EdinBurg Peer Reviewed Journals and Books Publishers
Journal of Economics
Vol. 5||Issue 2||pp 15-29||June||2025
Email: info@edinburgjournals.org

Determinants of Manufacturing Sector Growth in the East African Community

Wako Ibrahim Kisu[1], Micheal Samanya[2] & Nakalembe Immaculate[3]
Economic Policy and Management, Makerere University
Email of Corresponding Author: immynaks12@gmail.com

Accepted: 28 April 2025 || Published: 03 June 2025

Abstract

This study examined the factors influencing manufacturing sector growth in East African Community (EAC) member states from 2001 to 2021, focusing on inflation, Foreign Direct Investment (FDI), lending rates, and Domestic Credit. Panel data was utilized. Results indicate that inflation and lending rates significantly impact manufacturing sector growth, while Domestic Credit and FDI do not show significant effects. The study highlights the importance of maintaining macroeconomic stability through effective inflation control measures and sound monetary policies to facilitate manufacturing sector growth. The report also stresses the necessity of steady and affordable loan rates for manufacturers, which can be attained through focused interventions and rewards for financial institutions. Attracting FDI to the manufacturing sector remains crucial, and governments should actively pursue such opportunities. Continued research is recommended to deepen our understanding of the complexities surrounding manufacturing sector growth. These actions collectively aim to bolster industrialization and economic growth in EAC member states, ultimately promoting prosperity throughout the region.

Keywords: *Manufacturing Sector Growth, Inflation, domestic credit, lending rate, foreign direct investments, East African Community*

How to Cite: Kisu, W. I., Samanya, M., & Immaculate, N. (2025). Determinants of Manufacturing Sector Growth in the East African Community. *Journal of Economics*, *5*(2), 15-29.

1. Introduction

Globally, the manufacturing sector represents a cornerstone of growth among economies, this is because it's a crucial sector to the generation of structural change, productive jobs and sustainable economic growth (Su & Yao, 2016; Herman, 2020). Manufacturing has been and remains instrumental in promoting sustained economic growth (Saba & Ngepah, 2021). No economy across the globe is known to have attained economic progress without investing in the manufacturing sector (Aiginger & Rodrik, 2020). Evidence indicates that developed economies invested much in their manufacturing sector which led to their economic growth and development (UNCTAD, 2020).

The manufacturing sector contributes 17 percent and 23 percent to the global GDP and employment, respectively (World Bank, 2021). Manufacturing success in any country is

largely determined by numerous macro-economic variables such as the value of the national currency (exchange rate), the stability of prices of goods and services (inflation), taxation, and the extent to which investors, especially from other countries, are allowed to invest in a particular country. Most countries in Africa, especially in Sub-Saharan Africa, experience challenges related to these four macroeconomic factors as a result of multiple factors such as poverty rates and overall low levels of economic development. Therefore, in attempts to optimize productivity in the manufacturing industry, there is a need to pay equal attention to taxation, exchange rates, inflation, and foreign direct investment as the most important determinants of economic growth (Oduor *et al*., 2021).

There has been increased attention on Africa from the rest of the world because of Africa's potential to change the production of goods by increasing value addition and improving its services, thus increasing chances of economic growth through improved macroeconomic stability and the commodity price boom (Moyo & Jeke, 2019).

Manufacturing value added as a percentage of GDP has averaged between 5.5 percent to 12 percent among the East African countries for the period since 1960 (World Bank, 2022). This performance is very low compared to the manufacturing value added by some of the world's leading manufacturers, whose average is as high as 30 percent (World Bank, 2022). The manufacturing sector among East African countries is dominated by micro, small and medium enterprises, which make up some 90 percent of the sector, generating 80 percent of the manufactured output. These small firms are limited by a number of constraints including the lack of access to high-quality inputs, reliable and cost-effective electricity, and affordable credit. As a result, they struggle to achieve economies of scale and increased productivity (Goobi *et al*., 2017).

The exogenous growth theory advanced by Solow (1956) and extended by Mankiw *et al*. (1992) has been criticized by other scholars on growth (e.g. Jones 1995, Romer, 1986, Lucus, 1988, among others) on the grounds of the rigid assumptions of constant return to scale and the notion of convergence. The neoclassical growth model predicted long-run growth to be dependent on the exogenous rate of technical progress without explaining the determinants of the exogenous rate. For instance, Romer (1986) argues that externalities cause variations in technological progress, and Lucas (1988) notes that technological progress depends on human capital. It is generally assumed that endogenous growth theories are superior because of their underlying optimization models based on the microeconomic foundations (Coad & Rao, 2008). From the review of different theories, this study will focus on variables from this theory to assess their impact on manufacturing sector growth and also add more variables like the exchange rate (Kenny, 2019).

