Impact of Financial Intermediation on Manufacturing Sector Output In Nigeria

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Abstract. This paper examines the impact of financial intermediation on manufacturing output in Nigeria between 2012 and 2021. The actions of financial intermediation bore the names of deposit mobilisation, credit provision to the manufacturing industry, and the rate of interest. Through ordinary least squares regression analysis, the study found that deposit mobilisation has a positive and significant effect on manufacturing industry output, with a p-value of 0.0025, which is vital at the 1% level. Credit extension to the manufacturing sector was also observed to have a positive and significant impact on the sector's output, with a p-value of 0.0421, which is statistically significant at the 5% level. The value of the coefficient of determination (R^2) of 0.941684 indicates that the independent variables explain 94.16% of the variation in manufacturing sector output. The study has concluded that financial intermediation plays a pivotal role in realising the potential of the manufacturing sector in Nigeria. It has been recommended that the Central Bank of Nigeria design monetary policies with a view to increasing financial savings and seek ways to provide incentives to banks in an effort to encourage more savings to be deposited and lent to the manufacturing sector.

Keywords: Financial Intermediation; manufacturing sector; Deposits mobilisation; credit extension; Nigeria.

INTRODUCTION

Financial Intermediation refers to the mechanism by which financial institutions, such as banks, gather money in the form of deposits and later convert it into loan funds [1]; this means that the process of intermediation facilitates the transformation of deposit liabilities of surplus economic units into loans and advances by the bank, which are primarily interest-earning assets. Financial Intermediation converts the mobilised deposits and liabilities of depositors into bank assets or credit in the form of loans and overdrafts by financial intermediaries, such as banks. It is merely the act by which financial intermediaries accept money deposited by depositors and lend it to borrowers at a rate of interest [2]. Deposit-taking banks provide the most critical intermediaries in the financial system due to the amount of assets they control within the eco-

nomic system, as well as their prime position in the short-term intermediation of funds.

Banks facilitate economic growth through financial intermediation, making adequate allocations of money obtained by the excess exercise of monetary units to the deficit sides. This role implies that financial intermediation may play a catalytic role in economic growth and development. Author [3] articulates that institutional funds mobilisation and investments are indeed the marks of financial intermediary operations of any financial institution; this is because there is sufficient evidence to indicate that countries experiencing economic prosperity are associated with an effective process of mobilising financial resources and allocating them to productive investments. Effective financial intermediation provides a significant input to the health of the financial system, yielding a greater output in terms of employment and income, and thereby augmenting the living standards of the people.

The relevance of the manufacturing sector in the economy cannot be overstated, especially in terms of its contribution to the overall employment/Output of the economy. According to authors [4], growth in this sector has long been considered crucial to the sustainable development of the economy. The industry can be said to be a potential source of innovation, change, and an agent of positive spillover impacts, as well as a provider of skilled employment. One of the elements that has been deemed effective in bringing about meaningful and effective economic change in both developed and emerging economies relates to the current development and growth in manufacturing output. The manufacturing sector is a significant industry in most developed and emerging economies, particularly in terms of boosting economic productivity, creating jobs, contributing to per capita income, and enhancing foreign exchange earnings [5].

Nonetheless, upon closer examination of the manufacturing sector in Nigeria, one would find that the actual output is significantly lower compared to that of the manufacturing sector worldwide. It is rather unfortunate to note that the industry has been realising low yields, which has contributed to the overall productivity of the economy. The low performance of the sector in Nigeria has been reflected in the output growth and consequently contributed to the unemployment rate. Autors [6] opined that the sector's poor performance in Nigeria is attributed to the financial sector's failure to adequately support the industry by providing funds for investment activities. A notable phenomenon is that the Nigerian financial markets are underdeveloped and underbanked, with a significant portion of financial intermediation occurring in the informal market. Consequently, savings do not respond to real interest rates [7].

Nigeria's business environment is hazardous and uncertain, considering the prevalence of corruption throughout the economy. The banks, therefore, require high degrees of collateral endorsement and high premium rates and will not offer loans exceeding one year. Likewise, Nigeria's manufacturing sector can be classified as very low in terms of its survival rate and Gross Domestic Product (GDP) contribution [8]. The poor survival rate and the poor contribution of the Manufacturing sectors to the Gross Domestic Product (GDP) has been attributed by the researches to numerous factors including management problems, money problems, infrastructural problems, government policy inconsistency and bureaucracy, environmental factor related problems, multiple taxes and levies, access to modern technology problems, unfair competition, marketing related problems, and non-availability of raw materials locally among many other factors.

