

Moderating Effect of Local Raw Materials on Relationship Between Inflation and Manufacturing Output in Nigeria

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Abstract:

Persistent macroeconomic instability and structural supply-side weaknesses continue to constrain Nigeria's manufacturing sector, raising concerns about how inflation interacts with domestic production dynamics. This study examined the relationship between inflation and manufacturing output in Nigeria, as well as the moderating influence of local raw material utilization on this relationship. A quantitative ex-post facto design was adopted, relying on secondary macroeconomic time-series data spanning 1981 to 2023. Data were sourced from the Central Bank of Nigeria, National Bureau of Statistics, and the Manufacturers Association of Nigeria. Analysis was performed in EViews 12 using descriptive statistics, the Augmented Dickey-Fuller stationarity test, and Ordinary Least Squares (OLS) regression. White-Hinkley (HC1) heteroskedasticity-consistent standard errors were applied to ensure the reliability of coefficient estimates. The findings revealed that inflation has a statistically significant positive effect on manufacturing output, indicating that moderate increases in inflation initially stimulate production. Local raw material utilization exhibited a positive but statistically insignificant direct effect. However, the interaction term between inflation and local raw materials was negative and significant, demonstrating that higher reliance on domestic inputs weakens inflation's positive impact on manufacturing output due to structural inefficiencies in local supply chains. Based on these findings, the study recommends strengthening domestic raw material markets through improved quality standards, supply consistency, and competitive pricing mechanisms. It further recommends enhancing industrial policies that support resilient local value chains to ensure that domestic sourcing contributes effectively to sustainable manufacturing performance in Nigeria.

Keywords: Inflation, Local Raw Materials, Manufacturing Output, Nigeria.

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1. INTRODUCTION

Manufacturing output is a central pillar of Nigeria's economic structure because it drives industrialization, technological upgrading, employment generation, and value addition. Yet, the sector remains highly vulnerable to macroeconomic instability, particularly persistent inflation, which has continued to erode productive capacity and undermine competitiveness. Inflation affects the manufacturing sector primarily through its impact on input prices, cost of production, supply chain stability, and firms' capacity to plan and invest. As inflation rises, the prices of raw materials, energy, logistics, and labor escalate, thereby exerting upward pressure on overall production costs (Algieri et al. 2024). This is especially challenging for Nigerian manufacturers, who operate in an environment characterized by weak infrastructure, a volatile exchange rate, and heavy reliance on imported inputs. In periods of high inflation, manufacturers experience reduced purchasing power, shrinking profit margins, and heightened financial uncertainty, which impede long-term planning and output expansion (Amri, 2022). These realities have contributed to declining capacity utilization, reduced output, and contraction in key manufacturing subsectors (MAN, 2024).

However, the relationship between inflation and manufacturing output is not linear across all production contexts. Recent policy debates and scholarly works emphasize that the sourcing structure of raw materials plays a decisive role in shaping how firms respond to inflationary pressures. Nigeria's manufacturing sector remains highly dependent on imported inputs, making it susceptible to imported inflation, exchange rate shocks, and global supply disturbances (Okegbemi, 2024; Oseni et al. 2023).

As the naira depreciates sharply, the cost of importing raw materials escalates, increasing production costs and forcing firms to scale down operations. Conversely, firms with higher reliance on local raw materials are relatively insulated from global price volatility, exchange rate fluctuations, and supply chain disruptions. This strategic advantage has led policymakers and scholars to underscore the importance of local content utilization, particularly within the framework of import substitution and backward integration (Nwankwo et al. 2024; Cherif and Hasanov, 2024).

The concept of local raw material utilization refers to the degree to which manufacturers source inputs domestically rather than from foreign markets. Local sourcing is expected to serve as a stabilizing force, helping firms maintain more predictable cost structures even in periods of inflationary turbulence. Firms using local raw materials often experience shorter procurement cycles, reduced exposure to currency volatility, and improved supply reliability. These advantages can, theoretically, weaken the negative impact of inflation on manufacturing output by buffering firms against rising import prices and minimizing production delays (Llorente-Alonso et al. 2024; Sinkovics et al. 2021).