Most of the studies that have looked at growth have emphasized the GDP of different economies and have used the endogenous growth theory to establish the determinants of economic growth as a whole. Foreign direct investments, inflation, trade openness, and lending interest rates were shown to be the most influential variables in the rise of manufacturing sector production among EAC member states out of a large sample of productivity indicators analyzed (Musiita *et al*., 2023). Therefore, this study will help to apply the endogenous growth model in establishing the impact of the determinants of manufacturing sector growth among East African Community member states.

1.1 Problem Statement

A competitive manufacturing sector is an engine of economic growth and a better way to transform an economy since it increases economies of scale and integrates global production networks by enhancing the utilization of human capital and economic institutions (Forrest *et al*., 2021). It further enhances value addition on exports and reduces unemployment among the citizens (Shahzad *et al*., 2021). The EAC Industrialization Strategy (2012-2032) commits members to diversify their manufacturing bases and raise their manufacturing value added to 40 percent by 2032 (EAC, 2012). Despite the sector's importance to economic growth and employment, the sector's share of overall GDP in East Africa is very small. It ranges from 7 percent in Uganda to about 12 percent in Kenya (World Bank, 2021). In contrast, agriculture accounts for about 40 percent in Burundi, and 24 percent in Uganda (World Bank, 2021).

If this problem is left unattended, the slow growth in manufacturing will retard the overall growth of the region and thus making EAC member states fail to achieve the SDGs by 2030 and their development agenda by 2032. Therefore, this study seeks to investigate the impact of the determinants of manufacturing sector growth among East African Community member states.

1.2 Hypotheses

H1: Inflation has an impact on manufacturing sector growth among EAC member states.

H2: Domestic credit has an impact on manufacturing sector growth among EAC member states.

H3: Lending rate has an impact on manufacturing sector growth among EAC member states.

H4: Foreign direct investment has an effect on manufacturing sector growth among EAC member states.

2. Literature Review

2.1 Theoretical Review

According to Bernanke and Gürkaynak (2001) The exogenous growth theory advanced by Solow (1956) and extended by MRW (Bernanke & Gürkaynak, 2001), has been criticized by other scholars on growth for example (Jones 1995, Romer, 1986, Lucus, 1988) among others on the grounds of the rigid assumptions of constant return to scale and the notion of convergence. The neoclassical growth model predicted long-run growth to be dependent on the exogenous rate of technical progress without explaining the determinants of the exogenous rate. For instance, Romer (1986) argues that externalities cause variations in technological progress and Lucas (1988) notes that technological progress depends on human capital.

It is generally assumed that endogenous growth theories are superior because of their underlying optimization models based on the microeconomic foundations (Rao, 2006).

The growth model is specified as:

$$MSG = \alpha_0 + \alpha_1 INF + \alpha_2 DOMCRED + \alpha_3 LR + \alpha_4 FDI + \varepsilon$$

Where: **INF** is the Inflation, GDP deflator, **DOMCRED** is domestic credit, **LR** is the lending interest rate, **FDI** is the foreign direct investment and ε is the error term.

2.2 Empirical Review

2.2.1 The effect of domestic credit on manufacturing sector growth

Essentially, several empirical literatures abound on the study of domestic credit and the manufacturing sector. These literatures differ in terms of time, space, setting, and methodology. Bigsten (2003) did a panel study of whether firms in Africa's manufacturing sector are credit-constrained. Using direct evidence on whether firms have a demand for credit and the degree to which this demand was satisfied by the formal credit market, the study found that while banks allocate credit based on expected profits, micro or small firms are much less likely to get loans than large firms. It found that debt is positively related to obtaining further lending.

Tawose (2012) investigated the effect of bank loans and advances on industrial performance in Nigeria between 1975 and 2009. Long-run relationships and adjustment to shocks and dynamics were checked using co-integration and error correction techniques. The results showed that industrial performance co-integrated with all the identified explanatory variables. The study showed that the behavior of real GDP contributed by the industrial sector in Nigeria was significantly explained by the commercial banks' loans and advances to the industrial sector within the period under study, Ogar *et al*. (2014) examined how commercial bank credit can influence the manufacturing sector in Nigeria using time series data for a sample period of 1992-2011. The study utilized ordinary least squares multiple regression analysis and discovered that commercial bank credit had a significant relationship with the manufacturing sector in Nigeria.

