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Does Quality Education Matter to FDI Inflows in Sub-Saharan Africa?: Theoretical and Methodological Insights

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Abstract

This research utilises human capital theory within a national competitiveness framework to assess how quality education affects FDI inflows into Sub-Saharan Africa (SSA). Employing fixed effects estimation with panel data from 2001 to 2019, the study explores how educational advancement influences global FDI, and FDI from developed and developing countries. Data are primarily sourced from UNCTAD. Results show education as a significant factor for attracting FDI, especially from developing economies. The findings stress the need for SSA countries to design education policies that align with specific investment strategies to increase their appeal to global investors.

Keywords: *FDI inflow, Quality Education, Sub-Saharan Africa, Fixed Effect Model, Human Capital Theory*

1. Introduction

Foreign Direct Investment (FDI) inflows in developing economies have surged since the early 1990s. Nevertheless, despite efforts to attract FDI, Africa has not seen as much growth as the FDI boom in other developing countries (Kimiagari et al., 2023; Sichei & Kinyondo, 2012). For example, in 2015, global FDI inflows reached their highest point since the 2008/2009 global financial crisis, marking a 38% increase from the previous year. FDI flowing to Africa decreased by 7%, while developing countries overall saw a 9.5% increase that year (Gorg, 2023). However, recent trends show an encouraging shift. In 2024, SSA received approximately US$44 billion in FDI inflows, reflecting an 18% increase from the previous year. This resulted in FDI inflows accounting for 2.13% of the region's GDP, up from 1.74% in 2023 (UNCTADSTAT, 2025). These figures signal that SSA is becoming increasingly attractive to foreign investors, prompting a re-evaluation of the factors that influence this investment, especially in a global economy that is increasingly knowledge- and skills-driven.

As global business dynamics evolve, researchers have called for a rethinking of the traditional determinants of FDI, such as market size and natural resource endowment, in favour of a broader framework that accounts for human capital and institutional quality (Meressa, 2022; Kokko, 2002; Dunning, 2004a). This change is particularly relevant for SSA, as traditional factors may no longer be able to sufficiently explain FDI patterns there. Notably, intra-African FDI has also grown, comprising approximately 21% of the total FDI stock from 2020 to 2023, compared to 15% during 2010–2019 (UNCTADSTAT, 2025). This trend suggests that improvements in institutional capacity and education across the region may be facilitating both regional and international investment flows (Nunnenkamp & Spatz, 2002; Batschauer da Cruz et al., 2022; Naanwaab & Diarrassouba, 2016). Consequently, exploring quality education as a non-traditional determinant becomes not only timely but essential for understanding FDI behaviour in SSA. The UN SDGs have emphasised several factors. Specifically, the 'People' category encompasses goals like health and well-being, poverty eradication, quality education, hunger elimination, and gender equality.

This study addresses three underexplored areas of the literature and practices about the discussion above, focusing on quality education as one of the SDGs. First, there is a limited body of research evaluating the impact of educational advancements on FDI inflows into SSA. Most studies emphasise the positive relationship between FDI and educational

outcomes or human capital development rather than the reverse and how progress in education may attract investment. Second, few studies adopt a theoretically grounded approach, using frameworks such as the national competitive advantage model or human capital theory, to explain how educational improvements influence MNE decision-making in developing regions. This theoretical gap weakens the policy relevance of FDI research in SSA.

Finally, existing literature rarely distinguishes FDI by source region, overlooking the fact that investors from developing and developed economies may respond differently to improvements in educational infrastructure, skills, and institutional quality. This paper addresses these gaps by positioning quality education as a non-traditional determinant of FDI and analysing its different impacts on global, developed, and developing country investors. This research introduces novelty by diverging from the common focus in the literature on how FDI promotes sustainable development, which is an economic development perspective (Nguyễn et al., 2023; Gohou & Soumaré, 2012; Oetzel& Doh, 2009). It also examines the question of how achieving sustainable development affects the attraction of FDI inflows.

The study addresses three research questions: (1) How does progress in quality education impact global FDI inflows to SSA? (2) How does progress in quality education affect the flow of FDI from developed countries to SSA? (3) How does progress in quality education influence the flow of FDI from developing countries to SSA?

The remainder of this article is organised as follows: a brief literature review and an in-depth discussion of the methodology. The estimation results and discussion are then presented, followed by the conclusion.