The manufacturing sector in Nigeria faces challenges in accessing loans and advances from financial institutions. When advances are available, the conditions for accessing them are often too numerous and stringent to be fulfilled, which could have implications for the overall development of the manufacturing sector. High lending rates, poor mobilisation of finances, high systemic risk, and insufficient provision of finances to investors are some of the issues at stake [9]. There was also a low deployment of considerable savings in effective productive investment, leading to growth and development [10]. The linkage between the endogenous aspect of financial intermediation, especially the deposit aspect, and output can be best attributed to the fact that there is a close relationship between deposit funds and capital accumulation.

The unique nature of contractual arrangements, which facilitates the effective matching of lenders and borrowers, makes financial intermediation particularly important. It is thus crucial to the economy as it enhances investments mainly in the manufacturing sector. The level of deposits

mobilised as capital funds informs and dictates the amount of investments, jumpstarting and stimulating economic activities and, consequently, growth in the level of output. The interactions between the outputs and the capital have two significant long-term relationships: the level of capital dictates the level of output produced, and the level of production determines the level of saving, investment, and accumulated capital. The other form of endogenous portion of financial intermediation that is influential in output is banking credits (loans and overdrafts).

Due to the challenges facing the manufacturing industry and the positive effects of financial intermediation on economic development, there is a need to empirically investigate the impact of financial intermediation on manufacturing sector output in Nigeria. The ever-growing commendable role of manufacturing enterprises in the world has triggered, in recent years, critical reviews of how financial intermediaries can extend their services to companies and offer the required assistance. Comprehending this relationship is crucial in drafting effective policies that can enhance the performance of the manufacturing sector, ultimately leading to Nigeria's economic growth and development.

Research Questions: 1) To what extent does deposit mobilisation influence manufacturing sector output? 2) To what extent does credit extension influence manufacturing sector output?

Research Hypotheses

Ho_1: There is no significant relationship between deposit mobilisation and manufacturing sector output.

Ho_2: There is no significant relationship between credit extension and manufacturing sector output.

Literature Review

Conceptual Clarifications. Financial Intermediation is the methodology through which financial institutions, such as banks, withdraw savings in the form of deposits from the people and convert them into loanable funds [1]. According to authors [11], financial intermediation is considered an art of bringing the savings of surplus units and allocating them to deficit units in the economy for productive investment. It means organising the transfer of funds between savers and investors by mobilising funds and ensuring the effectiveness of transforming funds into capital formation. Author [12] noted that financial intermediation is instituted in a manner that involves financial resources provided by lenders (economic surplus units) to borrowers (economic deficit units) through financial institutions. According to authors [13], financial intermediation is the process through which a financial intermediary, such as a bank, raises deposits and converts them into bank credits, mainly in the form of loans and overdraft facilities. Therefore, one could argue that the effectiveness of the financial system depends solely on the financial intermediation process, given its essential role in capital accumulation required for productive investments and development.

Dimensions of Financial Intermediation. Deposit mobilisation refers to the process by which a financial institution transfers funds from a surplus unit to a deficit unit to take advantage of better investment opportunities. The lending capacity of a bank is closely tied to its ability to generate deposits and is therefore a key source of bank profits and growth. The deposit mobilisation must motivate customers to bring cash to the bank, allowing new customers to open an account. To survive in the banking field, banks must have a reasonable share of the deposit business. The industrial sector is one of the most pioneering sectors in the developed economies. It has catalytic power that is key to economic transformation, leading to increased productivity, growth, innovation, and trade. Authors [14] attribute the lack of appeal of the industrial sector to DMBs to government-sustained efforts to lure credit to the industry; despite such efforts, credits to the industrial sector remain at a relatively low level.

Credit extension entails the financial disequilibrium and intermediation, which suggest the economic ideas of lending and borrowing. What is resolved by finance is that, through an institutional arrangement of channels and mechanisms, deficit units and a surplus of units are brought together to effect the financial transaction needed to satisfy the disequilibrium. The role of deposit money banks is indispensable in the sense that they gather funds on behalf of other economic units that are in a surplus position and redirect these funds to economic units that are in a deficit position. Through this, bank credits play a significant and central role in enhancing the performance of the manufacturing sector by facilitating the acquisition of machinery needed to in-

crease output. These financial institutions in Nigeria have high liquidity to advance industrial loans. However, they do not consider it worthwhile to take on the risks and costs associated with lending to the manufacturing sector. The effects of the credit extended have not been realised so far for the manufacturing sector, as lending rates are sometimes in excess of thirty per cent (30%), making such credits unappealing. Meanwhile, the information-to-income ratio for investments in the sub-sector is below ten per cent (10%), which is below the norm.

