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Enhancing the Manufacturing Sector in Sub-Saharan African Countries through Foreign Direct Investment

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Abstract:- Sub-Saharan Africa (SSA) is at a critical juncture in its economic development. Despite the region's significant potential for industrial growth, its manufacturing sector remains underdeveloped. While Foreign Direct Investment (FDI) can play a vital role in this context, merely attracting foreign capital is insufficient. This article proposes a novel approach that harnesses FDI to cultivate a skilled domestic workforce, thereby enabling sustainable long-term growth in manufacturing.

The study evaluates strategies to enhance the manufacturing sector in SSA and identifies the key factors driving this initiative. The research utilizes panel data from the World Bank and central banks of selected countries, covering the period from 2003 to 2020. The analysis reveals that three critical determinants significantly influence FDI in the manufacturing sector: political stability (coefficient = 3.989), natural resources (coefficient = 0.902), and trade openness (coefficient = 0.398).

The study recommends that SSA countries urgently design investment policies that encourage foreign firms to establish joint ventures or technology-sharing partnerships with local companies.

Keywords: *Foreign direct investment, manufacturing, trade openness, natural resources, political stability, sub-Saharan Africa.*

JEL Codes: *F2, L6, F1, Q3*

1. Introduction

Sub-Saharan Africa (SSA) stands at a pivotal moment in its economic development, with the potential to significantly enhance its manufacturing capacity for sustained economic growth. Despite the region's vast industrial potential, the manufacturing sector remains underdeveloped, even as Foreign Direct Investment (FDI) flows into the region. FDI is a powerful catalyst for industrialization, driving technological advancement and improving global competitiveness. Manufacturing, in particular, accelerates economic growth and national development more effectively than traditional sectors like agriculture and raw mineral exports (Husman & Kubik, 2019; Maizura et al., 2017). This is largely due to the ability of manufacturing to add value to raw materials, enabling countries to earn more from their economic activities.

However, SSA countries have been heavily reliant on FDI in extractive and natural resource sectors, with most FDI inflows directed towards these industries (Udi et al., 2021; Nketiah-Amponsah & Sarpong, 2019). Attracting FDI into manufacturing has proven challenging for developing countries, in contrast to developed nations where it significantly contributes to economic development. Only seven SSA countries—Mozambique, South Africa, Nigeria, Ghana, Zambia, Kenya, and Ethiopia—have attracted the majority of FDI into manufacturing, accounting for approximately 78% of FDI in both greenfield and brownfield projects (Pasara & Garidzirai, 2020; Sarkodie & Strezov, 2019).

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Many SSA economies continue to rely heavily on extractive industries, exporting raw materials with minimal domestic processing (Awuah, 2019). This dependence on low-value extractive minerals and volatile commodity prices hinders economic diversification and sustained growth (Shan et al., 2018; Moti, 2019). While FDI has increased in recent years, much of it has been directed towards non-manufacturing sectors. Although some foundational work has been done to attract FDI into manufacturing, achieving sustainable growth in this sector requires more than simply attracting foreign capital. As Arthur (2013) noted, SSA countries must send the right signals to target FDI in manufacturing, focusing on attracting companies that bring advanced technologies and a commitment to skills development.

The potential for growth and development in SSA is strong (UNCTAD, 2019). Globally, economic growth and development have often been achieved through FDI (Crespo & Fontoura, 2017; Kumari & Sharma, 2018; Quazi, 2017). FDI not only brings capital inflows but also facilitates technology transfer, technical expertise, job creation, and a positive economic outlook for the host country (Bengoa & Sanchez-Robles, 2013; Hanson, 2014). FDI in manufacturing has been particularly effective in generating revenue for host countries, as finished products yield higher returns than raw material exports on international markets (Essel, 2019; Hobbs et al., 2021; Maio et al., 2020).

FDI inflows into SSA have gradually diversified from exploration to manufacturing between mid-2006 and mid-2020, with 20% directed towards manufacturing, 35% towards services, 23% towards agriculture, and 22% towards extractive industries like mining and oil exploration (IMF, 2022; UNCTAD, 2022). This shift indicates a growing impact of FDI in manufacturing within the region. However, attracting FDI into manufacturing requires meeting specific investor prerequisites, such as infrastructure, policy support, and skilled labor (Pasara & Garidzirai, 2017). Studies highlight that macroeconomic indicators like interest rates and inflation are also critical factors (Salem & Baum, 2016; Hobbs et al., 2019). Conversely, low internet adoption, poor infrastructure, and insufficient skilled labor have made some SSA countries less attractive to FDI (Nketiah-Amponsah et al., 2019; Sarkodie et al., 2021).