2. Materials and Methods

2.1 Theoretical Framework of the Study

Quality education is considered a foundational determinant of FDI due to its effect on workforce readiness and national productivity. The National Competitive Framework (NCF), based on Porter's Diamond Model, focuses on dynamic factors such as skills development, innovation, and strong institutions. These are seen as more influential than natural endowments. Human Capital Theory complements the NCF by linking education to improved productivity. Together, these theories explain how education enhances competitiveness, lowers transaction

costs, and helps SSA economies attract sustainable FDI—especially as they shift away from resource dependency.

The national competitive framework (NCF), grounded in Porter's Diamond Model, is particularly well-suited for analysing FDI determinants in Sub-Saharan Africa (SSA). Unlike traditional location theories that emphasise static endowments, such as natural resources, the NCF focuses on developed factors, including human capital, innovation capacity, and institutional quality, which are increasingly relevant to SSA's evolving economic structure. SSA countries are transitioning from resource dependency toward productivity-driven growth. In this context, quality education and workforce skills, central to the human capital dimension of the NCF, are becoming critical for attracting sustainable, high-value FDI. Moreover, the framework is flexible enough to accommodate the region's institutional diversity, allowing for country-specific strategies that align with long-term development objectives.

Delgado et al. (2012) argue that an economy's competitiveness can be assessed in two ways: first, through foundational competitiveness (anticipated output per potential worker) and second, through global investment attractiveness, which reflects the difference between a country's foundational competitiveness and its existing factor costs. (Delgado et al., 2012).

The national competitive framework includes quality education and explains its impact on competitiveness and, subsequently, the attractiveness of a country for inward FDI. It connects quality education to transaction costs, productivity, and human capital (Delgado et al., 2012). The human capital theory provides the theoretical foundation for the link in the framework.

The human capital theory originates from scholars like Mincer (1958) and Becker (1962). According to Porter (1990), productivity is the only reasonable indicator of a country's competitiveness. Therefore, a country's increased productivity could be equated with its increased competitiveness. "The human capital theory is premised on the notion that an increase in a person's stock of knowledge and health raises his or her productivity in both market and non-market activities" (Tompa, 2002, p. 183). Knowledge capital, derived from education, and health capital are critical forms of human capital. Education is essential for human capital development (Bloom & Canning, 2003; Bleakley, 2010).

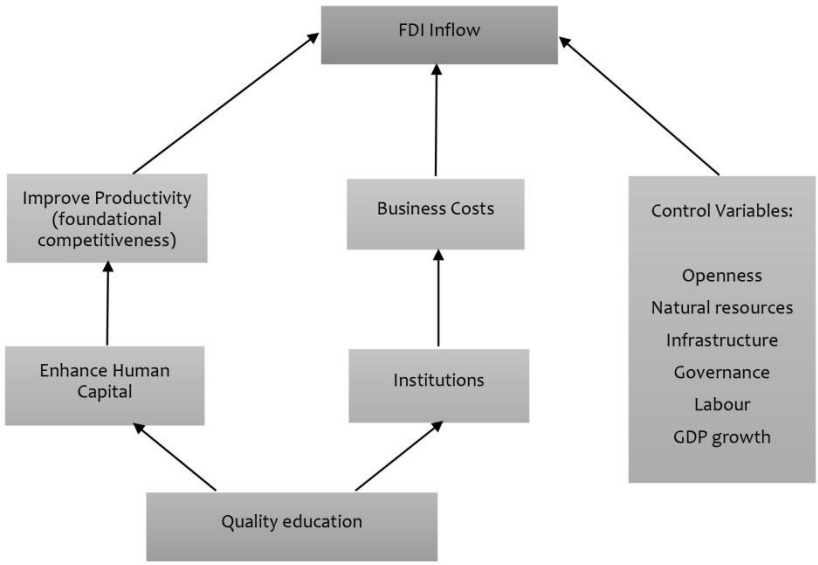
A country with an educated population possesses a workforce with high skills and knowledge.These workers can enhance production and efficiency by utilising advanced methodologies, performing their duties competently, and minimizing errors in their operations. Educated

workers can be easily trained; thus, a knowledgeable and skilled worker can handle various activities and reduce the cost per unit compared to an uneducated worker (Shatz, 2003). Productivity rises as human capital improves; hence, unit labour costs decrease.

Ishak and Rahmah (2002) also contend that in terms of skilled workers, a country's education level is crucial for aligning the workforce supply with the economy's needs. According to Shatz (2003), many multinational industries operate in sectors with differentiated or technologically advanced products, which are more appealing to educated or high-income earners. Thus, to make sophisticated products, MNEs also require highly skilled labour. However, highly educated individuals could suggest higher wage expenses to MNEs, considering their qualifications; nonetheless, Kucera (2002) maintains that MNEs consider skills more than wage costs. Thus, the argument for highly educated workers appears "More significant than for low-skilled and inexpensive labour" (Shatz, 2003).

