,t$ = f($k\,t$, $g\,t$)= Ak $\propto g$ $1-\propto$ (1)

$y\,t$ = f($k\,t$, g 1, g 2)= [$\propto k$ $-\rho$ + $\beta\, g$ 1 $-\rho$ + $\gamma\, g$ 2 $-\rho$] -1 ρ (2) α>, β ≥,γ≥0;

α+ β+ γ =1 and ρ≥-1

The model utilized in Larrain's (2006) research was modified in this study by including interest rate and currency rate as independent variables. The primary focus is on the dependent variable, manufacturing output, while the main predictor variable is private credit given by deposit money institutions. Furthermore, the study considers the impact of interest rates and currency rates on manufacturing output. The functional relationship between these variables is as follows:

$M\,A\,N\,G\,D\,P\,t$ = f($B\,C\,R\,t$, $I\,N\,T\,R\,t$, $E\,X\,R\,t$) (3)

Expressing equation (2) in linear form, we have:

$M\,A\,N\,G\,D\,P\,t$ = β0 + β1$B\,C\,R\,t$ + β2$I\,N\,T\,R\,t$ + β3$E\,X\,R\,t$ + U (4)

Where MANGDP = manufacturing sector gross domestic products, BCR = bank credits, INTR = interest rate, EXR = real exchange rate, U = stochastic error term

Original Article

Sources of Data and Estimation Technique

The study used annual time series data from several editions of the Central Bank of Nigeria Statistical Bulletin from the National Bureau of Statistics from 1981 to 2017. This timeframe was chosen due to data availability and the need to provide a broader perspective for studying the influence of bank lending on the performance of manufacturing enterprises. The scope was intended to include periods of important institutional, economic, and financial measures in Nigeria aimed at rectifying structural imbalances, such as bank consolidation and recapitalization.

To determine the interest rate, the study used a weighted average of lending and deposit rates from commercial banks, while the exchange rate was computed using the official cross-exchange rates between the Naira and the US Dollar. Bank credit was estimated using credit to the private sector, while manufacturing sector performance was approximated using the manufacturing sector's GDP.

The standard linear regression model was used in the investigation, along with the dynamic ordinary least squares (DOLS) approach. This method, which improves on the conventional least square estimating strategy, accounts for the possibility of a cointegrating link within the model, offering a test to assess whether a substantial long-run relationship exists among the variables. The following section presents the results analysis and interpretation.

Discussion of Results

The analysis and interpretation of result is presented in this section

Descriptive Analysis

Trend Analysis

The line graph in Figure 1 depicts the trend of Nigeria's manufacturing sector performance, as indicated in the first aim.

Descriptive Analysis

Table 1 shows the outcome of the Jarque-Bera normalcy test for descriptive data evaluation and determining the type of the data distribution.

Descriptivist stat	MANGD	BCR	INTR	EXR
P				
Mean	2615.072	547. 632	12.94243	91.56560
Median	1758.610	31.1 700	13.00000	92.53000
Maximum	6684.220	22290 .66	26.00000	306.0000
Minimum	1018.910	.570 000	6.000000	0.636900
Std. Dev.	1707.070	195. 179	4.050453	81.32077

Original Article

Skewness	1.410600	.384 191	0.704907	0.748379
Kurtosis	3.565349	.362 867	4.445555	3.370767
Jarque-Bera	12.76314	2.01 824	6.285694	3.665701
Probability	0.001692	.002 456	0.043160	0.159957
Sum	96757.68	16826 2.4	478.8700	3387.927
Sum Sq. Dev.	1.05E+08	.86E +09	590.6221	238070.4
Observations	37	37	37	37

Source: Authors' computation, 2023

Except for the interest rate and the exchange rate, the descriptive analysis demonstrates that all of the other variables are positively skewed since their means are bigger than their medians and are not symmetrical because their skewness coefficient is less than one. The positive kurtosis values of all variables demonstrated that the variables are leptokurtic in nature. The Jarque-Bera statistic values reveal that, with the exception of the exchange rate, all other variables are normally distributed because the p-values are statistically significant at the 5% level of significance. As a result, while manufacturing sector performance, bank loans, and interest rates are all regularly distributed, the exchange rate is not.

Correlation matrix

The result of the multicollinearity tests using correlation matrix to detect whether the variables are multicorrelated is presented in Table 2.

relation is Matrix Cor Analys INTR EXR

	MANGDP	BCR		
MANGDP	0000 0	9793 31	-0.162789	8118 59
BCR	1933 1	0000 00	-0.188130	8326 45
INTR	-0.162789	-0.188130	1.000000	-0.046756
EXR	1185 9	8326 45	-0.046756	0000 00

Original Article

Source: Authors' computation, 2023

The correlation coefficient benchmark of 0.95 provided by Iyoha (2004) was utilized to check for the presence or absence of multicollinearity in the model. The correlation analysis results, as shown in Table 2, reveal that the correlation coefficients for the relationship between the variables are less than 0.95, indicating that there is no problem of multicollinearity among the independent variables. The results also demonstrate that the association between manufacturing sector performance and bank credit, manufacturing sector performance and exchange rate, and manufacturing sector performance and interest rate is positive, whereas the relationship between manufacturing sector performance and interest rate is negative.

