Applied Journal of Economics, Management, and Social Sciences, 2024, 28-38

Doi: 10.53790/ajmss.v5i1.90
ISSN: 2811-1613
Submitted: January 2024; Revised: 24th, February, 2024; Accepted: April 2024

ARTICLE

Human Capital Development and Inclusive Growth in Sub-Saharan Africa: The case for Health

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Abstract

This study examined the effect of human capital development on inclusive growth in SSA with focus on the health dimension of human capital. Panel data from 20 SSA countries between 2000 and 2021 were used for the analysis. The study employed General Method of Moment (GMM) and the Feasible Generalized Least Square estimation method to analyze the relationship between the variables of interest. The result showed that life expectancy at birth had a negative and significant effect on the inclusive growth index while public expenditure on health had a positive and significant effect on inclusive growth index. The study concluded that human capital development health dimension has significant impact on inclusive growth in SSA. The study recommended that policy efforts toward achieving inclusive growth should focus on substantially increasing government spending on health. Policy effort towards achieving inclusive growth should not focus only on improving the health of the population but also ensure that such citizens have equal opportunities for empowerment and welfare support.

Keywords*:* Human capital development, Inclusive growth index, Life expectancy at birth, public expenditure on health

JEL Classification: H51, I15, O15, O47

Cite as: Owopetu, A. A., Oyedele, O., Tella, S. A. (2024). Human capital development and inclusive growth in Sub-Saharan Africa: The case for health. *Applied Journal of Economics, Management, and Social Sciences*, 5(1), 28-38

1. Introduction

Inclusive growth, a cornerstone of sustainable development, aims to broaden economic participation and opportunity, particularly for marginalized populations, to enhance collective well-being and mitigate inequalities (**Tella, 2016**; **Metu, 2021**). In Sub-Saharan Africa (SSA), challenges such as low employment growth, stagnant agricultural sectors, rural-urban disparities, and gender and social inequalities underscore the pressing need for inclusive economic policies (**Tella, 2016**; **Metu, 2021**). Addressing these disparities is crucial for fostering equitable development and harnessing the region's human capital potential.

Human capital development, integral to inclusive growth strategies, directly impacts labor productivity and earnings, thereby improving welfare levels and facilitating broader economic participation (**Joseph & Obikaonu, 2021**). Emphasizing human capital investment is paramount for SSA's long-term development trajectory, as it enables individuals to contribute meaningfully to economic growth and ensures that the benefits of prosperity are shared equitably across society.

Spending on healthcare is viewed as an investment in human capital because it increases the lifetime earnings of workers who become healthy than other workers and can thus put in more hours of work and so earn more wages. Moreover, **Metu (2021)** and **Kolawole (2016)** argued that healthy individuals are more likely to participate in and contribute to the workforce, leading to increased productivity and economic output. Similarly, investments in health improve human capital by enhancing cognitive abilities, reducing absenteeism, and increasing labor force participation, thus promoting economic growth and reducing inequalities (**Raheem, 2018**). By prioritizing health outcomes as a crucial component of human capital development, societies can achieve sustainable and inclusive growth, ensuring that the benefits of economic progress are equitably distributed across all segments of the population.

While existing research has extensively explored the relationship between human capital development and economic growth, there remains a gap in understanding its implications for inclusive growth, particularly regarding the health dimension. While some studies, such as those conducted by **Paramasivan (2014)**, **Tella (2016)**, **Kolawole (2016)**, and **Metu (2021)**, have considered the health dimension within the context of human capital development, they primarily utilized proxies like public expenditure on health rather than directly measuring health outcomes such as life expectancy.

Consequently, this study seeks to address this gap by specifically examining how investments in human capital, particularly health-related factors, influence inclusive growth. By focusing on health outcomes such as life expectancy as a direct measure of health human capital, this research aims to provide a more comprehensive understanding of the relationship between human capital development and inclusive growth, thereby contributing to the broader discourse on sustainable and equitable development strategies.