This study adopts the national competitive framework because it aligns closely with the productivity and capability-based determinants of FDI. Beyond its conceptual soundness, the framework also offers practical relevance in the Sub-Saharan African context.

Figure 1: Conceptual Framework of the Study



Source: Author

2.2 Data and Methodology

The study is mainly quantitative and employs panel data. It falls under the explanatory studies category since it seeks to explain the relationship between progress toward quality education and the inflow of FDI in SSA. Since this research did not aim to account for all possible variables that could explain the flows of FDI to SSA, we required an approach that could address the issue of omitted variables. Therefore, fixed effects models effectively address the issue of omitted variables (Wooldridge, 2002). A limitation of the fixed effects model is that it cannot contain fixed explanatory variables over time (Torres-Reyna, 2007). However, this constraint does not cause worry, as the focus is exclusively on time-varying explanatory factors (Wooldridge, 2002: 266).

SSA comprises 48 countries. Considering data availability, the study encompasses only 38 countries and covers the period from 2001 to 2019. Among the 38 countries included, 23 are designated least developed countries (LDCs), and 15 fall into the low- or high-middle-income categories.

2.2.1 Operationalisation of key variables

Variable	***Measurement***	***Source***
FDI inflows	Natural logarithm of bilateral gross FDI inflows	Bryant and Javalgi, 2016; Agosin and Machado, 2007; Alsan et al., 2006
Education progress	gross enrolment at the tertiary level (lageducation).	Kheng et al., 2017; Talukdar and Parvez, 2017; Miningou and Tapsoba, 2017; Chanegriha et al., 2017; Cleeve et al., 2015; Strat, 2015; Lee et al., 2013; Noorbakhsh et al., 2001

2.2.2 Data Collection and Management

We first obtained the bilateral FDI flow data for SSA economies from UNCTAD as bespoke data in mirror data format. The mirrored data shows the amount of FDI inflows a specific SSA nation receives from other economies worldwide, as well as the amount of FDI this country invests in other economies worldwide each year. The partner countries were classified into developing and developed categories. Subsequently, we compiled two separate bilateral FDI flow datasets: one detailing the amount of FDI inflows into SSA economies from developed economies and the other from developing economies. The total or worldwide FDI flows to SSAeconomies were sourced from UNCTADSTAT. The three distinct FDI datasets—the global or aggregate FDI flows dataset (FDI), the flows of FDI from developed economies dataset (FDID), and the FDI flows from developing economies dataset (FDING)—were cleaned and restructured into a long format. This format enhances data clarity and usability, making it ready for integration with independent and control variables. Despite the benefits of this data source, including a wide range of reputable sources for control variables, clarity, and usability, limitations exist, such as limited control over data collection and incomplete information. A limitation of this study was the data, as we only had information for 38 of the 55 countries. To address this gap, we use linear interpolation following the methods outlined by Blanco et al. (2016), Albulescu and Goyeau (2016), and Azemar and Desbordes (2009).

2.2.3 Econometric model

According to Delgado et al. (2012)

$$FDI = f(FOUNDATIONAL\ COMPETITIVENESS), (FACTOR\ COST) \quad 1$$

Where:

Foundational competitiveness depends on social infrastructure and political institutions (SIPI), which include health, education, and institutional factors.

Factor costs include labour costs, cost of materials, and transaction costs.

Apply natural logarithm transforms to equation 2 and include quality education

$$Ln\ FDI = \propto + \beta_1 Education_{t-1} + \varepsilon \quad 2$$

Where: The t-1 is the time lag

The study uses three primary models:

1st *model: assesses the FDI flows from developed economies to SSA (FDID).*

$$Ln\ FDI = \propto + \beta_1 Education_{t-1} + \beta_2 Control\ variables_{t-1} + \varepsilon \quad 3$$

2nd model: assesses the FDI flows from developed economies to SSA (FDID).

$$Ln\ FDID = \propto + \beta_1 Education_{t-1} + \beta_2 Control\ variables_{t-1} + \varepsilon \quad 4$$

3rd model: assesses FDI flows from developing economies to SSA (FDING).

$$Ln\ FDING = \propto + \beta_1 Education_{t-1} + \beta_2 Control\ variables_{t-1} + \varepsilon \quad 5$$

2.2.4 Estimations

This study employs a fixed-effects regression approach with robust standard errors to estimate the influence of quality education on FDI. Lagged independent variables were used to reduce simultaneity bias. Fixed effects were preferred over GMM due to sample size constraints. The method accounts for country-specific differences, eliminating

omitted variable bias related to time-invariant characteristics. By controlling for such effects, the model focuses on variations over time within countries, offering more consistent results.