These challenges, including high production costs driven by expensive electricity, undermine the competitiveness of SSA countries (Hannon & Reddy, 2016). High electricity prices, in particular, increase operational costs, reducing profit margins and limiting the ability of domestic firms to compete globally.

Between 2016 and 2021, SSA saw an increase in overall FDI, despite the challenges posed by the COVID-19 pandemic. The region experienced FDI growth from 14% between 2006 and 2012 to 25% between 2013 and 2019. However, the distribution of FDI in manufacturing remains uneven, with certain countries making significant gains while others lag behind. This raises the question: What new and existing factors can SSA countries leverage to attract more FDI into manufacturing?

To build on existing literature with novel insights and help SSA countries navigate the competitive landscape for FDI in manufacturing, this article explores the significance of FDI in bolstering the manufacturing sector across SSA, outlining key strategies and opportunities for sustainable economic growth.

2. Literature Review

2.1 Historical and territorial inflow of FDI in SSA

FDI in SSA countries has transitioned from a focus on natural resources to services and manufacturing over the past 60 years (Yeboah & Jing, 2020). In the 1990s, as Sub-Saharan countries began to recover from civil wars and other forms of social unrest, they were in dire need of FDI to revive their economies and improve various socio-economic indicators (Rogoff & Reinhart, 2013). The adoption of democracy and multi-party elections during this period helped to restore investor confidence in these economies (Jaumotte, 2014). In the early 2000s, FDI in the region played a key role in improving the standard of living for workers who had been demanding better working conditions (Jaumotte, 2014).

Between 1990 and 2020, Nigeria received a significant percentage of FDI relative to its Gross Domestic Product (GDP). During the early 2000s and again in 2020, Ghana emerged as the country with the highest percentage of

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FDI relative to GDP in the region, with a peak of 9.58% in 2013 and a low of 0.8% in 2003, as shown in Figure 1. While South Africa received the highest value of FDI in SSA between 2006 and 2014, Kenya, Côte d'Ivoire, and Nigeria also experienced substantial growth in FDI during this period.
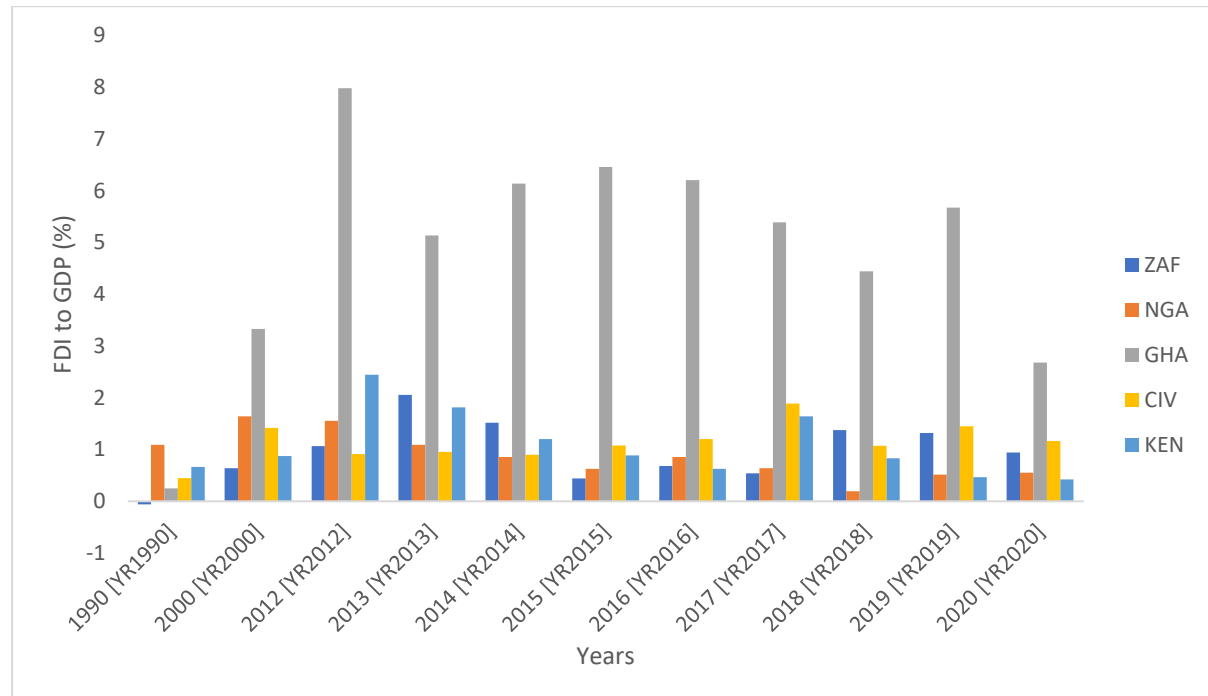