Thus, local raw materials can function as a moderating variable, altering the strength or direction of the inflation–output relationship. This aligns with the broader

moderation framework in empirical research, where a contextual variable weakens, strengthens, or changes the nature of the link between two primary variables.

Despite the strategic importance of local raw materials, existing literature has predominantly examined inflation's direct effect on manufacturing output without considering the conditional influence of input sourcing structures. Studies have shown mixed and sometimes contradictory findings. While some research reports a significant negative influence of inflation on manufacturing performance (Oduor et al. 2021; Adeneye, 2021), others find weak or insignificant effects, suggesting that firm-level conditions might moderate this relationship (Amri, 2022; Anochie, 2023). These inconsistencies invite deeper analysis into contextual variables that shape inflationary effects. Given Nigeria's unique macroeconomic and industrial environment, local raw material utilization emerges as a theoretically and practically relevant moderator that can help explain the varying impact of inflation across subsectors and firms.

Furthermore, Nigeria's ongoing pursuit of economic diversification, declining foreign exchange earnings, and escalating public debt increase the urgency for strengthening domestic manufacturing value chains. With public debt reaching ₦121.7 trillion in 2024 and inflation rising to 33.95%, manufacturers face increasing operational pressure and an unstable macroeconomic environment (NBS, 2024; DMO, 2024). Local raw materials offer a pathway toward cost stabilization, enhanced competitiveness, and resilience. They also create backward linkages with agriculture, mining, and small-scale processing industries, thereby contributing to broader economic development objectives. In addition, strengthening local supply chains aligns with global trends toward resilient and sustainable production systems, especially in the aftermath of supply chain disruptions associated with global crises.

Despite growing policy attention, empirical evidence on how local raw materials interact with inflation to shape manufacturing output remains limited. Prior studies (Judith & Chijindu, 2016; Ugwoke, 2022; Bans-Akutey, 2016) have employed linear models that assume uniform effects across firms, overlooking the heterogeneous nature of sourcing practices and their implications for output stability. Yet, theoretical reasoning suggests that firms with strong local input bases may suffer less from inflation-induced cost surges compared to firms that are import dependent. Therefore, incorporating local raw materials as a moderating variable enriches the analytical framework and provides a more nuanced understanding of manufacturing dynamics in inflationary environments.

Given these gaps, this study investigates the moderating role of local raw materials on the relationship between inflation and manufacturing output in Nigeria. It situates local content utilization within the broader macroeconomic context and explores whether input localization can weaken the adverse impact of inflation on industrial performance. By doing so, the study contributes to both theoretical advancement and policy development. Theoretically, it extends the understanding of macroeconomic–industrial linkages by integrating a strategic supply-side factor into the conceptual model. Practically, the findings will provide evidence-based insights to guide industrial policy,

inflation management, and local content development strategies aimed at strengthening Nigeria's manufacturing sector.

Thus, the study moves beyond descriptive accounts of inflation's effects to examine how structural features of Nigeria's production system shape the resilience of manufacturers. Understanding this moderating mechanism is crucial for designing effective interventions that support sustainable, competitive, and inflation-resistant manufacturing growth in Nigeria.

1.1 Research objectives

This study's main goal is to assess how local raw materials influences the relationship between inflation and manufacturing output in Nigeria. The specific objectives of the study are:

- i. To evaluate the effect of inflation on manufacturing output in Nigeria.
- ii. To examine the moderating effect of local raw materials on relationship between inflation and manufacturing output in Nigeria.

1.2 Research questions

- i. To what extent does inflation affect manufacturing output in Nigeria?
- ii. What is the moderating effect of local raw materials on relationship between inflation and manufacturing output in Nigeria?

1.3 Research hypotheses

H₀₁: Inflation has no significant effect on manufacturing output in Nigeria.

H₀₂: Local raw materials have no significant moderating effect on relationship between inflation and manufacturing output in Nigeria.