Although the Generalised Method of Moments (GMM) is a widely used approach to address potential endogeneity in panel data analysis, it was not employed in this study for several reasons. First, GMM estimators, particularly system GMM, require a large number of cross-sectional units and short periods to produce reliable results. However, this study uses a relatively small sample of 38 countries over 19 years, making GMM less suitable due to risks of instrument proliferation and weak identification. Second, the primary concern in this study is time-invariant unobserved heterogeneity, which the fixed effects (FE) estimator effectively addresses by controlling for all country-specific factors that remain constant over time. Furthermore, the study employs lagged independent variables, which mitigates concerns about reverse causality and reduces simultaneity bias. Given the structure of the data and the research focus, fixed effects with robust standard errors are the most appropriate and transparent approach. Applying pooled regression with Ordinary Least Squares may lead to bias due to heterogeneity, as each country has a distinct underlying model. Combining data from all countries without considering unobserved effects would result in biased estimates.

Fixed effects estimation is suitable for analysing variables that vary over time, focusing on the relationship between predictor and outcome variables within each entity. Each entity possesses distinctive attributes that could affect predictor variables; fixed effects assume that specific entity-specific characteristics affect predictors or outcomes, necessitating their control. A fixed-effects model mitigates the bias of omitted variables and endogeneity issues (Allison et al., 2017; Qian & Su, 2014). It achieves this by first controlling for average disparities among countries in observable and unobservable predictors, thus significantly reducing the risk of biases from omitted variables (Francis et al., 2013). Secondly, the model addresses characteristics that remain constant over time to isolate the actual impact of predictors on the outcome variable (Torres-Reyna, 2007), often employing a first-difference transformation (Wooldridge, 2010).

In the equation:

$$Y_{it} = X_{it}\beta + C_i + U_{it} \ldots t = 1 \quad (6)$$

$$Y_{it-1} = X_{it-1}\beta + C_i + U_{it-1} \ldots t = 2 \quad (7)$$

Taking the difference between equation 6 and equation 7 results in

$$\Delta Y_{it} = Y_{it} - Y_{it-1} = \Delta X_{it}\beta + \Delta U_{it} \ldots t = 2 \qquad 8$$

This removes the unobserved $C_{i,}$ thus, the FD estimator evades bias due to some omitted, time-invariant variables using repeated observations over time. Then, we apply OLS to the different variables.

3. Empirical Results and Discussion

Before performing estimations, it is essential to conduct multiple preliminary tests to ensure that all assumptions regarding fixed effects are met.

3.1 Normality

The assumption of "normality in the regression errors" enhances the stability of our regression solutions and improves the reliability of our inference procedures. (Hair et al., 2009). After applying a natural logarithm transformation to the dependent variables, the normality test revealed no sign that they were not normally distributed.

3.2 Heteroscedasticity test

We run a modified Wald test to detect heteroscedasticity among groups in the fixed-effect regression model.

Heteroscedasticity test for the 1st model

$H_0: \sigma_i^2 = \sigma^2$ for all i

$H_i: \sigma_i^2 \neq \sigma^2$ for all i

chi2 (21) = 2.6e+28

Prob>chi2 = 0.0000

Since Prob>chi2 <0.05, we reject the null hypothesis and affirm the presence of heteroskedasticity.

Heteroscedasticity test for the 2nd model

The null hypothesis $H_0: \sigma_i^2 = \sigma^2$ for all i

An alternative hypothesis $H_i: \sigma_i^2 \neq \sigma^2$ for all i

$i = \sigma^2$ for $i = 1. . . . . Ng$, where Ng is the number of cross-sectional units.
chi2 (19) = 7.5e+28

Prob>chi2 = 0.0000

Since Prob>chi2 <0.05, we reject the null hypothesis and affirm the presence of heteroskedasticity.

Heteroscedasticity test for the 3rd model

$H_0: \sigma_i^2 = \sigma^2$ for all i

$H_i: \sigma_i^2 \neq \sigma^2$ for all i

chi2 (20) = 415.43

Prob>chi2 = 0.0000

Since Prob>chi2 <0.05, we reject the null hypothesis and affirm the presence of heteroskedasticity.