Figure 1: Foreign Direct Investment as Percent to Gross Domestic Product Among Some African Countries: 1990 – 2023 *Source: World Bank Data, 2023*

2.2   Determinants of FDI in Manufacturing

Determinants of FDI are crucial for investors when deciding which specific manufacturing sectors or industries to invest in (Nketiah-Amponsah et al., 2019). SSA countries have implemented strategies to meet the key determinants and signals that investors prioritize to boost FDI in manufacturing. However, while some countries have successfully met these requirements, others have struggled to do so (IMF, 2012). Notably, countries have identified strategic policies, such as tax incentives, to attract FDI into manufacturing (Prince & Vijay, 2019). For example, Nigeria, Ghana, and Côte d'Ivoire have established free zone enclaves that offer incentives to multinational companies that set up industries in specific manufacturing sectors.

Skilled labor has been identified in various studies as a critical component for driving FDI into manufacturing. To address this, Ghana implemented a free Senior High School (SHS) program to strengthen its skilled labor force and enhance technical expertise. Additionally, the political stability of SSA countries has facilitated FDI inflows, underscoring the importance of maintaining political stability to attract FDI into the manufacturing sector (Hezron & Pauline, 2016).

Research has also highlighted the importance of infrastructure development as a driver of FDI (Korsah, Amanamah, & Gyimah, 2022). Wako (2021) emphasized the need for policies that attract FDI with a focus on knowledge transfer and technological advancement. Similarly, Anyanwu (2011) underscored the significance of a stable macroeconomic environment, infrastructure development, and skilled labor in attracting productive FDI.

While most studies have focused on roads and transportation, there is a growing need for SSA countries to improve internet connectivity as a signal of infrastructure growth to investors. Infrastructure development is critical for attracting FDI and includes high-speed internet (4G–5G) networks, roads, ports, railways, and commercial structures, among others (UNCTAD, 2022). Market size is another important factor, with countries like Nigeria, due to its large population, being particularly attractive for FDI in manufacturing. However, the establishment of

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plants by VW, Toyota, and Mercedes-Benz in Ghana, despite its smaller population, suggests that population size is not the sole determinant of FDI inflows into manufacturing (Saini & Singhania, 2018). As noted by Yoo and Reimann (2017), multiple determinants must work together to achieve sustained FDI inflows into manufacturing, making some SSA countries more attractive than others (Salem & Baum, 2016).

2.4 Determinants of FDI in Manufacturing

Table 1 below shows the entire data and expected sign of dependence on FDI in manufacturing-specific countries, taking into consideration the established variables and the impact they have on specific FDI inflows into the country.

Table 1: Determinant variables for FDI inflows

Determinants	Signs	Supporting studies
Market size	Positive (+)	Chawla & Rohra, (2015)
Inflation	Negative (-)	Sarkodie *et al.,* (2021)
Natural resources	Positive (+)	Jude & Levieuge, (2017)
Infrastructure	Positive (+)	Phillips & Obwana, (2017)
Human capital	Positive (+)	Nketiah – Amponsah et al., (2019)
Trade Openness	Positive (+)	de Mello Jr. et al., (2017)
Corruption	Positive (+)	Khachoo & Khan, (2012)
Political stability	Positive (+)	Pasara & Garidzirai, (2017)

Market size has been widely recognized as an important determinant of FDI in manufacturing (Moti, 2019). However, studies have often lacked specificity regarding whether this market size refers to purchasing power or population size. Forsgren (2014) noted that firms seek larger market opportunities, with market-seeking FDI driven by market size and the economy's growth rate. Many studies mistakenly equate large populations with market size, but research shows that purchasing power is a more critical factor. Consequently, improving the standard of living can enhance a country's attractiveness to FDI.