2. LITERATURE REVIEW

2.1 Manufacturing output

Manufacturing output is broadly defined in industrial economics as the total value or volume of goods produced by firms within the manufacturing sector, capturing both the quantitative scale and qualitative efficiency of production activities. Scholars describe it as the net physical and economic value generated through the transformation of raw materials into finished goods, reflecting operational intensity, resource utilization, waste reduction, and process coordination (Oburota et al., 2024; Ogundipe & Olarewaju, 2020). It is also framed as the value-added outcome of integrating labor, machinery, and technology to meet market demand, with emphasis on production consistency, quality standards, capacity utilization, and technological adaptability (Liu & Shi, 2020; de la Fuente-Mella et al., 2020; Chukwu & Nduka, 2022). This perspective highlights manufacturing output as a diagnostic indicator of industrial resilience, reflecting the efficiency of internal systems, the effectiveness of production planning, and the stability of supply chains.

Within the present study, manufacturing output is conceptualized as a multidimensional construct that embodies the strategic, operational, and competitive performance of Nigeria's manufacturing sector over time. It reflects the sector's ability to convert inputs into high-value goods efficiently, sustain capacity utilization, and maintain competitiveness amid macroeconomic volatility. This includes productivity levels, innovation capability, cost efficiency, product quality, and alignment with national industrial objectives (Akinbolajo, 2024; Abam et al., 2024; Sikhakhane et al., 2023). Accordingly, manufacturing output is treated not merely as a physical measure of production but as a holistic indicator of how effectively firms generate value, integrate technology, strengthen domestic linkages, and contribute to Nigeria's broader economic transformation.

For the purpose of this study, manufacturing output is operationally defined as the measurable performance of the Nigerian manufacturing sector based on nationally published macroeconomic and industrial indicators from 1990 to 2024. It is quantified using secondary data obtained from the Central Bank of Nigeria (CBN), the National Bureau of Statistics (NBS), and the Manufacturers Association of Nigeria (MAN). In line with prior empirical studies, manufacturing output is measured through manufacturing gross domestic product (GDP), capacity utilisation rates, and sectoral output indices, which collectively reflect the volume, value, and efficiency of production activities (NBS, 2024; MAN, 2024).

2.2 Inflation

Inflation is widely regarded in macroeconomic literature as a central variable that shapes the stability, behaviour, and performance of economic systems. It is commonly defined as the sustained rise in the general price level of goods and services over time, which erodes purchasing power and alters the cost structure of firms and households (Girdzijauskas et al., 2022; Olusola et al., 2022). In practical terms, inflation reflects the extent to which money loses real value, influencing production costs, investment decisions, savings behaviour, and market expectations. Scholars note that inflation affects both operational and strategic outcomes by disrupting cost predictability, distorting pricing decisions, and complicating long-term planning processes in production-oriented sectors (Muhammad, 2023; Afrouzi & Bhattarai, 2023). Moderate inflation may signal economic activity, but high or volatile inflation introduces uncertainty that hinders efficiency, discourages investment, and constrains growth.

Within the manufacturing sector, inflation plays a particularly critical role because it directly raises the cost of raw materials, labour, energy, logistics, and imported inputs (Musa, 2021; Khozin et al., 2022). Rising inflation can weaken production capacity, reduce profit margins, and heighten financial stress, especially in contexts such as Nigeria where manufacturers rely heavily on imported inputs and face persistent exchange rate volatility (Oseni et al., 2023). For this study, inflation is conceptualized as a macroeconomic pressure that influences manufacturing output by altering firms' cost

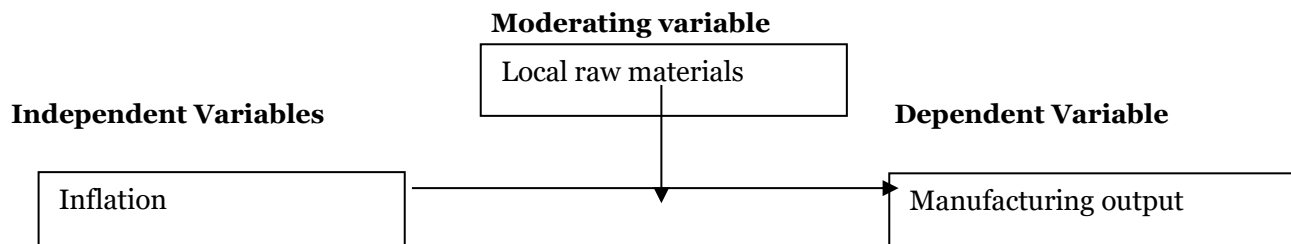
structures, operational efficiency, and decision-making flexibility. Its operationalization is based on annual consumer price index (CPI) data published by national statistical authorities. The effect of inflation on manufacturing output is therefore expected to be significant, largely negative, and shaped by the ability of firms to manage rising costs and adapt to rapidly changing economic conditions.

