

Trends and Patterns of Human Capital Development and Economic Growth in Selected Sub-Saharan African Countries

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Abstract

The study analyses the trends and patterns of human capital development in the selected Sub-Saharan African countries during the period 1981-2020. The study variables were economic growth rate; human capital development - proxied by Human Development Index (HDI), physical infrastructure – proxied by Physical Infrastructure Index (PII), technology – proxied by Research and Development (R&D), growth of labour force, share of private investment in GDP, trade openness, financial openness and share of total government expenditure. The result indicates that the trends and patterns over the year for human capital development in SSA countries proxied using HDI reveals virtually the same level of development either regional grouping or levels. This is on the basis that changes in human capital development as well as human development are not subject to short-term, but long-term variation – that is, they do take time. The study recommended that government should absorb excess labour force in SSA countries through investment in education, health and vocational training. By so doing, we are transforming the raw labour to human capital, which is very essential as the argument is that, the more of human capital, the more the growth in an economy. Therefore, the excess supply of labour after been transformed to human capital through training, education and health brings about positive impact in the economy.

Keywords: *Economic growth, Human Capital Development, Physical Infrastructure, Technology, Total Factor Productivity, Sub-Saharan African.*

1. Introduction

The role of human capital in economic growth cannot be overemphasized (Anyanwu *et al.*, 2015). Human capital has been generally considered to be a combination of people's knowledge and skills, acquired partly through education. It also includes their strength and vitality, which are dependent on their health and nutrition (Appleton & Teal, 2017). Thus, according to Subramony *et al.*, (2018), human capital is the knowledge, skills, and experience workers have in the economy. By implication, the level of human capital in a country has the capacity to influence the magnitude and pace of economic growth thereby by impacts on the level of development of the economy. Consequently, Ali *et al.* (2018) believed that by increasing the knowledge and skills of the people, economic development is enhanced.

Economic growth has attracted increasing attention in both theoretical and empirical research for decades (Shobowale *et al.*, 2022). This can be partly attributed to the lack of a unifying economic theory and the reductionistic way mainstream economics approach the issue. Despite the lack of a unifying theory, several partial theories discuss the role of various factors in determining economic performance and growth. Economic growth is defined as the change in the output of a nation over time (Shobowale *et al.*, 2022). It can also be seen as the annual increase or improvement in the real per capita income (real GDP per capita or output per person) of a country over a long period of time (Akaakohol & Ijirshar, 2018). Some of the determinants of economic growth are investment in human capital, innovation and R&D activities, trade openness, Foreign Direct Investment (FDI), institutional framework, political factors and social-cultural factors (Akaakohol & Ijirshar, 2018).

In the production process, human capital refers to the contribution of both skilled and unskilled labour as a factor of production (Attahir *et al.*, 2020). Human capitals are active production factor and constitute the most valuable resource of a country. In its absence, there will be the non-performance of physical capital (tools, machinery, and equipment) which will impede economic growth (Ohanyere *et al.*, 2019). Although, years of schooling holds an integral part of human capital in an economy, other forms of investment in human capital may also include quality of education, training, and attitude towards work. These partially account for the differences in wages across workers that are not captured by years of schooling differences alone (Olopade *et al.*, 2019). Thus, in most developed countries, economies are fostered by increasing their capacity to train productive and skilled workers (Dixit *et al.*, 2017).