Trade openness is another major determinant, as investors in manufacturing often consider external markets in the host country. The more open a country is to trade, the more favorable it is for FDI, as the level of trade is positively correlated with the manufacturing outlook in SSA countries. This relationship also involves factors such as port accessibility, international trade shipments, and the delivery of goods and services. Hence, increased port activity is associated with higher FDI inflows into manufacturing.

Political stability plays a crucial role in attracting FDI in manufacturing (Salem & Baum, 2016). Investors prefer countries with stable political environments, as this reduces the risk of losing their investments to political turmoil. SSA countries with strong democratic governance, rule of law, and low levels of terrorism are generally more attractive to investors (Shan et al., 2018). While studies emphasize political stability, specific factors such as the rule of law are often more significant than democracy alone in influencing FDI inflows into manufacturing.

Inflation, a key indicator of macroeconomic stability, also affects FDI in manufacturing (World Bank, 2008; Zaidi, 2016). Higher inflation erodes purchasing power and investment returns, making countries with high inflation less attractive to FDI due to perceived macroeconomic instability. However, since inflation is present in most countries, the key concern is its impact on FDI and the long-term returns for investors (Awuah, 2019).

Human capital is essential for attracting FDI in the manufacturing sector. Skilled personnel in the host country must be capable of operating advanced equipment and technologies and managing technical industries. There is a positive correlation between the level of skilled labor and the amount of FDI in manufacturing (Shan et al., 2023; World Bank, 2016). The quality of human capital is often proxied by government spending on education. Thus, a more educated and skilled workforce enhances productivity and attracts more FDI (Uzoka, 2012; World Bank, 2016).

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Corruption is a significant obstacle to attracting FDI in SSA, particularly in manufacturing. It undermines investor confidence by increasing business costs or creating uncertainty about the security of investments under certain regimes (Kumari & Sharma, 2018). Streamlining bureaucracy, reducing bribes, and making business registration and operations more efficient can significantly impact FDI inflows (Udi et al., 2021). The effectiveness of a country's anti-corruption measures, the ease of doing business, and the efficiency of setting up industries directly influence FDI in manufacturing.

Infrastructure is another critical factor for investors when deciding where to invest. While traditional studies focus on road networks and transportation systems, this study emphasizes the importance of internet and broadband connectivity in SSA countries. Countries with greater access to broadband internet are more likely to attract FDI in manufacturing, indicating a positive relationship between infrastructure development and FDI (Zaidi, 2016). Adequate infrastructure, particularly in telecommunications and internet access, is essential for attracting FDI to specific geographic areas.

Natural resources also play a vital role in investors' decisions. Manufacturing relies heavily on natural resources, and the abundance of raw materials in a region can significantly influence investment decisions. Numerous studies have documented the positive impact of natural resources on FDI in Africa (Zhang, 2011; UNCTAD, 2015; Shiells, 2013). The resource-seeking aspect is a powerful driver of FDI flows on the continent, and this study explores the relationship between investments and the availability of natural resources over time.

3. Methodology and Data

This study employed panel data analysis to investigate the determinants of FDI in manufacturing across selected SSA countries, based on the availability of relevant data. A panel regression analysis was conducted to identify which determinants have the most significant impact on FDI in manufacturing within these countries. Additionally, the study performed two key tests under the panel regression analysis: the Hausman test and an assessment of multicollinearity among the determinants. Data on manufacturing in various countries were sourced from the World Bank and Statista websites. The study also utilized different parameters to isolate the portion of overall FDI that is directed specifically toward manufacturing.

3.1 Source and justification of data

The data for this study was sourced from databank.worldbank.org, the International Investment Database, and the central banks of the selected SSA countries. The data spans from 2003 to 2020, a period chosen for its relatively comprehensive coverage of manufacturing data in SSA countries. The focus was on FDI in manufacturing within South Africa, Mozambique, Ghana, Nigeria, Kenya, Zambia, and Ethiopia. These countries were selected due to the availability of sufficient data on FDI in manufacturing. Additionally, these economies share similarities in terms of international trade partners, port facilities, policy initiatives, and the practice of multiparty democratic governance. They also have robust legal frameworks governing financial activities and efficient policy-making strategies.