Output in full in the sector of manufacturing. Manufacturing is an activity during which merchandise is produced for use or sale through the application of labour and machines, tools, chemical and biological processing, or formulation. The manufacturing sector encompasses activities related to the production and processing of goods, including the creation of new commodities or the addition of value [15]. In fact, the manufacturing industry is engaged in the activity of increasing the value of raw materials by converting them into products. Manufacturing activities are widespread and can be categorised into the following sectors: agro-processing, metal/plastics, ICT/electrical, textiles, clothing, footwear, cement, and building. These activities help the economy as a whole in regards to providing goods, commodities produced; a means of closing the gap between income disparities; a pool of skilled and semi-skilled labour force in future industrial sector; a greater advancement of forward, backward linkage within the value chain and interaction between socially and geographical diverse sectors of the nation; an excellent means of breeding entrepreneurs and managers and a source of foreign exchange to the economy [16].

Related Theories. The theory of capital formation is attributed to classical economists, such as those mentioned in [17, 18]. About capital formation, as per the theory, it would become possible when the society does not subject the entirety of its current acts of production to the immediate uses and wants of consumption but devotes a percentage of it to the production of capital goods, which can augment the productivity of the production activities so significantly. Classical economics views economic growth as primarily influenced by the ability of people to save and invest more in an economy. According to this theory, saving can be achieved through lower consumption and higher production. Therefore, capital formation plays a significant role in determining the rate of economic growth. The classical/neoclassical theories of economic growth maintain that economic growth can only occur through a rise in productivity. Savings and capital accumulation contribute to achieving significant productivity growth. The economic growth realised through the process of financial intermediation is therefore dependent on how well financial intermediaries mobilise savings and then invest them to enhance rapid economic growth.

Empirical Review. Empirical research on the interrelation between financial intermediation and the performance of the manufacturing sector has been conducted on several occasions. Authors [19] have examined the connection between financial intermediation and private sector investment in Nigeria, using time series data from 1980 to 2010. The results indicate that financial savings as a proportion of real gross domestic product, credit advanced to the private sector by deposit money banks, the prime lending rate, and real gross domestic product show a significant relationship with private investment in Nigeria. Author [20] analysed the influence of reforms in the financial sector on the performance of the manufacturing industry in Nigeria from 1980 to 2009 using empirical analysis. Overall, it was established that domestic credit and the ratio of broad money and GDP had a significant influence on manufacturing performance. Real interest rates, investment, foreign direct investment, and inflation rates are, however, insignificant factors in the performance of the manufacturing sector in Nigeria.

Authors [21] investigated the impact of financial deepening on the performance of manufacturing firms in Nigeria from 1970 to 2016. The findings of the study show that there exists an exact direct significance of broad money supply on the index of manufacturing production in Nigeria, an indirect insignificance of credit to the private sector on the index of manufacturing production in Nigeria and an indirect significance of market capitalisation on the index of manufacturing production in Nigeria in the long run and in the short run, respectively. Autors [6] investigated the relationship between financial development and manufacturing performance in Nigeria from 1981 to 2015. The outcome shows that the money supply and credit to the non-financial sector have a positive and insignificant impact on capacity utilisation and output. In the short term, the negative values of the money supply and credit to

the non-financial sector impact the value added of the manufacturing sector. Minor improvements arise in the long run, with both the money supply and credit to the non-banking sectors having a positive impact on the production of manufactured goods.

METHOD

The research design employed in this study is the ex post facto design, which will help establish the connection between financial intermediation and manufacturing sector output in Nigeria. The research was conducted using secondary data with the emphasis on the production of the manufacturing sector and Intermediation in Nigeria. The researchers gathered data from the Central Bank of Nigeria's published annual report, specifically the Statistical Bulletin, covering ten years (2012–2022); this is because the relationship between financial intermediation and manufacturing industries in Nigeria is elucidated through the output of the manufacturing sector as the dependent variable and financial intermediation as the independent variable, where Deposit mobilisation, credit extension, and interest rate have been used as proxies. The model was defined as follows:

$$OMS = a + bDM + cCE + dINT + e, \quad (1)$$

where OMS – output of the manufacturing sector; DM – Deposit mobilization; CE – Credit Extension; INT – Interest Rate; e – Error Term; a – Intercept/constant; b-d – Coefficients.