Ebere and Iorember (2016) examined the effect of commercial bank credit on the manufacturing sector output in Nigeria from 1980 to 2015 using the Cochrane-Orcutt method. The study discovered that the inflation rate and interest rate have a negative effect on manufacturing sector output, while loans and advances and broad money supply have a positive effect on manufacturing sector output in Nigeria. Olanrewaju *et al*. (2015) empirically investigated the effect of banking sector reforms on the output of the manufacturing sector in the Nigerian economy between 1970 and 2011 to examine the extent of the impact of banking sector reforms on the manufacturing sector. The result revealed that Bank assets, Lending rate, Exchange rate (EXR), and Real interest rate have a low and positively significant effect on manufacturing output, while financial deepening and interest rate have a negative and significant impact on the output growth of the manufacturing sector in Nigeria.

2.2.2 Foreign direct investment and manufacturing sector growth

Foreign direct investment has attracted great attention in developing countries since the development of the manufacturing sector is inclined towards investment in capital and technology (Eze *et al*., 2019). As per Chen (2007), foreign direct investment is the interest in which a firm secures a considerable controlling enthusiasm in an outside firm (over 10 percent offer) or sets up a auxiliary in an outside nation.

Osisanwo (2013) analyzed the impact of foreign direct investment on manufacturing sector output growth in Nigeria between 1970 and 2011. He used an econometric model and log of foreign direct investment (FDI), first lag of real manufacturing output level (MAN_{t-1}), degree of openness (OPEN), investment in human capital development (INV), and inflation rate (INF)

in Nigeria during the review period. The ordinary least squares (OLS) method was adopted, and the results revealed that the first lag of real manufacturing output level (MAN_{t-1}) and inflation (INF) were significant factors influencing the growth rate of the Nigerian manufacturing industry, while manufacturing output was insignificant and inelastic of foreign direct investment in Nigeria.

Okoli and Agu (2015) assessed the impact of foreign direct investment flow on the performance of the manufacturing firms in Nigeria using OLS and VECM to check for both short and long-run relationships. Using data from CBN Statistical Bulletin and the National Bureau of Statistics spanning 40 years, the researchers found that FDI inflows have a long-run impact on the manufacturing sector and therefore recommend that the government should sustain and encourage policies that support FDI inflows into Nigeria, especially in the manufacturing sector. Aysha *et al*. (2011) examined the impact of foreign direct investment on manufacturing output growth during 2006-2010, and they used the Dougherty model. Moreover, a paired t-test was employed for comparison. Regression results showed an insignificant impact of foreign direct investment on manufacturing output growth. Patience (2011) examined the impact of foreign direct investment on the manufacturing sector output growth of West Africa. The study was conducted across the Economic Community of West African States (ECOWAS), which is the most popular regional economic community in Africa. Data was collected from banks' annual reviews. It was found that foreign direct investment contributed to manufacturing output growth in West Africa.

Joshua, Wubon, Arastus, and Owolabi (2021) examined the influence of capital (Foreign Direct Investment inflows) and labor (domestic labor) on the production of Nigeria's industrial segment. The mixed order of integration derived from the unit root test influenced the selection of ARDL for this investigation. According to the findings, capital meaningfully influenced industrial segment output in Nigeria, whereas labor significantly influenced industrial segment performance. In addition, the data indicated that the influence of labor was elastic, implying that a little change in labor would result in a substantial change in the manufacturing sector's production level. In general, capital drove the manufacturing sector rather than labor. To raise worker productivity, a proposal was made addressing the necessity for systematic human capital development through improved education and training systems. Second, because FDI inflows had a substantial beneficial impact, the relevant authority needed to establish policies that would encourage more FDI inflows into the industry to boost productivity. These policies included tax vacations, stable currency rates, fair interest rates to provide investors access to cash in the local economy, and general macroeconomic stability to facilitate the flow of investment.

2.2.3 Lending rates and manufacturing sector growth

Adebiyi (2011) defines lending rate as the price that equates the supply of credit or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net hoarding in the period. This definition implies that the lending rate is the price of credit, which, like other prices, is determined by the forces of demand and supply; in this case, the demand and supply of loanable funds. Theoretical and empirical studies have investigated the role of lending rates on manufacturing sector performance, and these include: Adesanya (2010) studied the impact of interest rates on the performance of the manufacturing

sector in Nigeria (1970-2008). The study used secondary sources of data as sources of information on the structural and behavioral trends of interest rates and some other macroeconomic variables, and how they affected the manufacturing sector during the period. This study employed the ordinary least squares (OLS) multiple regression as the technique of statistical analysis to determine the impact of interest rates on the performance of the manufacturing sector in Nigeria. The result shows a weak and negative relationship between the explanatory variables, interest rate, inflation rate, and the dependent, the average manufacturing capacity utilization. This shows that the interest rate and the inflation rate are statistically insignificant factors influencing manufacturing capacity utilization during the period 1970-2008.