The remaining sections encompass the literature review, methodology, analysis, and conclusion. In the literature review, existing research on the topic of human capital development and its impact on inclusive growth, with a specific focus on the health dimension, will be critically examined and synthesized. The methodology section will outline the research design, data sources, variables, and analytical techniques utilized in this study. Subsequently, the analysis will present the findings of the empirical investigation, exploring the relationship between human capital development, inclusive growth, and health outcomes. Finally, the conclusion will summarize the key findings, discuss their implications, and propose avenues for future research.

2. Literature Review

Several empirical studies have investigated the intricate relationship between health and economic growth across various contexts. Studies by **Oyinlola et al. (2021)** and **Khan et al. (2020)** demonstrate that enhancing human capital positively impacts economic growth, employment, and income equality, thereby promoting inclusivity in developing countries. The formation of social capital, facilitated by the development of human capital through education and social inclusion, plays a significant role in promoting inclusive growth, as highlighted by **Dinda (2014)**. Social capital fosters trust, cooperation, and reciprocity, contributing to economic development and reducing regional disparities.

Moreover, increasing government expenditure on healthcare and education is essential for achieving inclusive growth, particularly in sub-Saharan Africa. Studies by **Raheem et al. (2018)** and **Tella (2016)** emphasize the significant impact of health sector financing on inclusive growth, suggesting that adequate investment in health and education is necessary to promote economic inclusivity. There exists a positive relationship between economic growth and health outcomes, as demonstrated by **Erdogan et al. (2013)**. Improved health indicators, such as increased life expectancy and reduced infant mortality rates, are associated with economic prosperity, highlighting the importance of accessible and high-quality healthcare in fostering socioeconomic development.

Specifically, **Barro (1996)** explored the relationship between growth and health in developed countries from 1960 to 1990, with life expectancy as a key indicator of health status. The regression analysis revealed a positive and significant effect of life expectancy at birth on growth. Conversely, **Barros (1998)** investigated healthcare expenditures' impact on growth in 24 OECD nations, finding a negative and significant effect. **Rivera (1999)** examined how health status affects productivity in OECD nations from 1960 to 1990, discovering positive

and significant correlations between health expenditures, income growth, and productivity.

Similarly, **Aghion (2010)** evaluated the connection between health and growth in OECD countries from 1960 to 2000, showing a significantly beneficial impact of life expectancy on per capita GDP growth. Additionally, **James (2017)** studied life expectancy's effect on inclusive growth among 35 OECD nations from 1990 to 2015, finding that gains in life expectancy translated into meaningful improvements in living standards. **Chhetri (2017)** investigated the linkage between human capital and per capita growth in emerging and developing countries, revealing a positive significant relationship between life expectancy at birth and GDP per capita growth.

Paramasivan (2014) examined government expenditure on health and its impact on inclusive growth, indicating a positive and significant relationship between health spending, per capita income, and inclusive growth. **Tella (2016)** explored the role of health and population growth in inclusive growth in 14 African countries, suggesting that increased financing in the health sector could enhance inclusive growth. Similarly, **Kolawole (2016)** investigated government spending's relationship with inclusive growth in Nigeria, finding a significant positive impact of health investment on long-term inclusive growth. Lastly, **Raheem (2018)** examined the potential for equitable growth through increased government spending on health in 18 SSA nations, revealing that boosting health spending could lead to increased GDP per capita growth.

Oyinlola et al. (2021) investigated the nexus of human capital, innovation, and inclusive growth in sub-Saharan Africa, employing a fixed-effects model across 17 countries from 1998 to 2014. Their findings highlighted a positive correlation between human capital, innovation, and inclusive growth. However, they also identified a negative indirect impact of human capital through innovation, suggesting constraints in promoting technological advancement.