Correlation analysis was employed to investigate the effects of financial intermediation on manufacturing firms in Nigeria, utilising both regression analysis and correlation analysis.

RESULTS AND DISCUSSION

Data Presentation. Table 1 presents the data for Output of Manufacturing Sector (OMS), Deposit Mobilisation (DM), Credit Extension (CE), and Interest Rate (INT) from 2012 to 2021.

Table 2 shows the descriptive statistics of the variables. The results indicate that the means of OMS, DM, CE, and INT are 12,393.11, 15,126.07, 239.20, and 16.31, respectively. The maximum value of OMS was 25,725.87 in 2021, while the minimum value was 5,588.82 in 2012. The Jarque-Bera values reveal that the variables follow a normal distribution.

Table 1 – Data Presentation for Financial Intermediation Variables (2012-2021)

Year	OMS	DM	CE	INT
2012	5,588.82	8021.19	1068.342	16.79031
2013	7,233.32	9603.453	1179.691	16.72283
2014	8,685.43	11451.59	18.21586	16.54839
2015	8,973.77	11763.92	11.71418	16.84845
2016	8,903.24	14034.23	21.28346	16.86808
2017	10,044.48	14464.64	25.25465	17.55502
2018	12,455.53	16053.43	20.69107	19.32667
2019	16,781.06	18229.53	11.30967	15.5279
2020	19,539.55	21990.48	11.87525	12.31933
2021	25,725.87	25648.26	23.63798	14.6543

Table 2 – Descriptive Statistics of Study Variables

	OMS	DM	CE	INT
Mean	12393.11	15126.07	239.2015	16.31613
Median	9509.129	14249.43	20.98726	16.75657
Maximum	25725.87	25648.26	1179.691	19.32667
Minimum	5588.822	8021.190	11.30967	12.31933
Std. Dev.	6360.886	5535.163	467.1031	1.855556
Skewness	1.010599	0.623517	1.511386	-0.719227
Kurtosis	2.860805	2.414982	3.304514	3.623539

	OMS	DM	CE	INT
Jarque-Bera	1.710256	0.790559	3.845782	1.024145
Probability	0.425229	0.673492	0.146184	0.599252
Sum	123931.1	151260.7	2392.015	163.1613
Sum Sq. Dev.	3.64E+08	2.76E+08	1963668.	30.98778
Observations	10	10	10	10

These descriptive statistics indicate that the manufacturing sector has shown steady growth over the years, which coincided with the rise in deposit mobilisation and credit extension.

Table 3 presents the correlation coefficients among the variables. OMS and DM exhibit a strong positive correlation of 0.9793, which is significant at the 1% level. OMS and CE have a negative relationship (-0.4916), while OMS and INT also show a negative relationship (-0.6291).

Table 3 – Correlation Matrix of Study Variables

	OMS	DM	CE	INT
OMS	1.000000			
	—			
DM	0.979386	1.000000		
	0.0000	—		
CE	-0.491629	-0.595939	1.000000	
	0.1490	0.0690	—	
INT	-0.629151	-0.586955	0.129029	1.000000
	0.0513	0.0744	0.7224	—

The implication is that the volume of deposits mobilised highly influences the manufacturing sector output, while high interest rates appear to hinder growth in the sector.

Table 4 shows that all variables are stationary at either the first difference or level, confirming their suitability for regression analysis.

Table 4 – Unit Root Test Results (ADF Test)

Variables	ADF stats	Critical value @ 5%	P Value	Order of Integration
OMS	-6.666985	-4.246503**	0.0029	I(1)
LOG_DM	-3.339881	-3.320969**	0.0488	I(1)
CE	-48.97776	-4.450425**	0.0001	I(1)
INT	-3.488275	-3.320969*	0.0401	I(0)

Table 5 presents the OLS estimates. Deposit mobilisation (LOG_DM) is positive and significant at the 1% level (p = 0.0025). Credit extension (CE) is positive and statistically significant at the 5% level (p = 0.0421). Interest rate (INT) is negative but insignificant (p=0.3719). The R^2 value of 0.94 indicates that the independent variables account for 94% of the variation in OMS.