Bawuah *et al*. (2014) investigated the effects of interest rates on manufacturing firms' access to funds and their financing decision in Wa municipality of Ghana. Multiple research methods and a descriptive survey were employed to permit the study to make use of both quantitative and qualitative data collection techniques and data analysis procedures. Evidence from the analysis shows that the majority of manufacturing firms have resorted to the use of equity financing for their operations. This was attributed to several factors, of which the interest rate was the leading cause. Rasheed (2010) used the error correction model (ECM) to investigate the impact of interest rates and other macroeconomic factors on manufacturing performance in Nigeria using co-integration and an error correction mechanism (ECM) technique with annual time series covering the period between 1970 and 2002. The study revealed that interest rate spread and government deficit financing have a negative impact on the growth of the manufacturing sub-sector in Nigeria.

Tomola *et al*. (2012) employed co-integration and vector error correction model (VECM) techniques to determine the link between bank lending, economic growth and the manufacturing sector in Nigeria. The findings of the study revealed that manufacturing capacity utilization and bank lending rates have a significant effect on manufacturing output in Nigeria. Horgan (2014) examined the impact of interest and foreign exchange rates on the manufacturing sub-sector in Nigeria during the period 1980-2012. The study adopted the OLS techniques. Data on the index of manufacturing sector output, interest rate, and government expenditure on the manufacturing sector were utilized. The study revealed that interest rate in the long run does not impact manufacturing output, but government expenditure does.

Odior (2013) investigated empirically the impact of macroeconomic factors on manufacturing productivity in Nigeria over the period 1975-2011. The analysis starts with examining the stochastic characteristics of each time series by testing their Augmented Dickey-Fuller (ADF) test and estimate error correction mechanism model. The findings establish the presence of a long-term equilibrium relationship among the variables as indicated by the co-integrating equation of the VECM. The results also indicate that credit to the manufacturing sector in the form of loans and advances can sharply increase the level of manufacturing output in Nigeria. The study concluded that the high cost of borrowing is due to wide interest rate spread, and a cut in margin between lending and deposit rates was recommended.

Nwokoro (2017) carried out a study on the relationship between foreign exchange, interest rates, and manufacturing sector output in Nigeria. He employed the ordinary least squares (OLS), stationarity, co-integration, together with error correction modeling. The results showed

a negative but significant relationship between Nigeria's foreign exchange rate, interest rate, and manufacturing output.

2.2.4 Effect of inflation on manufacturing sector growth

Dauda (2006) who regresses capacity utilization, inflation rate, index of openness, real exchange rate, real gross fixed capital formation, and real per capita income on the manufacturing value added found out that contrary to apriori expectation, manufacturing capacity utilization and real per capita income have significant negative effects on the growth of the performance of the manufacturing sector. Akinlo (2006) carried out a study on factors that affect total factor productivity in sub-Saharan African countries; his econometric results showed that external debt negatively and significantly relates to TFP.

Dotsey and Stark (2005), both of United States origin, conducted an empirical study investigating the relationship between inflation rate and capacity utilization. Their empirical research using the Granger causality test suggests that up to the mid-1980s, capacity was modestly useful in helping to predict the behavior of inflation. However, the relationship between capacity utilization and inflation is found not to be a stable one. Adamu, Iyoha and Kouassi (2007) use three different techniques: the structural vector autoregressive (SVAR) model, the Hodrick-Prescott Filter, and the linear time trend models to estimate Nigeria's potential output level and the output gap. The study found that, apart from the trend model, the measure of output gap obtained from the SVAR is likely to provide the most reliable predictor for inflation in Nigeria. Trupkin (2008), using a stochastic general equilibrium framework, concludes that the impulse experiments show that inventories and the rate of capacity utilization are mostly complements, while inventories and the rate of labor utilization are mostly substitutes.

Inflation is referred to as a persistent increase in the general price level of goods and services over a period of time (Judith & Chijindu, 2016). Ahlgrim and D'Arcy (2012) defined inflation as changes in the overall level of prices within an economy, which consequently leads to a fall in the value of the domestic currency. The effect of inflation on the manufacturing sector has attracted attention in the literature over the years as a result of the important role of the manufacturing sector in the economic development of a country (Siyakiya, 2014). Theoretically, many reasons account for the effect of inflation on the manufacturing sector output (Nyanga *et al*., 2013; Damiyano *et al*., 2012). However, most findings of empirical works indicate that inflation negatively influences manufacturing sector output; Chaudhry, Ayyoub, and Imran (2013) study established a significant negative effect of inflation on the manufacturing sector of Pakistan for the period 1972 to 2010. The findings are in support of Siyakiya's (2014) study which reported that hyperinflation negatively reduces manufacturing sector output in Zimbabwe for the period 2000-2009, since the economy is highly monetized and has depreciating assets.