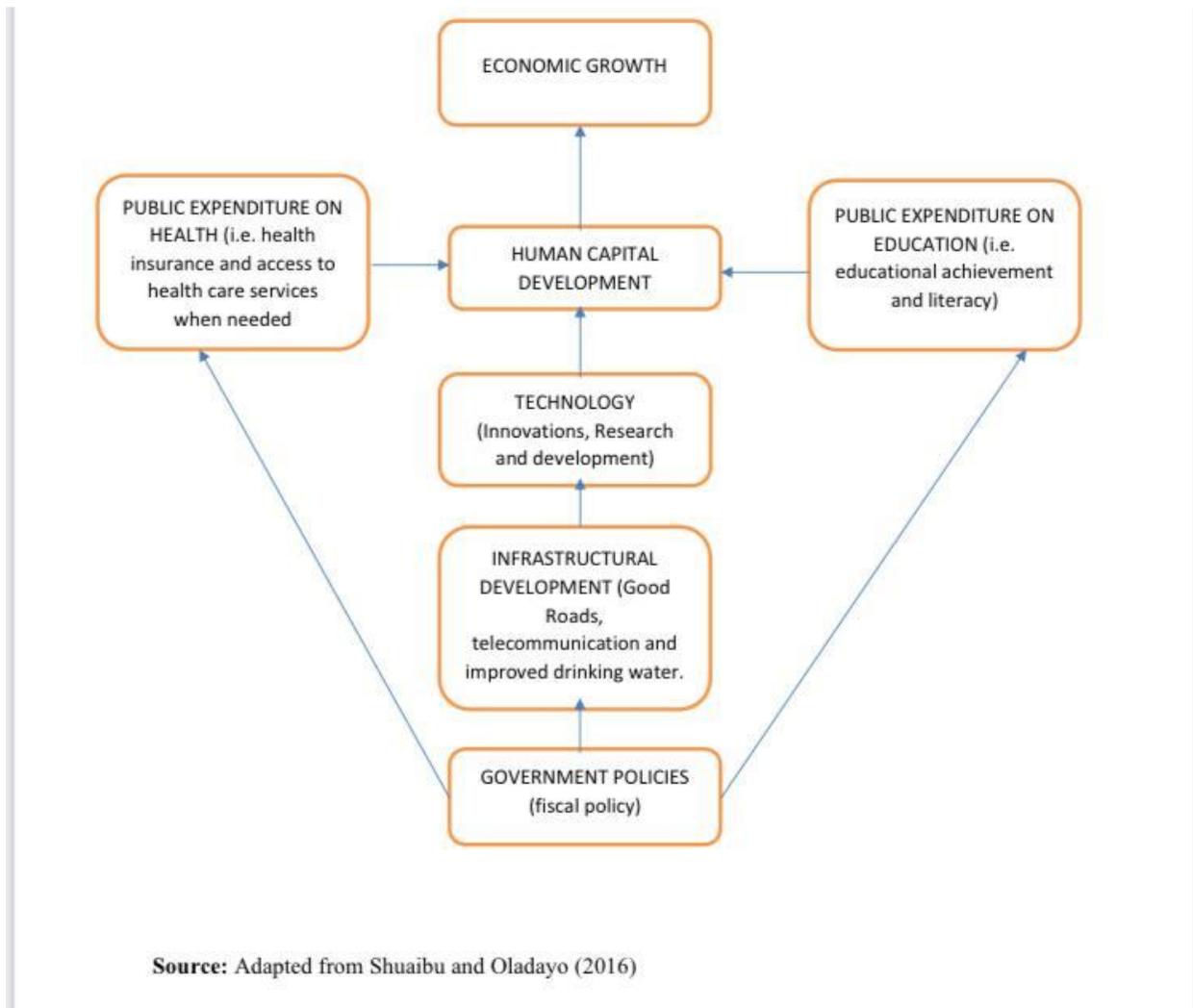
The concept human capital development can be referred to as the process of acquiring and increasing the number of persons who have the education, skills, and experience which are critical for the economic growth of any nation (Abramowitz, 1981; Adedokun, 2011; Awolusi 2019; Harbison, 1962). Thus, human capital development is people and not goods or production-centered development strategy (Ohanyere *et al.* 2019). Human capital development is a broad and

multifaceted concept encompassing many different types of investment in people. Human capital development can also be known as human capital formations or Human-Resource development.

According to Chikwe et al. (2015), Human capital development is associated with an investment in man and his development as a creative and productive resource. Based on development, investing in human capital development is critical as it aims to ensure that the nation's human resources endowment is knowledgeable, skilled, productive and healthy. To enable the optimal exploitation of other resources to produce growth and development (Adeyemi & Ogunsola, 2016). Human capital development has been described as an end or objective of development. It is a way to fulfil people's potential by enlarging their capabilities. And this necessarily implies the empowerment of people, enabling them to participate actively in their own development. Therefore, Human capital development is something that must exist or happen for national development to take place. (Ohanyere et al., 2019).

Education and health are investments made in the same individual. Education is the key to creating, adapting, and spreading knowledge. Education can add to the value of production in the economy and also to the income of the person who has been educated. But even with the same level of income, a person may benefit from education - in reading, communicating, arguing, being able to choose in a more informed way, being taken more seriously by others, and so on (Amatyasen, 1999). Investment in health and nutrition are germane components of such investments. For instance, in developing countries, there are deficiencies in these respects which actually limit the population's ability to engage in productive activities. The connection between health and education includes similar analytical treatment. There is a dual impact of the effects of health spending on the effectiveness of the educational system and vice-versa. More significant health capital may raise the return on investment in education and vice-versa. Basically, Human capital development is commonly measured using a composite index called the Human Development Index (HDI). This index constitutes health, knowledge, and standard of living components like life expectancy at birth, expected years of schooling and quality of life as a proxy, respectively (Akinlosotu, 2020).