Table 5 – Ordinary Least Squares Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-162027.5	41814.29	-3.874931	0.0082
LOG_DM	18795.61	3763.115	4.994694	0.0025
CE	3.676526	2.176103	1.689500	0.0421
INT	-382.6227	396.5693	-0.964832	0.3719

Table 6 – Model Fitness and Diagnostic Statistics

R^2	0.941684	Mean dependent var	12393.11
Adjusted R^2	0.912527	S.D. dependent var	6360.886
S.E. of regression	1881.290	Akaike info criterion	18.20648
Sum squared resid	21235521	Schwarz criterion	18.32751
Log likelihood	-87.03239	Hannan-Quinn criterion.	18.07370
F-statistic	32.29611	Durbin-Watson stat	2.134568
Prob(F-statistic)	0.000424	Wald F-statistic	71.12663
Prob(Wald F-statistic)	0.000044		

Test of Hypotheses

The study tested two hypotheses on the relationship between financial intermediation and manufacturing sector output in Nigeria.

Ho_1: There is no significant relationship between deposit mobilisation and manufacturing sector output. According to the regression results (Table 5), deposit mobilisation has a positive and significant effect on OMS, with a p-value of 0.0025, which is statistically significant at the 5% level. Hence, the null hypothesis is rejected.

Ho_2: There is no significant relationship between credit extension and manufacturing sector output. The results indicate that credit extension to the manufacturing sector has a positive and statistically significant effect on OMS, with a p-value of 0.0421, which is vital at the 5% level. Thus, the null hypothesis is rejected.

The interest rate shows a negative but insignificant effect (p-value 0.3719), implying that although higher rates increase the cost of borrowing, the impact on manufacturing output during this study period was not statistically significant.

Several significant findings emerge from the empirical analysis in this study regarding the link between financial intermediation and the output of the manufacturing sector in Nigeria.

The results show a strong positive relation between manufacturing sector output and deposit mobilisation. The coefficient on deposit mobilisation is positive and statistically significant (p = 0.0025); this implies that the greater a bank's capacity to raise deposits, the more funds can be channelled as loanable funds to productive sectors, such as manufacturing, thereby boosting output and growth. Policies and initiatives that increase the mobilisation of savings by banks will therefore stimulate the performance of the manufacturing sector. The results also show a positive and significant correlation between bank credit extension and output of the manufacturing sector. The coefficient on credit extension is vital at the 5% level (p = 0.0421); this aligns with economic theory and past empirical literature, which suggests that increased bank credit can alleviate constraints on financing working capital and investment requirements of firms, enabling them to undertake productivity-enhancing actions. Improved credit flow to manufacturing is, therefore, an essential driver of output. This finding is confirmed by studies such as those by authors [22, 23], which found a positive correlation between industrial production and the provision of credit.

The coefficient for interest rate is negative but statistically insignificant; this suggests that while higher interest rates increase the cost of borrowing and may discourage investment, they can also attract financial savings, enabling banks to lend more. The results suggest that the effect of interest rates on manufacturing output is not straightforward and may be nonlinear. This finding aligns with that of authors [24], who identified an ambiguous relationship between interest rates and manufacturing output in Nigeria.

Overall, the R^2 value of 0.94 indicates that the independent variables — deposit mobilisation, credit extension, and interest rate — explain more than 94% of the variation in manufacturing sector output; this underscores the pivotal role of banks in supporting the performance of the manufacturing sector through savings mobilisation and lending. It also highlights the importance of monetary policies and financial sector reforms that improve resource intermediation to the real sector. These conclusions support the Capital Formation Theory, which emphasises the mobilisation of savings and investment as drivers of economic growth and development.

CONCLUSIONS

This paper examined the effect of financial intermediation on manufacturing sector output in

Nigeria over the period 2012–2021. Using ordinary least squares regression, the study found that financial intermediation through deposit mobilisation and credit extension has a strong and significant influence on the performance of the manufacturing sector. Increased deposit mobilisation generates more loanable funds to lend to the manufacturing sector, easing funding constraints on productivity-enhancing investments and spurring output growth. Credit extension also makes a positive and significant contribution to manufacturing performance.

The result for interest rate shows a negative but insignificant relationship, suggesting that while higher rates may increase borrowing costs, they also attract savings that enable banks to lend more. Overall, financial intermediation plays a central role in unlocking the potential of the manufacturing sector and facilitating industrial-led growth.

The study therefore recommends that the Central Bank of Nigeria design monetary policies that promote higher financial savings and encourage banks to mobilise deposits for lending to the manufacturing sector; this can include lowering interest rates on loans, extending repayment periods, and easing collateral requirements. Government support in addressing infrastructural challenges and policy inconsistencies will further strengthen manufacturing firms' capacity to utilise credit effectively.

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