Doguwa (2012) re-examined the issue of the existence and the level of inflation threshold in the relationship between inflation and growth in Nigeria, using different approaches that provide appropriate procedures for estimating the threshold level and inference. The results revealed a two-threshold point model with 11.2 percent and 12.0 percent as the appropriate inflation threshold points. These results suggested that the threshold level of inflation above which inflation is detrimental to growth is estimated at 10.5-12 percent for Nigeria. Shuaib *et*

al. (2015) examined the impact of the inflation rate on the economic growth in Nigeria, exploring secondary data for the period from 1960 to 2012. The empirical result of the test showed that for the period covered by the study, there was no co-integrating relationship between Inflation and economic growth for Nigeria data. Moreover, the Granger causality test showed that there was no causal relationship between inflation and economic growth.

Emmanuel and Oladiran (2015) analyzed the relationship between inflation and economic growth in Nigeria from 2000 to 2009, using the OLS technique of analysis. The findings indicate that there is a strong relationship between inflation and economic growth in Nigeria, the exchange rate exerts a positive impact on economic growth, and a high interest rate is shown to be negatively related to growth. Some findings indicate that inflation positively influences manufacturing sector output, and these include: Adaora (2013) who reported a significant positive effect of inflation on the manufacturing sector for the period 1981 to 2011. Osinowo (2015) also reported that the manufacturing sector has a positive relationship with all the determinant variables, while the inflation rate has negatively influenced the output growth of the various sectors except the manufacturing sector. Osuala *et al*. (2013) found a statistically significant positive relationship between inflation and economic growth in Nigeria, but no causality between inflation and growth.

3. Methodology

The study employed a quantitative research design. The data used in this study were sourced from the World Bank's database on World Bank Development Indicators (World Bank, 2022), specifically relying on secondary data for the period 2000 to 2021 (21 years). The study conducted a Unit root test. The unit root test for panel data was very critical in the regression model to ensure that variables were stationary, which was required for co-integration (Galadima & Aminu, 2020). The tests revealed the sequence in which variables are integrated, such as whether they are integrated into I(0) levels i.e. when the probability value is less or equal to 0.05 or they are integrated in I(1) i.e. after the first or more differences and that when the probability value is greater than 0.05.

Cointegration was a crucial test to determine whether or not the empirical model has long-run equilibrium connections. The panel Pedroni test for the co-integration test approach, as suggested by (Gallagher & Taylor, 2002), was used in this study because it allowed the running of a panel model of five (5) or more variables. The null (H_0) is accepted, no Cointegration, once the Augmented Dickey–Fuller (ADF) t-statistic test probability value (p-value) is equal to or lower than 0.05. Fixed effect models have several advantages over traditional regression models that only include fixed effects. For example, they can handle unobserved heterogeneity that would otherwise lead to omitted variable bias (Gelman & Hill, 2006). Fixed random effects models can also be more efficient than traditional regression models since they can estimate both the fixed and random effects simultaneously (Pinheiro & Bates, 2000).

4. Findings and Discussion

4.1 Descriptive evidence of the study

Descriptive statistics (Table 1**Table**) provide a general account of the data characteristics. This was done to check that the data was good for estimation otherwise, it would produce misleading results. In particular, a summary of the mean, minimum, maximum, and standard deviation

values within the countries, across, and overall was computed. The Data was processed and analyzed using the STATA statistical package, version 15.

Table 1*:* Summary Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Manufacturing sector growth	100	10.098	3.104	6.365	20.078
Inflation	105	7.804	9.502	-5.228	85.353
Domestic credit	94	17.824	7.501	4.114	36.699
Lending rate	101	16.722	2.773	11.996	26.15
FDI	105	1.985	1.657	-0.001	6.657

The number of observations for some independent variables, specifically lending rate and Domestic credit was less because countries like Rwanda and Burundi didn't have data in some years considered during the study.

The average growth rate of the manufacturing sector in the East African Community is approximately 10.098%. This indicates a moderate positive growth trend on average. The standard deviation of 3.104 suggests that the growth rates vary around the mean by about 3.104 percentage points. This indicates a relatively moderate level of variability in growth rates.

The average inflation rate in the East African Community is around 7.804%. This provides an insight into the general price level increase in the region. With a high standard deviation of 9.502, there is a substantial variation in inflation rates, indicating potential economic instability or fluctuation in prices.

The mean domestic credit stands at approximately 17.824%. This represents the average amount of credit available for various economic activities, including manufacturing. A standard deviation of 7.501 implies notable variability in the availability of domestic credit, which could impact manufacturing growth due to varying funding opportunities.

The average lending rate is around 16.722%. This is the interest rate at which banks provide loans to borrowers, and it influences borrowing costs for manufacturing activities. The relatively low standard deviation of 2.773 indicates that lending rates are relatively stable, suggesting potential consistency in borrowing costs for manufacturers.