In a similar vein, **Khan et al. (2020)** delved into the impact of human capital development on inclusive growth in developing countries using panel data from 2000 to 2014. Their study unveiled that augmenting human capital positively affected economic growth, employment, while concurrently reducing income inequality and poverty. This underscores the imperative of bolstering human capital development to foster inclusive growth in developing nations.

Furthermore, **Dinda (2014)** scrutinized inclusive growth by emphasizing opportunities for all and elucidated the interplay between human and social capital formation. The study underscored the role of social capital in mitigating regional disparities and fostering economic development, stressing the mutual dependence between human and social capital for promoting inclusive growth. Similarly, **Raheem et al. (2018)** explored the impact of government expenditure on education and health on inclusive growth in sub-Saharan Africa. Their research advocated for increased investment in health, especially when coupled with natural resources, to significantly contribute to inclusive growth. This underscores the significance of directing resources towards health and education to realize inclusive growth objectives in the region.

Lastly, **Erdogan et al. (2013)** investigated the relationship between economic growth and infant mortality rates across 25 high-income OECD nations from 1970 to 2007. Their findings revealed a positive correlation between economic prosperity and a decline in infant mortality rates, emphasizing the critical role of accessible and high-quality healthcare in fostering socioeconomic development. These studies collectively underscore the multifaceted nature of inclusive growth and the pivotal role of various factors, including human capital, innovation, healthcare, and government expenditure, in shaping inclusive growth trajectories across different contexts.

De Haan (2015) explored the concept of inclusive growth and its potential to transcend traditional safety net approaches among OECD and developing nations. By analyzing global patterns and trends in income inequality, the study identified economic, human capital, political/governance, and social dimensions as key factors in measuring progress and inclusion. The findings highlighted the need to focus on economic participation, employment, and entrepreneurship to achieve inclusive growth. **Boarini (2015)** investigated the measurement of inclusive growth across OECD nations and China using the Multidimensional Living Standards (MDLS) indicator. The study assessed changes in living standards between 1995 and 2012, revealing that while median household living standards increased in most countries during this period, growth stagnated or declined after 2007 due to rising unemployment rates.

James (2017) explored strategies for enhancing economic growth inclusivity among OECD nations to improve overall well-being and address socioeconomic disparities. The study focused on the relationship between health and inclusive growth, analyzing empirical data from 35 OECD countries and reviewing relevant literature and policies. Findings indicated that gains in life

expectancy were influenced by various factors, including healthcare spending, healthier lifestyles, income, and education levels.

3. Methodology

3.1 Data and Source

The study used panel data for 20 sub-Saharan Africa countries for the period of 22 years from 2000 to 2021. The data include inclusive growth index, life expectancy at birth, public expenditure on health, gross capital formation, labour force participation rate, trade openness, control of corruption and rule of law are the independent variables. The inclusive growth index was computed using the gini-coefficient. Data for the study was obtained from the World Development Indicators (2022) and the World Governance Indicators (2022). The 20 selected SSA countries are Burundi, Cameroon, Chad, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Madagascar, Mali, Mauritius, Mozambique, Niger, Nigeria, Tanzania, Uganda, South Africa, Congo Democratic Republic, Senegal and Congo.

3.2 The Model

The model for this study is based on the Lin (2004) inclusive growth theory, which emphasizes the role of government in determining the type of development strategy that will help achieve inclusive growth. The inclusive growth model is therefore presented as a function of the labour force participation rate (LFP), trade openness (TO) and the quality of institutions captured using control of corruption (CC) and rule of law (RL). Inclusive growth (IG) is measured using the inclusive growth index (IGI). The functional form of the model is given in equation (1)

$$IGI = f(LFP, TO, CC, RL, LEB, PEH, GFC) \quad (1)$$

The effect of health human capital development was captured using life expectancy at birth (LEB) and public expenditure on health (PEH). The study also controlled for capital stock using the gross capital formation (GFCF). The model therefore becomes:

$$IGI_{it} = \alpha_0 + \beta_1 LFPR_{it} + \beta_2 TO_{it} + \beta_3 CC_{it} + \beta_4 RL_{it} + \beta_5 LEB_{it} + \beta_6 PEH_{it} + \beta_7 GFCF_{it} + e_{it} \quad (2)$$