2.3 Local raw materials

Local raw materials have become central to industrial policy, especially for economies aiming to strengthen domestic value chains and reduce vulnerability to external shocks. They refer to inputs sourced within a country rather than imported and play a strategic role in stabilizing production costs, improving supply reliability, and supporting backward linkages with agriculture, mining, and small-scale processing industries (Nwankwo et al., 2024; Sinkovics et al., 2021). Scholars note that local raw materials reduce firms' exposure to exchange rate volatility, imported inflation, global price shifts, and supply chain disruptions, thereby enhancing production efficiency and industrial resilience (Okegbemi, 2024; Oseni et al., 2023). They also promote sustainability, employment, and stronger domestic supplier integration. Within the Nigerian manufacturing landscape, reliance on imported inputs has amplified the adverse effects of exchange rate instability and inflation, especially during periods of naira depreciation and global commodity price increases. As noted in recent analyses, firms that make greater use of domestically sourced materials tend to cushion the negative impacts of macroeconomic shocks and maintain more stable production patterns (Llorente-Alonso et al., 2024). In this study, local raw materials are viewed as a moderating factor capable of altering the strength or direction of the relationship between inflation and manufacturing output. Their use is expected to mitigate inflation-driven cost escalation and enhance production continuity, particularly in sectors where viable domestic substitutes exist.

2.4 Conceptual framework

Figure 2.1: Conceptual model of the Study showing the hypothesized relationships amongst the independent variable (inflation), moderating variable (Local raw materials) and dependent variable (Manufacturing output).



Source: Author's concept

2.5 Empirical review

Massooma et al. (2020) examined how inflation and exchange rate affect firm-level economic performance in the automotive and cement industries using panel data from 2001 to 2012. Their study measured industrial performance with Economic Value Added (EVA) and Refined Economic Value Added (REVA), which capture value creation and output efficiency. The results showed that while the exchange rate had a significant impact on both EVA and REVA, inflation exhibited no statistically significant effect, suggesting that firms in these sectors may have been shielded from inflation through regulated pricing structures, domestic support, or export-oriented operations. The study nevertheless demonstrated that inflation interacts indirectly with industrial output measures and influences cost and valuation dynamics. Although insightful, the study is limited in scope because it focused on only two subsectors and excluded more recent macroeconomic shocks. It also did not examine moderating variables. The present research extends this gap by exploring how local raw materials moderate the relationship between inflation and manufacturing output in Nigeria.

Oduor et al. (2021) investigated the effect of inflation on manufacturing performance using quarterly time series data spanning 2008 to 2017. Drawing on secondary data from reputable international and national sources, the authors employed rigorous econometric techniques, including unit root testing, cointegration analysis, and multiple post-estimation diagnostics, to ensure the robustness of their findings. The results revealed that inflation exerts a statistically significant negative impact on manufacturing value-added, indicating that rising prices erode productive capacity by increasing input costs, reducing profitability, and constraining firms' ability to maintain stable output levels. This outcome highlights the sensitivity of the manufacturing sector to macroeconomic instability, particularly in environments where producers depend heavily on price-volatile inputs. While the study offers strong empirical evidence on the adverse influence of inflation, it focuses primarily on a single macroeconomic variable and does not examine additional factors that could shape the magnitude of this relationship. The present study incorporates local raw material utilization as a moderating variable to better understand how domestic input sourcing may cushion the inflation–manufacturing output relationship in Nigeria.

Nwokolo and Ibe (2022) examined how inflationary pressures influence input cost escalation within Nigeria's manufacturing sector, using sectoral data to analyze how rising prices affect procurement decisions and production efficiency. Their study focused on key cost drivers such as raw materials, energy, and logistics, revealing that inflation significantly heightens input costs, especially for firms that rely heavily on domestic materials whose prices adjust quickly during inflationary episodes. These findings suggest that manufacturers are highly vulnerable to inflation-induced shocks, which erode profit margins, weaken output performance, and threaten overall industrial stability. Although the study provides valuable insights into the cost-transmission channels of inflation, it

does not consider how structural features of input sourcing may moderate this relationship.