The three models mentioned above indicate the existence of heteroscedasticity. To address this issue, we incorporate a robust option when performing a fixed effects (FE) regression (Torres-Reyna, 2007; Drukker, 2003).

3.3 Hausman Test

Each model undergoes a Hausman test to determine the estimator's consistency and lack of bias, whether it is a fixed or random effects model.

Hausman's test was conducted across the three datasets

For the 1st model

Hausman's Prob>chi2 = 0.0009

Given that the p-value from Hausman's test is less than 0.01, we reject the null hypothesis. Thus, a fixed effects estimator is warranted.

For the 2nd model

Hausman's Prob>chi2 = 0.0005

Given that the p-value from Hausman's test is less than 0.01, we reject the null hypothesis. Thus, a fixed effects estimator is warranted.

For the 3rd model

Hausman's Prob>chi2 = 0.0040

Given that the p-value from Hausman's test is less than 0.01, we reject the null hypothesis. Thus, a fixed effects estimator is warranted.

3.4 Results

Table 1: Summary of the fixed effects estimation on Model 1, Model 2, and Model 3

Hypothesis	Explanatory variable	Aggregate FDI (Model 1)	FDI from developed countries (Model 2)	FDI from developing countries (Model 3)
+	Progress toward quality education	**-19.85834****	12.3316	**5.858174***
+	GNI	**2.578028*****	-1.376757	**3.04387*****
+	Openness	**1.320821****	**2.668459***	.5863179
+	Natural resources	**6.076851***	-8.788389	.7476992
+	Infrastructure	.1211656	-1.73678	-3.20e-08

+	Governance index	.2626634	-.8978056	1.042253
+	Labour	**-30.04718*** **	**44.9407****	-.0000171
+	GDPW	-.8257098	3.22982	**-5.962376*** **
	R^2	0.8745	0.8806	0.8654
	Adjusted R^2	0.8145	0.7964	0.7912
	P-value	0.0000	0.0000	0.0000
	constant	-7.13853	4.386575	**-118.7668****

*** Significant at a test size of 1% ** Significant at a test size of 5%* Significant at a test size of 10%

3.5 Discussion

3.5.1 Progress toward quality education and global FDI inflows to SSA

Quality education was significantly and negatively related to the flows of global FDI in SSA economies at a 5% significance level (-19.85834***). According to the findings, a higher quality of education leads to a lower flow of global FDI to SSA countries. The findings do not match expectations.In contrast, the findings agree with the alternative hypothesis that FDI is pursued" in countries with low levels of education to escape the high compensation costs associated with higher levels of education and skill" (Shatz, 2003, p. 188). The negative relationship aligns with the perspective that multinational enterprises (MNEs) prefer local workers for temporary positions, which typically demand lower qualifications than tertiary-level roles (Shatz, 2003).

While quality education boosts productivity and innovation, it may make a country less attractive to certain types of FDI, especially labour-intensive or cost-focused investments. There are several reasons for this, as supported by Wang (2009), Shatz (2003), Meyer and Thaijongrak (2013) and Porter's National Competitive Framework: First, a more educated workforce often expects higher wages, which discourages cost-sensitive investors looking for cheap labour. Second, tertiary education in SSA may not align with the practical or technical skills required by foreign firms, creating a gap between labour supply and demand. Third, educated workers may push for better working conditions and compliance with regulations, which can increase operational costs and deter firms that prefer low-cost environments. Lastly, as countries move from low-skill to high-skill advantages, traditional FDI may decline before knowledge-intensive FDI gains traction. These factors indicate that improving education should be complemented by industrial policies that align labour supply with the specific needs of target FDI sectors.

3.5.2 Progress toward quality education and FDI inflows from developed economies to SSA

While education improvements had a positive coefficient in relation to FDI from developed economies, the result was statistically insignificant. This suggests that investors from wealthier nations may prioritise other factors—like governance, infrastructure, or market potential—over human capital. The lack of significance could also indicate a mismatch between the skills produced through education in SSA and the requirements of firms from developed regions.

3.5.3 Progress quality education and FDI inflows from developing economies to SSA

The study found a statistically significant and positive link between improved education and FDI from developing nations. This implies that such investors are more responsive to educational advancement, possibly due to shared development challenges. They may perceive SSA's growing skill base as a comparative advantage that supports mutually beneficial investments, particularly in sectors requiring semi-skilled labour.