3.3 Model Strategy

The study employed General Method of Moment (GMM) to estimate the relationship. First and foremost, GMM is a flexible and robust estimation technique that allows researchers to handle complex models with potentially endogenous regressors, measurement errors, and unobserved heterogeneity. Unlike ordinary least squares (OLS), GMM does not require strict assumptions about the distribution of errors or the functional form of the model, making it suitable for a wide range of empirical applications.

Furthermore, GMM provides efficient estimates, especially in the presence of large datasets or when dealing with panel data where observations are correlated over time or across individuals. By exploiting moment conditions derived from the underlying economic theory, GMM offers consistent estimates even when the model is mis-specified or when there are unobserved confounding variables.

Additionally, GMM allows researchers to address issues of endogeneity by using instrumental variables or exploiting lagged values of the endogenous regressors as instruments. This enables causal inference and helps mitigate biases arising from omitted variables or reverse causality. Moreover, GMM provides diagnostics tests, such as Hansen's J test, which allows researchers to assess the validity of the moment conditions and the overall goodness-of-fit of the model. This helps ensure the reliability and robustness of the estimated parameters.

Overall, the choice of GMM reflects a methodological approach that prioritizes efficiency, flexibility, and robustness in estimating complex economic relationships while addressing challenges such as endogeneity and measurement errors commonly encountered in empirical research.

4. Results and Discussion

4.1 Descriptive Statistics and Pre-estimation Tests

This section discusses the result starting from the descriptive statistics to the core analysis using GMM. The descriptive statistics consist of mean, maximum, minimum, standard deviation, skewness and kurtosis as presented in Table 1.

The descriptive statistics revealed that all the series are well behaved giving that the standard deviation and skewness are largely small. We could clearly see from the result that the standard deviation and skewness are close to each other. Moreso, the maximum and minimum value between each of the variables are close to each other.

A correlation analysis was conducted and the results are presented on Figure 1. The results showed the absence of multicollinearity among the variables except for the case of control of corruption and the rule of law, which had a high correlation of more than 0.8. Therefore, both variables were included separately in the estimated models. A cross sectional dependence test was conducted and the result showed the presence of cross sectional dependence at the 5 percent significance level as presented in Figure 2.

Table 1 Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
GDPPPE	9896.23	11.20	1398.61	51926.5	2.258	7.181
IGI	28.372	3.839	18.808	41.713	1.211	5.198
PEE	17.079	1.072	15.09	18.772	-0.2	2.048
GCF	9.902	10.093	-3.632	49.345	2.54	10.906
PEH	1.564	0.221	1.26	2.326	1.976	7.346
LFPR	70.147	10.079	45.49	88.35	-0.194	2.291
LEB	58.299	6.327	42.914	74.515	0.185	3.031
TO	62.918	4.446	53.983	71.467	0.056	2.501
CC	-0.684	0.523	-1.581	0.639	0.353	2.231
RL	-0.623	0.6	-1.918	1.023	0.413	3.219
GDPPC	1.694	3.887	-14.964	27.831	-0.07	9.44
GINI	43.379	5.831	32.3	63.5	1.325	5.97

Source: Author`s Computation (2024)