Several theoretical and empirical studies have been conducted, contributing to understanding the nexus between human capital development and economic growth. However, not so much appreciated in these studies is the moderating influence of the total factor productivity. By this study, a contribution to knowledge is expected to be made in this area of research, bringing to the fore how such factors as technology and infrastructure could moderate the nexus between human capital development and economic growth. The quality and quantity of available human capital development can directly affect the growth of an economy by expanding the knowledge and skills of its people. Therefore, policymakers should be able to determine from findings whether human capital development affects economic growth in SSA to use it as an instrument to promote growth. Hence, the need to analyse the trends and patterns of human capital development in selected SSA countries. The diagram below depicts the impact of the moderating factors such as technology and infrastructure towards enhancing human capital development in order to achieve the needed growth in an economy.



Source: Adapted from Shuaibu and Oladayo (2016)

Source: Adapted from Shuaibu and Oladayo (2016)

The objective of this study is therefore to analyse the trends and patterns of human capital development in the selected SSA countries between 1981-2020.

2. Conceptual Issues

Human Capital Development Index

Human development involves studies of the human condition, with its core being the capability approach. The inequality-adjusted Human Development Index is used to measure actual progress in human development by the United Nations. It is an alternative approach to a single focus on economic growth and focuses more on social justice to understand progress. The United Nations Development Programme (2017) defines human development as "the process of enlarging people's choices", said choices allowing them to "lead a long and healthy life, to be educated, to enjoy a decent standard of living", as well as "political freedom, other guaranteed human rights and various

ingredients of self-respect". According to UNDP (2017), there are six fundamental pillars of human development: equity, sustainability, productivity, empowerment, cooperation and security.

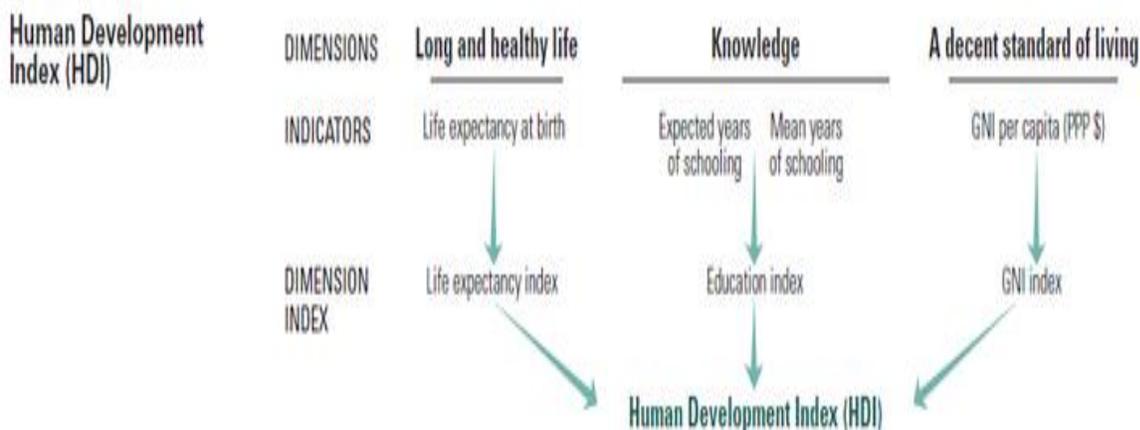


Figure 2: A graphical presentation of the underlying principles behind the Human Development Index.

Source: UNDP. 2017 Human Development Index Report

Economic Growth

According to Guru (2016), economic growth can be defined in two ways. In one-way, economic growth is defined as sustained annual increases in an economy's real national income over a long period of time. In other words, economic growth means a rising trend of net national product at constant prices. Some economists have criticized this definition as inadequate and unsatisfactory. They argue that total national income may be increasing, yet the people's standard of living may be falling. This can happen when the population is growing at a faster rate than the total national income. Hence, the second and better way of defining economic growth is to do so in terms of per capita income. According to the second view of Guru (2016), economic growth means the annual increase in real per capita income of a country over a long period. Traditionally, aggregate economic growth is measured in terms of gross national product (GNP) or gross domestic product (GDP), although alternative metrics are sometimes used. When measured with the population of a given country, economic growth can be stated in terms of per capita income, i.e., the aggregate production of goods and services in a given year after being divided by the country's population in the given period. Economic growth can therefore be seen as the annual increase or improvement in the real per capita income (real GDP per capita or output per person) of a country over a long period of time (Akaakohol & Ijirshar, 2018).

In economics, there are a few ways to generate economic growth. The first is an increase in the amount of physical capital goods in the economy. Adding capital to the economy tends to increase the productivity of labour. A second method of producing economic growth is by technological improvement. Improved technology allows workers to produce more output with the same stock of capital goods by combining them in novel ways that are more productive. Like capital growth, the rate of technological growth is highly dependent on the rate of savings and investment since savings and investment are necessary to engage in research and development. The last method is

to increase human capital. This means labourers become more skilled at their crafts, raising their productivity through skills training, trial and error, or simply more practice. Human capital in this context can also refer to social and institutional capital; behavioural tendencies toward higher social trust and reciprocity and political or economic innovations like improved protections for property rights are in effect types of human capital that can increase the economy's productivity.