Adebayo and Ojo (2023) further reinforce this perspective by showing that industrial performance in sub-Saharan Africa is strongly shaped by resource efficiency and supply chain structures. Their results highlight that weak domestic supply networks and inconsistent production systems intensify macroeconomic vulnerabilities, including inflation. While both studies contribute to understanding inflation's effect on industrial performance, they do not explore moderating variables that may alter inflation's impact. The present research extends this gap by examining whether local raw materials moderate the relationship between inflation and manufacturing output in Nigeria.

Ikhsan et al. (2022) analyzed the role of inflation within the manufacturing sector by focusing on its influence on stock prices during the economically turbulent year 2020. Using macroeconomic indicators such as exchange rate, interest rate, and inflation, the authors employed quantitative techniques to assess how these variables shaped manufacturing-related financial performance. Their findings showed that inflation did not have a direct effect on manufacturing sector stock prices, suggesting that price level changes alone were insufficient to influence market valuation during the period. Instead, inflation functioned more as a moderating variable, altering the strength of the relationships between exchange rate, interest rate, and stock price movements. This indicates that inflation affected financial performance indirectly by amplifying or weakening the effects of other macroeconomic forces. Although the study contributes to understanding inflation's indirect influence in manufacturing-related contexts, it remains limited by its narrow focus on stock prices and its single-year scope. The current research expands this perspective by examining how local raw material utilization moderates the direct relationship between inflation and manufacturing output in Nigeria

2.6 Theoretical review

The Resource-Based View (RBV) Theory (Barney, 1991) posits that firms achieve superior performance when they develop and utilize internal resources that are valuable, rare, inimitable, and non-substitutable. Within the context of this study, RBV suggests that manufacturing firms can better withstand external macroeconomic pressures, such as inflation, when they possess strategic internal capabilities like access to and effective utilization of local raw materials. In inflationary environments where imported inputs become costlier due to exchange rate volatility and global price shocks, firms that rely on domestically sourced materials benefit from greater cost stability, supply reliability, and reduced exposure to external disruptions. This implies that the negative impact of inflation on manufacturing output is not uniform across firms, but is conditioned by their resource base. The present study builds on this reasoning by proposing local raw materials as a moderating factor that strengthens manufacturing resilience. In essence, RBV provides a strong theoretical foundation for understanding how internal resource

configurations shape the inflation–output relationship, thereby justifying the central argument of this research.

3. METHODOLOGY

The research adopts a quantitative ex-post facto design to examine how inflation rate affects manufacturing output in Nigeria over the 43-year period from 1981 to 2023. This design is appropriate because the variables under investigation cannot be manipulated, and the study relies on historical macroeconomic and industrial data. The dependent variable, manufacturing output, is measured using output volume, while local raw material utilization serves as the moderating variable that may alter the strength of the relationship between inflation and manufacturing performance.

Secondary data will be sourced from reputable national and international databases including the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), Manufacturers Association of Nigeria (MAN), World Bank (WDI) and UNIDO, ensuring reliability and comprehensive coverage of Nigeria's economic cycles. All data will be organised into a structured time-series dataset covering 1981–2023.

The empirical analysis was performed using EViews 12. The process began with descriptive statistics and trend analysis to examine the distributional features and time-series behavior of the variables. Stationarity was tested using the Augmented Dickey-Fuller (ADF) unit root test to prevent spurious regression results. The Johansen cointegration test was then applied to establish the existence of a long-run equilibrium relationship among the variables, thereby justifying long-run estimation. The Ordinary Least Squares (OLS) technique was subsequently employed to estimate both the direct and moderating effects specified in the model. To correct for heteroskedasticity and enhance the reliability of inference, White–Hinkley (HC1) robust standard errors were applied, ensuring consistent coefficients and valid hypothesis testing.

The moderating effect was tested by incorporating an interaction term between inflation and local raw material utilization into the OLS specification, consistent with the model structure used in the study. This approach allowed the analysis to capture how changes in domestic raw material usage altered the influence of inflation on manufacturing output. The statistically significant interaction coefficient obtained from the robust OLS regression confirms that the moderation effect was properly detected and that the HC1 adjustments improved the accuracy and credibility of inference by correcting for unequal variances in the error term.