Figure 1 Correlation Analysis

Correlation Matrix

LIGI

	LIGI	GFCF	LFPR	TO	RL	PEH	LEB	SSE	PEE	CC
LIGI	1.0000									
GFCF	0.0667	1.0000								
LFPR	-0.2143	0.0270	1.0000							
TO	-0.0374	0.0276	-0.0348	1.0000						
RL	0.2616	-0.0791	0.1725	0.0320	1.0000					
PEH	0.3961	-0.0877	-0.0869	-0.1776	0.0306	1.0000				
LEB	-0.2146	-0.0582	-0.1519	-0.0278	-0.1355	-0.0130	1.0000			
SSE	0.3773	-0.0602	-0.3725	-0.1926	-0.0031	0.3732	0.4321	1.0000		
PEE	0.1060	-0.0224	0.1776	-0.1287	-0.0272	0.2409	0.1276	0.1478	1.0000	
CC	0.1252	-0.0915	0.0404	0.0723	0.8830	-0.0239	-0.1570	-0.0313	-0.1354	1.0000

Figure 2
Correlation Matrix
LGDPPPE

	LGDPPPE	GFCF	LFPR	TO	RL	PEH	LEB	SSE	PEE	CC
LGDPPPE	1.0000									
GFCF	-0.0505	1.0000								
LFPR	-0.6821	0.0270	1.0000							
TO	-0.0765	0.0276	-0.0348	1.0000						
RL	0.0191	-0.0791	0.1725	0.0320	1.0000					
PEH	0.2322	-0.0877	-0.0869	-0.1776	0.0306	1.0000				
LEB	0.4213	-0.0582	-0.1519	-0.0278	-0.1355	-0.0130	1.0000			
SSE	0.6447	-0.0602	-0.3725	-0.1926	-0.0031	0.3732	0.4321	1.0000		
PEE	-0.0471	-0.0224	0.1776	-0.1287	-0.0272	0.2409	0.1276	0.1478	1.0000	
CC	0.0946	-0.0915	0.0404	0.0723	0.8830	-0.0239	-0.1570	-0.0313	-0.1354	1.0000

Table 2.
Results of Residual Cross-Sectional Dependence Test

Models	Breusch-Pagan LM Statistic (Prob)	Pesaran Scaled LM Statistic (Prob)	Pesaran CD Statistic (Prob)
Model 1	438.885 (0.0000)*	12.669 (0.0000)*	9.63 (0.0000)*
Model 2	366.103 (0.0000)*	9.034 (0.0000)*	9.593(0.0000)*
Model 3	2263.213 (0.0000)*	106.354 (0.0000)*	20.373 (0.0000)*
Model 4	1939.899 (0.0000)*	89.768(0.0000*	19.227 (0.0000)*

*denote significance at 1%.
Source: Author's computation (2024)

The log of GDP per person employed had the highest correlation with labour force participation rate. The correlation among the independent variables were all below 0.8 implies that there is the absence of any correlation bias.

The panel unit root test was conducted using the Levin, Lin & Chu test and the Im, Pesaran and Shin methods. The first generation unit root test was conducted to test for the stationary of the variables. The results showed a mixed order of integration as presented in Table 2. However, the second-generation panel unit root test was conducted to control for cross-sectional dependence. The test was conducted using the Bai and Ng-PANIC unit root test method. The results showed that all the variables were stationary at level as presented in Table 3. Therefore, the study employed the feasible generalized least square (FGLS) estimation method, which controls for the established cross-sectional dependence issue. The feasible generalized least square estimator also controls for heteroskedasticity and autocorrelation issues.

Table 3 First Generation Unit Root Test
First Generation Unit Root Test

Levin, Lin & Chu (LLC)			Im, Pesaran, Shin (IPS)		
Variable	**Order of Integration**	**Statistic (Prob)**	**Variable**	**Order of Integration**	**Statistic (Prob)**
IGI	I (0)	3.2957 (0.0005) *	IGI	I (0)	4.523 (0.0000) *
LEB	I(0)	9.7534 (0.0000) *	LEB	I(0)	4.5875 (0.0000)*
PEH	I (0)	1.648 (0.0496) **	PEH	I (1)	10.552 (0.0000) *
GCF	I(0)	5.8219 (0.000)*	GCF	I(0)	-7.0186 (0.0000) *
LFP	I (0)	3.4312 (0.0003)*	LFP	I (1)	-0.6286 (0.735)
TO	I(1)	1.2504 (0.1056)	TO	I(1)	-8.9572 (0.0000)*
RL	I(1))	-7.237 (0.000)*	RL	I(1))	-9.3755 (0.0000)*
CC	I(0)	2.094 (0.0181) **	CC	I(1)	-10.4446 (0.0000)*