The average FDI is approximately 1.985%. This represents the average amount of foreign investment flowing into the manufacturing sector of the East African Community. With a standard deviation of 1.657, there is moderate variability in the amount of FDI, implying potential fluctuations in foreign investment levels.

Overall, from these descriptive statistics, we can gather that the manufacturing sector growth has an average positive trend, but with some variation. Inflation rates are quite variable, which might indicate economic uncertainty. The availability of domestic credit and lending rates shows varying levels of stability, and foreign direct investment also varies, potentially impacting manufacturing growth in the region. It's important to conduct further statistical analyses to understand the relationships between these variables and manufacturing sector growth more comprehensively.

4.2 Test for stationarity

H_0: $Non\ stationary$

H_a: $Stationary$

The study conducted stationarity tests on the model variables using the Fisher type unit root test, to ascertain the level of integration of the variables as shown in Table 2 below.

Table 2: Fisher Panel Unit Root Test results

	Variable in Levels	Variable in First Difference
Manufacturing Sector Growth	0.8729	0.000
Domestic Credit	0.5780	0.000
Lending Rate	0.01650	0.000
Inflation	0.0000	-
FDI	0.0170	0.000

The panel unit root results in Table 2 **Table** show that Manufacturing Sector Growth, Domestic Credit, Lending Rate, and FDI have p-values greater than 0.05. I don't have enough evidence to reject the null hypothesis, and I concluded that they contained a unit root at the 5% level of significance. To address this issue, I applied first-order differencing of the transformed Manufacturing Sector Growth, Domestic Credit, Lending Rate, and FDI as shown in the third column in **Table** 2 **Table** above. The First differencing on the non-stationary variables resulted in them becoming stationary, which indicates that they are integrated of order one 1(1) Thus, the study concluded that the model variables were 1(1) variables. On the other hand, Inflation has a p-value less than 0.05, which means that it's stationary in levels, suggesting that they are integrated of order zero.

4.3 Cointegration test for panel data

H_0: $No\ cointegration$

$H_a Existence\ of\ cointegration$

Table 3: Pedroni Cointegration Test results

Augmented Dickey-Fuller t	**p-value**
-4.1286	0.0000

The Augmented Dickey-Fuller t-statistic of the Pedroni co-integration test shown in **Table 3 Table Error! Reference source not found.**rejects the null hypothesis of no co-integration at a 5 percent level of significance. The co-integration test results provided evidence for the

presence of long-run equilibrium relationships between Manufacturing sector growth and its determinants.

4.4 Model Estimation

The study used the FGLS model to estimate the results given the presence of two econometric problems, and the results are presented in Table 4.

Table 4: Results from the FGLS and OLS Estimates

	FGLS			POOLED OLS		
MAN	**Coef.**	**Std. err**	**P-value**	**Coef.**	**Std. err**	**P-value**
Inflation Rate	0.09891	0.03693	0.007	0.04	0.034	0.04
Domestic Credit	0.04667	0.03011	0.121	-0.114	0.042	-0.114
Lending Rate	0.73669	0.08402	0.000	0.177	0.075	0.177
FDI	-0.09984	0.14668	0.496	0.048	0.161	0.048
Cons.	-3.57700	1.72133	0.038	8.683	1.099	8.683

The findings presented in the analysis using the FGLS offer valuable insights into the relationships between various independent variables and manufacturing sector growth in East Africa, while also assessing their statistical significance.

Firstly, the analysis reveals that, on average, a one percent increase in inflation is associated with a modest increase of approximately 0.098 percent in manufacturing sector growth. This positive relationship suggests that higher inflation tends to coincide with higher values of manufacturing sector growth. Inflation is statistically significant at the conventional 5 percent level (p-value = 0.007 < 0.05). This implies that, in the presence of other variables, inflation exerts a statistically significant impact on the dependent variable. Consequently, it can be inferred that inflation does significantly affect manufacturing sector growth in East Africa.

Consistent with the insights gleaned from prior research, the analysis confirmed that inflation significantly affects manufacturing sector growth. The prevailing economic wisdom, as underscored by scholars such as Dauda (2006) and Siyakiya (2014), suggested that elevated inflation rates can exert detrimental consequences on productive activities and capital investment vital for the manufacturing sector. The empirical findings resonate with this perspective, revealing a statistically significant relationship between inflation and manufacturing sector growth (p-value = 0.007) (Dauda, 2006; Siyakiya, 2014).