Regarding the control variables, the study found a significant and positive relationship between a country's market size and global FDI flows to SSA, as well as FDI flows from developing countries to SSA, at a 1% and 5% test size, respectively. This aligns with the observation that larger markets with untapped resources tend to attract more FDI, exemplified by nations like the Republic of Congo, Mozambique, Angola, Nigeria, Ghana, and South Africa.

A country's openness has a positive and significant relationship with the flows of FDI to SSA, particularly from global and developed economies, at a 5% and 10% test size, respectively. This result supports the notion that the more open the economy is, the higher the levels of FDI attraction, as evidenced by previous research by Mijiyawa (2015), Demirhan and Masca (2008), Kinaro (2006), and Asiedu (2002).

A positive and statistically significant relationship exists between the abundance of natural resources in SSA countries and the flows of global FDI to SSA at a 10% significance level. This finding aligns with the traditional trend of FDI allocation to natural resource exploitation, as noted by Cleeve et al. (2015) and UNCTAD (2016).

Contrary to expectations, the study found a negative and statistically significant relationship between the labour force and global FDI flows to SSA at a 1% test size. These results align with those of Meyer and Thaijongrak (2013), who suggest that a workforce with high skills is

perceived as a disadvantage due to the cost of retaining them. However, a positive and significant relationship exists between the labour force and FDI flows from developed countries to SSA at a 5% significance level. This aligns with the expectation that multinational enterprises (MNEs) seek countries with large working-age populations for cheaper labour costs (Dunning, 1993).

3.5.4 Model diagnostics

The fixed effects estimations in all three models show a high significance at the 1% level. The variance of the three models expressed by R^2-type measures ranges between 0.8745 and 0.8806. These values align with or exceed those found in related longitudinal studies that employed fixed-effects analysis (Demir, 2016; Kimino et al., 2007; Davies et al., 2008)

3.5.5 Robustness test of the models

We follow Hair et al. (2009) in using split sample analysis to measure the robustness of the model. The regression outcomes from the segmented sample models closely mirrored those of the original models. Thus, the results of the split-sample technique validated the models.
Furthermore, we utilised the ex-post Harman Single Factors test (Podsakoff et al., 2003) to identify any potential common method bias. Principal Axis Factoring Extraction was used to derive the result, revealing that the total percentage of variance explained by the single construct is 20.491%, suggesting a minimal presence of common method bias.

4. Conclusion

The study contributes to the FDI literature by exploring the role of quality education in shaping investment flows into SSA. The study uses the national competitive framework and human capital theory to find that education has both positive and negative effects, depending on where the investor is from. FDI from developing countries increases with better education, while global FDI may decline due to rising labour costs. The findings suggest that SSA nations must tailor their education reforms to match the needs of target sectors, promoting FDI without sacrificing education quality.

The study establishes that the national competitive framework provides a comprehensive analytical framework, utilising human capital

theory to evaluate the non-traditional influences on productivity. As the framework has been used within the context of developed economies (Delgado et al., 2012), the findings suggest that the national competitive framework can integrate the theoretical foundations of human capital theory with the emerging context of developing economies, such as those in the SSA. Therefore, this represents a novel framework application within this specific context.

The study enhances empirical research on non-traditional influences by utilising customised bilateral FDI inflow data from UNCTAD for the SSA region. This new data set is not publicly available, adding novelty to this research.

This study provides a rigorous quantitative methodological approach within the relatively recent research context of FDI flows and non-traditional impacts of FDI in SSA. It introduced an innovative aspect of FDI research by gathering secondary data from authoritative organisations and databases that compile official state data, including sources such as the World Development Indicators (WDI), UNCTADSTAT, and ILO. The study advances the methodology by examining a novel dataset across three categories: North-to-South FDI flows (from developed economies to the SSA), South-to-South FDI flows (from developing economies to the SSA), and global FDI flows to the SSA. Generally, this approach has already been utilised. However, it has never been used in SSA, as data is not publicly available unless obtained from UNCTAD.

The positive relationship between the inflows of FDI from developing economies and quality education suggests that SSA economies should continue to invest in improving education. This is likely to enhance their appeal to investors from other developing nations who value higher education and its associated benefits. To foster further investment, policies should support educational advancements and align them with the needs of businesses in developing economies. On the other hand, given the negative relationship between quality education and global FDI inflows, SSA economies should consider refining their strategies to attract foreign direct investment. Instead of focusing solely on increasing the quality of tertiary education, which may inadvertently reduce FDI from global sources, these economies explore policies that balance education improvements with other factors that attract international investors.