* and **, denote significance at 1% and 5% respectively.
Source: Author's computation (2024)

4.1.5. Second Generation Unit Root Test with Cross-Sectional Dependence

The second-generation unit root test was conducted to test for the stationarity of the variables with the presence of cross-sectional dependence. The test was conducted using the Bai and Ng-PANIC unit root test method. The results are presented in Table 4. The results showed that all the variables were stationary at level. Therefore, the study employed the feasible generalized least square estimation method which controls for the established cross-sectional dependence problem. The feasible generalized least square estimator also controls for heteroskedasticity and autocorrelation issues.

Table 4:
Second Generation Unit Root Test with Cross-Sectional Dependence

Bai and Ng-PANIC Unit Root Test			
Variable	**Statistic**	**Prob**	**Order of Integration**
LIGI	2.123**	0.033	1 (0)
∆ LIGI	2.03**	0.042	1 (1)
LGDPPPE	6.862*	0.0000	1(0)
∆ LGDPPPE	6.973*	0.0000	1(1)
GCF	2.842*	0.0045	1(0)
∆ GCF	2.647*	0.0081	1(1)
LFPR	+/-inf*	0.0000	1(0)
∆ LFPR	+/-inf*	0.0000	1(1)
TO	+/-inf*	0.0000	1(0)
∆TO	+/-inf*	0.0000	1(1)
CC	+/-inf*	0.0000	1(0)
∆CC	+/-inf*	0.0000	1(1)
RL	2.922*	0.0035	1(0)
∆RL	2.887*	0.0039	1(1)
LEB	7.852*	0.0000	1(0)

∆LEB	+/-inf*	0.0000	1(1)
PEH	+/-inf*	0.0000	1(0)
∆ PEH	+/-inf*	0.0000	1(1)
SSE	+/-inf*	0.0000	1(0)
∆ SSE	+/-inf*	0.0000	1(1)
PEE	3.792*	0.0002	1(0)
∆ PEE	3.855*	0.0001	1(1)

*and ** denote the statistical significance at 1% and 5% respectively.
Source: Author's Computation (2024)

4.1.2 Effect of Health Human Capital Development on the Inclusive Growth Index

This study examined the effect of human capital development (health dimension) on inclusive growth index. The results are presented in Table 5 for model 1 (which included control of corruption and excluded the rule of law) and model 2 (where only the rule of law was used and control of corruption was excluded). The results in model 1 showed that the effect of life expectancy at birth on the log of inclusive growth index was negative and significant while public expenditure on health had a positive and significant effect on inclusive growth index. This implies that an increase in life expectancy at birth caused the log of inclusive growth index to decline by 0.4 percent. Therefore, despite the improvement in life expectancy at birth the growth of output was not necessarily inclusive. On the other hand, an increase in public expenditure on health significantly improved the log of inclusive growth index by 4.45 percent.

Gross capital formation had a positive and significant effect on the log of inclusive growth index. This implies that an increase in gross capital formation caused the log of inclusive growth index to increase by 0.03 percent. Labour force participation rate had a negative and significant effect on the log of inclusive growth index, implying that an increase in labour force participation rate caused the log of inclusive growth index to decline by 0.28 percent. Control of corruption had a positive and significant effect on the log of inclusive growth index, the implies that an increase in control of corruption caused the log of inclusive growth index to increase by 2.86 percent.