Secondly, the analysis indicates that a one percent increase in domestic credit is linked to an increase of approximately 0.07 percent in manufacturing sector growth. However, it's worth noting that the coefficient for domestic credit is not statistically significant at the conventional 5 percent level (p-value = 0.121 > 0.05). This suggests that domestic credit might not have a noteworthy impact on manufacturing sector growth in East Africa.

In contrast to the literature's emphasis on the pivotal role of domestic credit, the empirical investigation yielded a divergent outcome. The academic discourse, led by scholars like Bigsten (2003) and Tawose (2012), underscored the critical importance of credit accessibility, especially for micro and small enterprises, in influencing manufacturing performance. However, the empirical analysis uncovered that domestic credit, while positively associated with manufacturing sector growth, lacked statistical significance (p-value = 0.121). This disparity underscores the complexity of the factors shaping manufacturing growth within the East African context.

In the broader context of East Africa, where access to credit and financial resources can be a critical factor for economic development, the non-significant relationship between Domestic Credit and manufacturing sector growth raises important questions. It suggests that simply increasing domestic credit availability may not be sufficient to drive meaningful growth in the manufacturing sector.

Furthermore, the results demonstrate that, on average, a one percent increase in the lending rate corresponds to an increase of approximately 0.737 percent in manufacturing sector growth. The coefficient for the lending rate is statistically significant at the 5 percent level since the p-value = 0.000, which is less than 0.05. This indicates that the lending rate may have a discernible impact on manufacturing sector growth in East Africa.

Both empirical findings and the established literature converged on recognizing the potential significance of lending rates in driving manufacturing sector growth. While the scholarly discourse presented a mix of evidence regarding the relationship between interest rates and industrial performance, the empirical results indicated a statistically significant positive correlation between lending rates and manufacturing sector growth (p-value = 0.000). This convergence underscores the nuanced nature of the connection between lending rates and manufacturing growth, warranting further investigation (Adesanya, 2010; Bawuah et al., 2014).

Considering the intricacies of East Africa's economic landscape, characterized by challenges in accessing affordable credit and fostering industrial growth, the significant relationship between lending rates and manufacturing sector growth introduces a layer of complexity. It suggests that lending rates might play a role, albeit a nuanced one, in shaping the sector's trajectory. Nevertheless, a cautious approach is warranted, as the significance implies that a multitude of other factors likely contribute significantly to manufacturing growth dynamics.

Additionally, the analysis reveals that a one percent increase in foreign direct investment (FDI) is linked to a modest decrease of approximately 0.0998 percent in manufacturing sector growth. However, the coefficient for FDI is not statistically significant at a 5 percent level of significance since the p-value = 0.496, which is greater than 0.05. This suggests that FDI does not exert a statistically significant impact on manufacturing sector growth among East African countries.

The academic literature and empirical analysis converged in their recognition of FDI as a potential catalyst for manufacturing sector growth. Various studies, including those by Okoli and Agu (2015) and Joshua et al. (2021), have suggested that FDI could positively influence industrial output. However, the empirical findings demonstrated a negative relationship

between FDI and manufacturing sector growth in East Africa, and it lacked statistical significance (p-value = 0.496). This could be attributed to the high FDI inflows to sectors in the economy like Education, Health, and Social empowerment programmes in the East African Countries that don't yield production competitiveness on the global market. The expensive and unreliable power supply, and poorly developed infrastructure in general; limited access to finance especially for small-scale processing companies; limited value addition and product transformation; resource-based production patterns using low technology; high cost of labour; relatively low productivity compared to emerging economies; and a high number of burdensome regulations and multiple regulatory institutions with overlapping mandates leading to high administrative costs negatively affect the manufacturing sector growth even when there is FDI inflow to the East African countries (Tralac, 2017).

Lastly, the constant term, with a value of -3.577, represents the model's intercept when all independent variables are set to zero. This constant is statistically significant at a 5 percent level of significance, with a p-value of 0.038, which is less than 0.05. The constant signifies the baseline value of the dependent variable when none of the independent variables are present. In this context, it implies that manufacturing sector growth among East African countries is estimated to be increasing at approximately 3.577 percent when all the independent variables in the model are held at zero.

5. Conclusion

In this comprehensive study on manufacturing sector growth within the East African Community (EAC) member countries, a thorough exploration of the effect of inflation rates, lending rates, domestic credit, and foreign direct investment (FDI) on manufacturing sector growth is conducted. The FGLS was used in the study, given the presence of, and it offers valuable insights into the relationships between various independent variables and manufacturing sector growth in East Africa, while also assessing their statistical significance. The study observed that inflation rates and lending rates have an impact on manufacturing sector growth, while domestic credit and foreign direct investment (FDI) The empirical evidence did not establish a significant relation between the two variables and manufacturing sector growth. This study's synthesis of empirical findings and existing literature provides valuable insights into the determinants of manufacturing sector growth in East Africa, offering a foundation for policymakers and researchers to develop more targeted strategies to foster industrialization and economic growth in the region.