To enhance the positive effects of education on FDI inflows, SSA economies should pursue sector-specific education policies. For instance, Science, Technology, Engineering, and Mathematics (STEM) education

can support tech and digital FDI, while vocational training aligns well with manufacturing and agribusiness investment needs. Mining and environmental programmes may attract resource-based FDI, and strengthening medical and life sciences education can position countries for healthcare-related investment. These targeted educational reforms, coupled with strong industry-academia partnerships, can improve the alignment between human capital development and investor expectations, ultimately fostering more strategic and sustainable FDI inflows.

Overall, there is a need for SSA economies to adopt a nuanced approach to education and investment strategies, considering the varied impacts on different types of FDI. It is noted that institutions have consistently been viewed as drivers of productivity improvement, leading to increased flows of FDI by the human capital theory linkage (Bénassy-Quéré et al., 2007).

4.1 Limitation of the Study

While this study offers valuable insights, a few limitations should be noted. The measure of education, specifically tertiary enrollment, indicates access but may not reflect deeper aspects like teaching quality or job readiness. Additionally, although the fixed-effects approach controls for many unobserved factors, it cannot completely rule out subtle reverse influences, such as FDI improving educational systems. Finally, although linear interpolation was used to fill missing values, it affected less than 5% of the data. This minimal interpolation is unlikely to bias the results, especially given the robustness checks conducted.

4.2 Future Research

Building on this study, future research could explore sector-specific linkages between education and FDI, particularly in manufacturing, ICT, and services. Disaggregating FDI by industry could reveal how different sectors respond to various types of human capital.

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Data Availability Statement

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References

Afzal, M., Rehman, H. U., Farooq, M. S. & Sarwar, K. (2011).'Education and economic growth in Pakistan: A cointegration and causality analysis.'*International Journal of Educational Research*, 50(5-6) pp. 321–335.

Agosin, M. R. & Machado, R. (2007). 'Openness and the international allocation of foreign direct investment.' The Journal of Development Studies, 43(7) pp. 1234–1247.

Asiedu, E. (2002). 'On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different?' World Development, 30(1) pp. 107–119.

Barro, R. J. & Lee, J. W. (2013).'A new data set of educational attainment in the world, 1950–2010.'*Journal of Development Economics*, 104 pp. 184–198.

Batschauer da Cruz, C. B., Eliete Floriani, D., & Amal, M. (2022). The OLI Paradigm as a Comprehensive Model of FDI Determinants: A Sub-National Approach. International Journal of Emerging Markets, 17(1), 145–176.

Becker, G. S. (2009).*Human capital: A theoretical and empirical analysis, with special reference to education.*University of Chicago Press.

Bleakley, H. (2010).'Health, human capital, and development.'*Annu. Rev. Econ.*, 2(1) pp. 283–310.

Bloom, D. E. (2005).'Education and public health: Mutual challenges worldwide.'*Comparative Education Review*, 49(4) pp. 437–451.

Bloom, D. & Canning, D. (2003).'The health and poverty of nations: from theory to practice.'*Journal of Human Development*, 4(1) pp. 47-71

Bryant, C. E. & Javalgi, R. G. (2016). 'Global economic integration in developing countries: The role of corruption and human capital investment.' Journal of Business Ethics, 136(3) pp. 437–450.

Chanegriha, M., Stewart, C. & Tsoukis, C. (2017). 'Identifying the robust economic, geographical and political determinants of FDI: an Extreme Bounds Analysis.' Empirical Economics, 52(2) pp. 759–776.

Cleeve, E. A., Debrah, Y. & Yiheyis, Z. (2015).'Human capital and FDI inflow: An assessment of the African Case.'*World Development*, 74 pp. 1–14.

Crick, D. (2007). UK SMEs' motives for internationalizing: Differences between firms employing particular overseas market servicing strategies. *Journal of International Entrepreneurship*, *5*(1-2), 11–23.

Delgado, M., Ketels, C., Porter, M. E. & Stern, S. (2012).*The determinants of national competitiveness*. National Bureau of Economic Research.

Dunning, J. H. (1977).'Trade, location of economic activity and the MNE: A search for an eclectic approach.'*Inthe international allocation of economic activity*. Springer, pp. 395–418.

Dunning, J. H. (2000).'The eclectic paradigm as an envelope for economic and business theories of MNE activity.'International business review, 9(2) pp. 163–190.

Dunning, J. H. (2004). Determinants of foreign direct investment: globalization-induced changes and the role of policies. Towards Pro-Poor Policies, 279–290.

Görg, H. (2023). Drivers and extent of foreign direct investment in Sub-Saharan Africa (No. 9). KCG Policy Paper.