3.2 Model Specification

The specification model was as indicated below, which was:

Equation:

$$mFDI_{it} = \beta 0_i + \beta 1\, GDP_{it} + \beta 2\, INFR_{it} + \beta 3\, MACR_{it} + \beta 4\, NATR_{it} + \beta 5\, POLI_{it} Z_{it} + \beta 6\, HUMC_{it} Z_{it} + \beta 7\, INST_{it} + \beta 8\, TRADOPP_{it} + \varepsilon_{it} - - - - - - \qquad 1$$

The variables i *(i = 1, 2, 3, 4, 5,7,8)* represent the respective countries used for the empirical model. The variable t denotes the time in years ($\sum_{i=1}^{n} year_i$) period; the variable $\beta 0_i (i = 0, 1, \dots, 5, 8)$ represents the unknown response coefficient of variations in the values of the dependent variable for changes in the values of the independent variables; the variable ε_{it} refers to the error term (the dependent and explanatory variables).

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Where $\beta 0$ is the intercept; coefficients of $\sum_{i=1}^{8}\beta_i$ are the cofficients of the determinants; the "*GDP*" variable indicates GDP which measures the size of the economy; the variable "*INFR*" denotes the infrastructure development measured by the budgets into road and infrastructure projects; the variable "*MACR*" measures annual inflation rate for respective countries; "*NATR*" variable fixates on the availability of resources necessary for product; "*POLI*" variable focuses on the tax holidays given to businesses in manufacturing as a fraction (%) of investment yearly; the "*HUMC*" variable focuses on the investments made by each country into education and skills acquisition as a percentage of GDP; whilst, the "*INST" variable* shows the level of internet and data access to the population yearly (ε_{it}) represents the dummy variable of the model that takes into consideration unforeseen, unexpected, or unobserved data influence movements such as external shocks, pandemics, and other related activities that have an impact on FDI.

4. Data Analysis and Results

The fixed, pooled, and random effects regression analysis was conducted to ascertain the best estimator model for the impact on FDI into manufacturing. The Ordinary Least Squares (OLS) technique was chosen not only because of its computational simplicity but also because it possesses some desirable statistical properties such as linearity, unbiasedness, minimum variance, and zero mean value of the random term (Gujarati, 2015; Koutsoyiannis, 2013).

4.1 Results and Discussions

The results from the descriptive statistics on the determinants of FDI in manufacturing in SSA countries are presented in Table 2 below. The GDP and natural resources had the highest mean of $M = 1.255e+11$ and $1.532e+09$ respectively, with associated SD = 1.551e+11, 1.149e+09 respectively. This shows higher variations in impact from GDP compared to natural resources as determinants of FDI into manufacturing. With the infrastructure, which was measured as the level of internet broadband penetration, the mean was M = 195970.91 and SD = 368752.09, indicating that there has been a huge upgrade in people using the internet and thus has a good bearing on FDI in manufacturing. Due to the measurement, corruption and political instability had means of M = -.534 and -.667 with SD of .43 and .840 respectively, showing little variation. This indicated that the countries in SSA used for the analysis are not widely different in the context of perceptions of corruption and political stability, which affects the chances of FDI into manufacturing. Inflation and government expenditure on education had means of M = 10.65 and 18.986. The inflation had a SD = 6.465 indicative of the fact that SSA countries have been able to keep inflation in check for a much longer period. The mean and standard deviation are in parentheses.

Table 2: Descriptive Statistics

Variable	Mean	Standard Deviation
Infrastructure (broadband internet)	195970.91	368752.09
GDP	1.255e+11	1.551e+11
Inflation	10.65	6.465
Trade Openness	59.596	21.798
Education	18.986	6.035
Natural Resources	1.532e+09	1.149e+09
Corruption	-.534	.43
Political Stability	-.667	.863

4.3 Regression Analysis for the FDI determinants

The results from the panel regression analysis are shown in Table 4 below. The analysis showed the impact of determinants on FDI in manufacturing in SSA countries. The F statistics *Prob > F = 0.000*, was statistically significant (F 0.000 < 0.05). The R squared was 0.729 (strong explanatory power), meaning that the determinants explained 72.9% of the changes in FDI into manufacturing, whereas 27.1% was explained by other determinants considered in this study. In addition, inflation was not statistically significant to influence FDI, even though it had

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a negative value of (-.072) it was not significant. GDP size and infrastructure or broadband access were also not statistically significant which had results of 0.012 and 0.03 respectively. However, trade openness and education were not statistically significant. Political stability was identified to be statistically significant in influencing FDI in manufacturing (3.99***, $p < 0.01$). This means investors considering to invests in FDI in manufacturing SSA gauge the stability of the of political environment to be an important indicator. Trade openness was recognized to be statistically significant in influencing FDI in manufacturing (.398***, $p < 0.01$). Natural resources play a major role in investors' decision on where to invest, thus the result shows that it was statistically significant which has a positive impact on FDI in manufacturing (.902***, $p < 0.01$), this implies countries with specific abundance in natural resources will attract FDI in manufacturing for that specific natural resources. The data is shown in the table 3 below.