Table 5 Estimates of Effect of Health Human Capital Development on the Inclusive Growth Index

Variable	Model 1	Model 2
	Coefficient (t-Statistic)	**Coefficient (t-Statistic)**
GCF	0.0003 (11.94)*	0.0034 (13.908)*
LFPR	-0.0003 (-29.256)*	-0.0033 (-32.09)*
TO	5.08 (1.467)	3.13 (0.92)
CC	0.0286 (13.019)*	-
RL	-	0.059 (38.254)*
LEB	-0.004 (-17.988)*	-0.004 (-19.563)*
PEH	0.0445 (52.924)*	0.0434 (59.883)*
Adjusted R-square	0.8908	0.945

F-statistic	597.989*	1257.718*
(Prob)	(0.0000)	(0.0000)

*and** **denote significance at 1% and 5% respectively.**
Source: Author's Computation (2024)

The results for model 2 showed that the effect of life expectancy at birth on the log of inclusive growth index was negative and significant. This implies that an increase in life expectancy at birth caused the log of inclusive growth index to decline by 0.4 percent. Therefore, despite the improvement in life expectancy at birth the growth of output was not necessarily inclusive. On the other hand, public expenditure on health had a positive and significant effect on inclusive growth index implying that an increase in public expenditure on health significantly improved the log of inclusive growth index by 4.34 percent.

Gross capital formation had a positive and significant effect on the log of inclusive growth index. This implies that an increase in gross capital formation caused the log of inclusive growth index to increase by 0.034 percent. Labour force participation rate had a negative and significant effect on the log of inclusive growth index, this means that an increase in labour force participation rate caused the log of inclusive growth index to decline by 0.33 percent. Rule of law had a positive and significant effect on the log of inclusive growth index, this implies an increase in rule of law caused the log of inclusive growth index to increase by 5.9 percent.

This study estimated the effect of human capital development (health dimension) on inclusive growth index. The finding of this study showed that human capital development had a negative effect on inclusive growth index for the case of life expectancy at birth when corruption is controlled for, as well as when the rule of law is controlled for. The result is contrary to **James (2017), Chhetri (2017)** and **Aghion (2010)** which found a positive effect of life expectancy at birth on inclusive growth. Therefore, emphasis should be placed on reducing corruption and strengthen the rule of law in SSA in order to avert the negative of improved life expectancy on inclusive growth index. Therefore, in other to achieve inclusive growth there is the need to not only improve life expectancy but also reduce corruption levels and strengthen the rule of law.

The effect of human capital development for the case of public expenditure on health was positive when institutional quality is controlled for using the control of corruption and rule of law. The result is similar to **Tella (2016), Kolawole (2016)** and **Piabuo (2017)** also found a positive effect of public health spending.

The labour force participation rate had a negative and significant effect when control of corruption and rule of law was controlled for. Therefore, there is the need to increase the opportunities for more of the working population to participate in the labour force in order to achieve inclusive growth provided corruption reduces and rule of law strengthened. This is contrary to **Mujahid (2012)** and **Muhammad (2020)** that found a positive effect. Other variables such as trade openness, control of corruption, rule of law and gross capital formation had a positive and significant effect on the inclusive growth index.

5. Conclusion

The study examined the effect of human capital development (health dimension) on inclusive growth. The result showed the health dimension of human capital, although increasing the level of public expenditure on health significantly improved inclusive growth index, improvement in life expectancy at birth caused reduction in inclusive growth index. Therefore, effort toward achieving inclusive growth should not focus only on improving the health of the population but also ensure that citizens have equal opportunities for empowerment and welfare support. For the case of GDP per person employed, both life expectancy at birth and public expenditure on health significantly contributed to achieving inclusive growth when either corruption or rule of law was controlled for. Therefore, investment in health capital is important for increasing output per worker or productivity level. There is therefore the need to increase public investment allocations for the health sector towards ultimately achieving inclusive growth.

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