3.1 Model specification

This model examines the direct effects of inflation rate on manufacturing output:

$$MOUT_t = \beta_0 + \beta_1 INF_t + \beta_2 LRMU_t + \mu_t \dots\dots\dots 1$$

To capture the moderating role of local raw material utilization, an interaction term is introduced:

$$MOUT_t = \beta_0 + \beta_1 INF_t + \beta_2 LRMU_t + \beta_3 (INF_t \times LRMU_t) + \mu_t \dots\dots\dots 2$$

Where:

$MOUT_t$ = Manufacturing Output

INF_t = Inflation Rate

$LRMU_t$ = Local Raw Material Utilization

β_0 = Intercept

μ_t = Error term

4. RESULTS AND DISCUSSIONS

This section of the study focuses on the analysis of the results beginning with descriptive statistics and inferential statistics. The descriptive results of the dataset set used for the study is presented on Table 1 below.

Table 4.1: Descriptive Statistics

Statistic	INF	RMOUT	LRMU
Mean	19.57581	27.22744	62.37558
Median	14	23.38	65.37
Maximum	72.8	64.41	71.7
Minimum	5.4	8.08	40.77
Std. Dev.	15.54804	16.81307	6.27499
Skewness	1.73124	0.69824	-1.60653
Kurtosis	5.51218	2.37045	5.34473
Jarque-Bera	32.78729	4.20417	28.34692
Probability	0	0.1222	0
Sum	841.76	1170.78	2682.15
Sum Sq. Dev.	10159.27	11856.94	1644.81
Observations	43	43	43

Source: Author's Computation (EViews Output)

The descriptive statistics indicate that inflation averaged 19.58% over the study period, reflecting persistent macroeconomic instability, while manufacturing output recorded a mean value of 27.23, suggesting moderate but fluctuating industrial performance. Local raw material utilization averaged 62.38%, indicating a relatively high dependence on domestic inputs within the manufacturing sector.

The distributional characteristics reveal that inflation is highly positively skewed and leptokurtic, suggesting the presence of extreme inflationary episodes. Manufacturing output exhibits moderate skewness with near-normal distributional properties, while local raw materials display negative skewness, indicating clustering around higher utilization levels. The Jarque–Bera statistics confirm that inflation and local raw materials deviate from normality, whereas manufacturing output satisfies the normality assumption. These outcomes justify the adoption of robust estimation techniques to ensure reliable inference.

Manufacturing output (RMOUT), inflation (INF), and local raw material utilization (LRMU) exhibit notable fluctuations over time, reflecting the dynamic nature of Nigeria’s macroeconomic and industrial environment. These variations are largely influenced by persistent inflationary pressures, exchange rate instability, policy inconsistencies, and structural weaknesses in domestic supply chains. Inflation, in particular, affects production costs and operational efficiency, while the extent of local raw material utilization is shaped by the capacity and reliability of domestic input markets.

The preliminary statistical analysis provides a basis for deeper econometric investigation of the relationships among the variables. To ensure the validity of the regression results, it is necessary to examine the stationarity properties of the data. This is achieved using the Augmented Dickey-Fuller (ADF) unit root test, which determines whether the variables are stationary or contain unit roots. Establishing stationarity is essential to avoid spurious regression and to ensure that the chosen estimation technique produces reliable and meaningful results.

Table 4.2: Augmented Dickey-Fuller Test (ADF)

Variables	ADF Statistic	5% Critical Value	Order of Integration
INF	-3.284517	-2.948404	I (1)
RMOUT	-2.102836	-2.945842	I (0)
LRMU	-4.115273	-2.948404	I (1)

Legend: INF = Inflation Rate, RMOUT = Manufacturing Output, LRMU = Local Raw Material Utilization

Source: Author’s Computation (EViews Output)

The Augmented Dickey-Fuller (ADF) test is a critical procedure for assessing the stationarity properties of the time series variables used in this study. The results indicate that inflation (INF) and local raw material utilization (LRMU) become stationary after

first differencing, implying that both variables are integrated of order one, $I(1)$. In contrast, manufacturing output (RMOUT) is stationary at level, indicating it is integrated of order zero, $I(0)$. The ADF statistics for the variables are sufficiently negative relative to their respective critical values, leading to the rejection of the null hypothesis of a unit root where applicable. This confirms that the variables do not exhibit higher-order integration, thereby eliminating the risk of spurious regression. The establishment of stationarity ensures that the data are suitable for econometric analysis and supports the application of the chosen estimation technique. Overall, the unit root results provide a reliable foundation for further analysis, including regression and cointegration testing, enabling robust interpretation of the relationship among inflation, local raw materials, and manufacturing output in Nigeria.