Table 3: Panel Data Regression with Pooled OLS

FDIm	Coef.	St. Err.	p-value	Sig
Political Stability	3.989 (1.496)	1.496	.009	***
Corruption	-3.102	2.185	.16	
Natural Resources	.902	.12	0	***
Education	-.167	.119	.165	
Trade Openness	.398	.092	0	***
Inflation	-.072	.095	.45	
GDP	0.012	0.32	.074	*
Infrastructure (Internet Broadband)	0.03	0.041	.118	
Constant	1.7	3.657	.643	
Mean dependent var	*5.648*	*SD dependent var*	*7.819*	
R-squared	*0.729*	*Number of obs*	*87*	
F-test	*26.205*	*Prob. > F*	*0.000*	
Akaike crit. (AIC)	*506.198*	*Bayesian crit. (BIC)*	*525.926*	

*** p<.01, ** p<.05, * p<.1*

5. Discussion

In discussing the results and findings, trade openness emerged as a key determinant of FDI in manufacturing growth. This aligns with the assertions and findings of Pasara and Garidzirai (2020), who identified trade openness as closely linked to manufacturing as an effective driver of FDI inflows into the sector. Many SSA countries that successfully attract FDI into manufacturing have implemented policies to enhance their ports, international trade, and other factors signaling their readiness for global trade. This is further supported by Chawla and Rohra (2015), who emphasized that countries can enhance their attractiveness for FDI in manufacturing by expanding their network of trading partners across different regions.

Political stability also stood out as a crucial determinant, consistent with the findings of Pasara and Garidzirai (2020). Their research highlighted that the history of civil wars and coup d'états in many SSA countries raises concerns among investors. However, countries that have managed to maintain long-term political stability have significantly improved their attractiveness for FDI. Additionally, the study confirmed that natural resources are a vital determinant of FDI inflows into manufacturing, as supported by the works of Jude and Levieuge (2017), Pasara and Garidzirai (2020), and Victor (2019). These scholars emphasized that investors are reluctant to invest in manufacturing within local economies lacking the necessary resources to support the operations of

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manufacturing companies. Therefore, the availability of specific natural resources is a significant advantage in attracting FDI.

6. Conclusion

This study sought to update the current trends in the determinants influencing the inflow of Foreign Direct Investment (FDI) into the manufacturing sector in Sub-Saharan African (SSA) countries. The analysis focused on Mozambique, South Africa, Zambia, Kenya, Ghana, Nigeria, and Ethiopia—countries identified as strong performers in attracting FDI into manufacturing. Panel data from the World Bank and the central banks of these selected countries were used for the analysis.

The key findings indicate that political stability, natural resources, trade openness, and GDP are significant determinants of FDI in manufacturing across SSA countries. The results suggest that investors are more likely to commit resources to manufacturing in SSA when these countries demonstrate the availability of natural resources, sustained political stability, adherence to the rule of law, and trade openness, alongside a robust port infrastructure to facilitate trade.

Ethical Statement

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflict of Interest: The authors declare no conflicts of interest that could have influenced the research process or findings presented in this study.

Ethical Approval: Ethical approval for this study was obtained from the Mendel University Review Board, ensuring compliance with ethical guidelines for research involving human subjects.

Informed Consent: All participants included in the study provided informed consent before their involvement. Any identifiable information has been anonymized to protect the privacy and confidentiality of participants. This research study used secondary data sources for the analysis and information where all institutional data were given the necessary ethical consideration before usage.

Author Contribution: The author contributed significantly to the conception, design, analysis, and interpretation of data for this study. The author has reviewed and approved the final version of the manuscript for submission.

Data Availability Statement: The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

This ethical statement ensures transparency and integrity in the conduct of research and demonstrates compliance with ethical principles and standards in academia.

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