Gheasi, M., Nijkamp, P. and Rietveld, P. (2013).'Migration and foreign direct investment: education matters.'The Annals of Regional Science, 51(1) pp. 73-87.

Gohou, G., & Soumaré, I. (2012). Does foreign direct investment reduce poverty in Africa, and are there regional differences? World Develop*ment*, *40*(1), 75–95.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, *11*(3), 255–274.

Kheng, V., Sun, S. & Anwar, S. (2017). 'Foreign direct investment and human capital in developing countries: a panel data approach.' Economic change and Restructuring, 50(4) pp. 341–365.

Kimiagari, S.; Mahbobi, M. and Toolsee, T. (2023). Attracting and retaining FDI: Africa gas and oil sector.Resource Policy, 80, 103219

Kokko, A. (2002). Globalization and FDI incentives. World Bank ABCDE–Europe Conference. Oslo, Norway. June,

Lee, K., Kim, B.-Y., Park, Y.-Y. & Sanidas, E. (2013). 'Big businesses and economic growth: Identifying a binding constraint for growth with country panel analysis.' Journal of Comparative Economics, 41(2) pp. 561–582.

Meyer, K. E., & Thaijongrak, O. (2013). The dynamics of emerging economy MNEs: How the internationalization process model can guide future research. Asia Pacific Journal of Management, 30, 1125–1153.

Mihalache-O'Keef, A., & Li, Q. (2011). Modernization vs. Dependency Revisited: Effects of Foreign Direct Investment on Food Security in Less Developed Countries1. *International Studies Quarterly*, *55*(1), 71–93.

Miningou, E. W. & Tapsoba, M. S. J. (2017).Education Systems and Foreign Direct Investment: Does External Efficiency Matter? : International Monetary Fund.

Naanwaab, C., & Diarrassouba, M. (2016). Economic freedom, human capital, and foreign direct investment. Journal of Devel*oping Areas*, *50*(1), 407.

Nguyễn, H. V., & Phan, T. T. (2023). Impact of economic growth, international trade, and FDI on sustainable development in developing countries. Environment, Development and Sustainability, 1-27.

Noorbakhsh, F., Paloni, A. & Youssef, A. (2001).'Human capital and FDI inflows to developing Countries: New empirical evidence.'World Development, 29(9) pp. 1593–1610.

Nunnenkamp, P., & Spatz, J. (2002). *Determinants of FDI in developing countries: Has globalization changed the rules of the game?* (Vol. 1122). Kiel Institute for World Economics, Germany.

Oetzel, J., & Doh, J. P. (2009). MNEs and development: a review and reconceptualization. *Journal of World Business*, *44*(2), 108-120.

Porter, M. E. (1990). 'The competitive advantage of nations.' *Competitive Intelligence Review*, 1(1) pp. 14–14.

Porter, M. E. (2011).*The Competitive Advantage of Nations: Creating and Sustaining Superior Performance.* Vol. 2. Simon and Schuster.

Sharma, R. R., Nguyen, T. K., & Crick, D. (2018). Exploitation strategy and performance of contract manufacturing exporters: The mediating roles of exploration strategy and marketing capability. *Journal of International Management*, *24*(3), 271–283.

Shatz, H. (2003).'Gravity, education, and economic development in a multinational affiliate location.'*J. Int. Trade & Economic Development*, 12(2) pp. 117-150

Sichei, M. M., & Kinyondo, G. (2012). Determinants of Foreign Direct Investment in Africa: A Panel Data Analysis. *Global Journal of Management and Business Research*, *12*(18).

Strat, V. A. (2015).'The relationship between the education system and the inflows of FDI for the Central and East European EU new member states.'Revista Romana de Economie, 41(2).

Talukdar, M. Z. H. & Parvez, M. A.-A. (2017).'Measuring the Impact of Population Health and Education on Foreign Direct Investment: Panel Evidence from 46 Countries.'Asian Economic and Financial Review, 7(12) p. 1242.

Torres-Reyna, O. (2007). Panel data analysis fixed and random effects using Stata (v. 4.2). *Data & Statistical Services, Princeton University*.

UNCTAD. (2016). *World Investment Report* (Investor Nationality: Policy Challenges, Issue. U. N. Publication.

Wang, M. (2009). Manufacturing FDI and economic growth: evidence from Asian economies. *Applied Economics*, *41*(8), 991–1002.

Wooldridge, J. M. (2002). Econometric analysis of cross-section and panel data, MIT Press. *Cambridge, MA*, *108*.