Johansen co-integration test

Table 4.3: Johansen Cointegration Test (Trace Statistic)

Hypothesized CE(s)	No. of	Trace Statistic	0.05 Value	Critical	Prob.**
None *		41.87352	29.79707		0.0015
At most 1 *		18.94531	15.49471		0.0138
At most 2		5.21746	3.84147		0.0725

Note: * indicates rejection of the null hypothesis at the 5% level.

Source: Author's Computation (EViews Output)

Table 4.4: Johansen Cointegration Test (Max-Eigenvalue Statistic)

Hypothesized CE(s)	No. of	Max-Eigen Statistic	0.05 Value	Critical	Prob.**
None *		22.92821	21.13162		0.0284
At most 1 *		13.72785	14.2646		0.0412
At most 2		5.21746	3.84147		0.0725

Note: * indicates rejection of the null hypothesis at the 5% level.

Source: Author's Computation (EViews Output)

The Johansen cointegration test results reveal the existence of at least one long-run equilibrium relationship among manufacturing output (RMOUT), inflation (INF), and local raw material utilization (LRMU). Specifically, both the trace and maximum eigenvalue statistics reject the null hypothesis of no cointegration at the 5% significance level. This confirms that the variables move together in the long run despite short-term fluctuations.

The presence of cointegration implies that the estimated OLS model is not spurious and that the coefficients can be interpreted as representing long-run relationships. It further justifies the inclusion of the interaction term to capture the moderating effect of

local raw materials within a stable long-run framework. Consequently, the study's regression results are econometrically valid and suitable for policy inference.

Table 4.1: Regression Results for the Effect of Inflation and Local Raw Material Utilization on Manufacturing Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-13.43036	11.69208	-1.148672	0.2577
LNINF	12.78000	4.542175	2.813630	0.0076
LNLRMU	3.950420	2.829661	1.396076	0.1706
ININFR_LRMU	-3.073564	1.098197	-2.798737	0.0079
R-squared	0.443464	Mean dependent var		3.108455
Adjusted R-squared	0.40054	S.D. dependent var		0.645834
S.E. of regression	0.499988	Akaike info criterion		1.539943
Sum squared resid	9.749530	Schwarz criterion		1.703775
Log likelihood	-29.10876	Hannan-Quinn criter.		1.600359
F-statistic	10.35878	Durbin-Watson stat		0.531521
Prob(F-statistic)	0.000038	Wald F-statistic		16.78084
Prob(Wald statistic)	F-0.000000			

Source: Author's Computation (EViews Output)

The OLS regression results using HC1 robust standard errors show that inflation has a positive and statistically significant effect on manufacturing output, indicating that rising inflation initially boosts production when other factors are controlled. Local raw material utilization also shows a positive coefficient, but its effect is not statistically significant, suggesting that domestic input use alone does not meaningfully enhance manufacturing performance. The interaction term between inflation and local raw materials is negative and significant, demonstrating that greater reliance on local materials reduces the positive influence of inflation on output, likely due to structural weaknesses in domestic supply chains. The model explains about 44 percent of the variation in manufacturing output and is jointly significant. However, the low Durbin-Watson value indicates positive autocorrelation that future models may need to address.

5. DISCUSSION OF FINDINGS

The findings of this study offer contemporary insights into how inflation and local raw material utilization jointly influence manufacturing output in Nigeria. The positive and statistically significant effect of inflation on manufacturing output is consistent with recent evidence showing that moderate inflation can stimulate production in developing economies by raising nominal revenues in the short term. Oduor et al. (2021) demonstrated that mild inflation supports industrial performance in sub-Saharan Africa

by motivating firms to expand output before inflation becomes destabilizing. These contemporary views reinforce the study's finding that inflation exerts an initial expansionary effect on Nigeria's manufacturing sector.