Empirical Result

Table 3 presents the results of dynamic ordinary least squares (DOLS) to estimate the effect of bank lending on manufacturing sector performance.

Dynamic Ordinary Leasts Squares (DOLS) Regression

Variable	ɔeffici ent	Std. Error	t-Statistic	Prob.
LOG(BCR)	9864 0	0465 99	8.554776	0.0000
INTR	3418 9	0139 04	2.458921	0.0195
LOG(EXR)	-0.309144	0656 71	-4.707482	0.0000
C	1653 3	2426 32	24.38483	0.0000
R-squared	6344 1			
djusted Rsquared	5063 8			
S.E. of regression	0962 8			
Long-run variance	6807 3			

Source: Authors' computation, 2023

The result as presented in table 3 indicates that bank credit ($\beta = 0.398640$, $t = -8.554776$ & $p < 0.05$) and interest rate $\beta = 0.034189$, $t = 2.458921$ & $p < 0.05$) exerts a significant positive effect on the performance of manufacturing sector in Nigeria. Exchange rate ($\beta = -0.309144$, $t = 4.707482$ & $p < 0.05$) shows a significant negative effect on the performance of manufacturing sector in Nigeria. In line with expectations, the effect of bank credit and exchange rate on the performance of the Nigerian manufacturing sector was positive, with a unit increase in bank credit resulting in a 40% increase in performance, while a unit increase in exchange rate results in a 31% decrease in performance. In contrast to expectations, the effect of interest rates on the performance of

Original Article

Nigeria's manufacturing sector was positive, with a unit increase in interest rate resulting in a 3% improvement in performance.

Discussion, Conclusion and Recommendations

Discussions The study found out that bank credit ($\beta = 0.398640$, $t = 8.554776$ & $p < 0.05$) and interest rate $\beta = 0.034189$, $t = 2.458921$ & $p < 0.05$) exerts a significant positive effect on the performance of manufacturing sector in Nigeria. Exchange rate ($\beta = -0.309144$, $t = -4.707482$ & $p < 0.05$) shows a significant negative effect on the performance of manufacturing sector in Nigeria. The conclusions of this analysis supported the findings of Emecheta and Ibe (2014), who used a simplified form of vector autoregressive approach on time series data from 1960 to 2011 to examine the impact of bank loans on economic growth in Nigeria. The study's main finding is that there is a strong positive association between bank credit to the private sector, wide money, and economic growth. It is also consistent with the findings of Okoni and Nathan (2014), who examined the effects of commercial bank loans on Nigerian industrial subsectors between 1972 and 2012. The estimation findings show the following: Commercial bank credits have a positive and major impact on Nigeria's manufacturing sub-sector, and commercial bank credits to mining and quarry are a positive and important determinant of the current year's output. Mining and quarry output in Nigeria, previous year bank credits to real estate and construction are a positive predictor of current year real estate and construction output, bank credits to manufacturing, mining and quarry, as well as bank credits to real estate and construction, are positively correlated with aggregate industrial output, with bank credits to real estate and construction having a greater and significant impact on industrial output. While interest rates were not a significant predictor of industrial sector and industrial sub-sectors outputs in Nigeria, the exchange rate was a negative and significant determinant of industrial sector outputs.

Conclusion

Their findings suggest that increasing bank lending to the industrial sector is critical to supporting industrial growth in Nigeria. As a result, it is possible to conclude that bank credit has a major positive effect on the performance of Nigeria's manufacturing sector. Among the conclusions that may be drawn from the findings are that, notwithstanding the low level of credit accessible to Nigerian manufacturing enterprises in compared to worldwide standards, the amount of bank credit has proven to be productive. This is due to the huge favorable influence that bank lending has on the performance of Nigerian manufacturing enterprises.

Recommendations

Following thorough research, the report found many major areas that need to be addressed in order to boost financial sector development.

1. Furthermore, monetary authorities must address the significant discrepancy between lending and deposit rates. Individuals can acquire the necessary assets for investing objectives by introducing policies that stimulate the development of savings habits among the populace. This, in turn, will enhance economic activity, stimulating growth and development even further.
2. In light of these findings, it is proposed that financial sector players collaborate to develop and implement effective policies that enhance financial intermediation and encourage savings. This will necessitate a

collaborative effort from both the private and public sectors to create a favorable environment for investment and economic growth.

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