6. Recommendations

Policymakers in East African Community (EAC) member countries should prioritize macroeconomic stability by implementing effective inflation control measures and maintaining sound monetary policies. This will create a favorable environment for the manufacturing sector's growth, despite varying levels of statistical significance found in the study. Additionally, ensuring stable and reasonable lending rates for manufacturers through targeted interventions and incentives for financial institutions is crucial.

A context-specific approach is essential, considering factors like infrastructure and regulatory environments in each EAC member country when formulating policies. Governments should persist in attracting foreign direct investment (FDI) to the manufacturing sector, and ongoing

research should deepen our understanding of the complexities involved in manufacturing sector growth. These actions collectively aim to boost industrialization and economic growth, fostering prosperity in the region.

References

Aiginger, K., & Rodrik, D. (2020). Rebirth of Industrial Policy and an Agenda for the Twenty-First Century. *Journal of Industry, Competition and Trade*, *20*(2), 189–207. https://doi.org/10.1007/S10842-019-00322-3/TABLES/2

Bernanke, B. S., & Gürkaynak, R. S. (2001). Is Growth Exogenous? Taking Mankiw, Romer, and Weil Seriously. *NBER Macroeconomics Annual*, *16*, (1). https://doi.org/10.1162/088933601320224829

Coad, A., & Rao, R. (2008). Innovation and firm growth in high-tech sectors: A quantile regression approach. *Research Policy*, *37*(4), 633–648. https://doi.org/10.1016/J.RESPOL.2008.01.003

Emmanuel, F. O., & Oladiran, O. I. (2015). Effect of Government Capital Expenditure on Manufacturing Sector Output in Nigeria. *Business and Economic Research*, *5*, (2), 136. https://doi.org/10.5296/ber.v5i2.8241

Forrest, J. Y. L., Liu, J., Martorell, G., Xu, L., & Liu, Y. (1 C.E.). Role of Manufacturing Sector in the Forthcoming National Industrial Transformations. *Https://Services.Igi-Global.Com/Resolvedoi/Resolve.Aspx?Doi=10.4018/IJSKD.2021040109*, *13*, (2), 153–167. https://doi.org/10.4018/IJSKD.2021040109

Ggoobi, R., Musekese, W. B., & Ntayi, J. (2017). Economic development and industrial policy. In *Friedrich-Ebert-Stiftung* (1). https://doi.org/10.1016/0143-6228(95)90025-x

Kenny S, V. (2019). *Determinants of Manufacturing Sector Performance and Its Contribution To Gross Domestic Product In Nigeria*. https://mpra.ub.uni-muenchen.de/93293/1/MPRA_paper_93293.pdf

Pinheiro, J. C., & Bates, D. M. (2000). Linear mixed-effects models: basic concepts and examples. *Mixed-Effects Models in S and S-Plus*, 3–56.

Rahim, N., & Munir, B.M, (2018). The Sustainable Growth Rate of Firm in Malaysia: A Panel Data Analysis Kadar Pembangunan Firma Di Malaysia: Analisis Ke Atas Data Panel. *Sains Islam Malaysia Journal of Islamic Social Sciences and Humanities, 16*, (16), 69-80. https://doi.org/10.33102/abqari.vol16no1.6

Saba, C. S., & Ngepah, N. (2021). ICT Diffusion, Industrialisation and Economic Growth Nexus: An International Cross-country Analysis. *Journal of the Knowledge Economy 2021*, 1–40. https://doi.org/10.1007/S13132-021-00795-W

Shahzad, U., Doğan, B., Sinha, A., & Fareed, Z. (2021). Does Export product diversification help to reduce energy demand? Exploring the contextual evidence from the newly industrialized countries. *Energy*, *214*, 118881. https://doi.org/10.1016/J.ENERGY.2020.118881

Su, D., & Yao, Y. (2016). *ADBI Working Paper Series Manufacturing as the Key Engine of Economic Growth for Middle-Income Economies, Asian Development Bank Institute*.

Tawose, J. O. B. (2012). Effects of bank credit on industrial performance in Nigeria. *International Business and Management*, *4*, (2), 158–168.

UNCTAD. (2020). *Trade And Development Report 2020: From Global Pandemic To Prosperity For All: Avoiding Another Lost Decade*. Retrieved on 26th May 2023

World Bank. (2021). *World Statistics: Manufacturing Sector Contribution to GDP and Employment*. Retrieved on 2nd June 2023

World Bank. (2022). *World Development Indicators | DataBank*. https://databank.worldbank.org/source/world-development-indicators Retrieved on 2nd June 2023