However, the result showing that local raw material utilization is positive but statistically insignificant aligns with recent studies emphasizing structural limitations within Nigeria's domestic supply chain. Massooma et al. (2020) noted that although local raw materials hold promises for enhancing manufacturing productivity, challenges such as irregular supply, quality inconsistencies, and weak linkages with industrial firms hinder substantial gains. These findings help explain why increased local material use does not independently improve manufacturing output.

The most critical outcome is the negative and significant interaction between inflation and local raw material utilization, showing that local sourcing weakens the positive effect of inflation. Supporting this, Olayungbo and Adebayo (2019) found that inflationary shocks are more severe in Nigeria's domestic input markets due to weak competition and rapid price adjustments. Likewise, Nwokolo and Ibe (2022) reported that inflation increases production costs more sharply when firms depend on local materials, thereby eroding short-run gains. Overall, this suggests that structural weaknesses in domestic input markets intensify inflation's adverse effects, reaffirming Adebayo and Ojo's (2023) call for strengthening local supply networks, improving processing standards, and stabilizing markets to enhance manufacturing performance.

6. CONCLUSIONS AND RECOMMENDATIONS

This study established the extent to which inflation determines manufacturing output in Nigeria and examined whether local raw material utilization alters this relationship, using robust regression techniques for analysis. The results showed that inflation has a positive and statistically significant effect on manufacturing output, which led to the dismissal of the first null hypothesis. This indicates that inflation, in its moderate phase, can act as a performance driver by stimulating short-run production responses among manufacturing firms. The findings further revealed that although local raw material utilization alone was not statistically significant, its interaction with inflation was negative and significant, allowing the rejection of the second null hypothesis. This suggests that the performance gains associated with inflation are weakened when firms depend heavily on domestic raw materials, reflecting structural weaknesses in local input markets.

Based on the findings, the following recommendations were made:

- i. In relation to the first hypothesis, policymakers should strengthen inflation-management strategies that stabilize production costs and create an operating environment where moderate inflation continues to support manufacturing output without escalating into cost-push distortions.
- ii. In relation to the second hypothesis, government agencies and industry stakeholders should improve the structure and efficiency of the domestic raw

material supply chain by enhancing quality standards, ensuring consistent supply, and promoting competitive pricing so that local raw materials reinforce, rather than weaken, the effect of inflation on manufacturing output.

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APPENDIX I

YEAR	INFR	RMOUT	LRMU	YEAR	INFR	RMOUT	LRMU
1981	20.9	33.33	65.37	2003	14	12.63	65.37
1982	7.7	29.03	65.37	2004	15	14.75	65.37
1983	23.2	20.49	65.37	2005	17.9	17.67	65.37
1984	39.6	13.03	65.37	2006	8.2	21.11	65.37
1985	5.5	15.53	65.37	2007	5.4	23.38	64.91
1986	5.4	11.51	65.37	2008	11.52	27.73	65.14
1987	10.2	9.89	65.37	2009	12.4	23.12	71.25
1988	38.3	10.44	65.37	2010	13.2	24.05	71.7
1989	40.9	8.08	65.37	2011	10.84	29.72	58.09
1990	7.5	9.61	65.37	2012	12.52	35.84	58.26
1991	13	11.6	65.37	2013	8.52	46.44	54.75
1992	44.5	9.19	65.37	2014	8	55.33	46.71
1993	57.2	10.42	65.37	2015	9	46.48	40.77
1994	57	16.83	65.37	2016	17.5	35.12	53.14

1995	72.8	28.18	65.37	2017	19.52	32.85	63.21
1996	29.3	35.48	65.37	2018	19.67	40.69	60.3
1997	8.5	38.56	65.37	2019	20.12	54.68	60.5
1998	10	38.11	65.37	2020	15.75	54.75	57.5
1999	6.6	9.62	65.37	2021	15.63	64.41	51.5
2000	6.9	9.64	65.37	2022	21.35	64.25	52.8
2001	18.9	10.24	65.37	2023	28.92	55.74	52
2002	12.9	11.23	65.37				