3. Human Capital Theory

The theory predicted a bi-causal relationship between education and health and how they lead to an increase in workers' productivity. The human capital theory sees education as a component of human capital as having a positive effect on productivity and earnings both at the level of individuals and that of the economy at large. Therefore, human capital improvement is instrumental to achieving macroeconomic progress (Tan, 2014). Since the introduction of human capital theory in the 1960s, a number of studies have attempted to address this and other related issues (Adelakun, 2011). According to Becker (1964), human capital is directly useful in the production process. It increases a worker's productivity in all tasks, though possibly differentially in different tasks, organizations, and situations. He thinks of human capital as 'the stock of knowledge, skills embodied in a worker and used by the firm as an input' (Becker, 1964). Given this, human capital increases a worker's productivity while at the same time increasing productivity in other areas of life, such as health, education, and employment (Li et al., 2017).

4. Empirical Evidence

There is plethora of studies on the debates pertaining to human capital development and economic growth both in developed and developing countries of the world. Most of these studies used the same variable and proxy for human capital development and economic growth. Firstly, studies like Attahir et al. (2020), Ekperiware et al. (2017), Ohanyere et al. (2019), as well as Oluwafemi et al. (2018) examined human capital development and economic growth using school enrolment (primary, secondary and tertiary education) and government expenditure on health and education as a proxy for human capital development. They concluded that there is a strong positive relationship between human capital development and economic growth in the long run empirically. However, despite the increased academic interest, the issue of interaction between human capital development (government expenditure on health and education) on economic growth remains hitherto unsettled.

Eita and Pedro (2020) and Sulaiman et al. (2015) investigated the impact of human capital development and technology on economic growth. They found that human capital and technology are important determinants of growth. They emphasised that technological advancement leads to economic development, as proposed by Romer (1990). In addition, studies like Bokana and Akinola (2017), Danquah and Ouattara (2014), as well as Zelleke, Sraiheen and Gupta (2013) investigated the contributions of human capital development and total factor productivity to economic growth in selected SSA countries. The study, therefore emphasis the impact of not just human capital development alone but also that of the moderating factors such as technology and infrastructure towards achieving economic growth. Finally, to a large extent, the study is expected

to give credence to the underlying proposition of the essence of the augmented Solow model that emphasises technology and human capital as critical factors for long-run economic growth.

Also, Ogunjobi, Eseyin & Popoola (2021) from their study of implications of human capital and energy infrastructure on economic growth in Nigeria, they found out that quality of educational, transportation and communication facilities had a significant and contemporary influence on economic development. In the same way, investment in physical resources calculated by gross fixed capital development, quality of healthcare facilities, availability of power supply was also found to have a positive impact with a lag effect on economic growth. According to the study, an increase in these facilities over the past decade in terms of their availability and efficiency would boost economic development over the current period.

The measurement of the impacts of public expenditure and human capital development in Nigeria was done using Dynamic Ordinary Least Squares (DOLS) regression technique by Olopade, Matthew, Eseyin and Odularu (2023). The method was used to test the complexity of the interactions between the various human capital components. It was found out from the study that Nigeria's economic growth is directly impacted by public spending on the different aspects of human capital development. It was further established from the study that investments in health and education have a favourable and considerable impact on Nigeria's economic growth.

Concerning growth, Ogbaro, Sanni, Adeoye, Akintaro & Eseyin (2023) investigated the roles of financial development in the nexus between remittances and economic growth in Nigeria. It was established that although remittances have a negative and negligible impact on Nigeria's economic growth, but remittances and financial development have positive and considerable impact on economic growth. The results also show the level of financial development beyond which remittances encourage economic growth in Nigeria. According to their finding, the financial sector's growth is necessary for the impact of remittances on economic growth.

5. Methodology

Sub-Saharan Africa is a geographical area of the continent of Africa that lies in the south of the Sahara. According to the United Nations, it consists of all African countries and territories fully or partially south of the Sahara. The SSA consists of 46 countries, which can be categorised into West, East, Central and Southern Africa. Nonetheless, the selected SSA countries for the period under study will be categorised into four regions, i.e., West Africa (Nigeria, Ghana, Cote d' Ivoire and Senegal; Central Africa (Cameroon, Equatorial Guinea, Rwanda and Republic of Congo; East Africa (Kenya, Uganda and Tanzania; and Southern Africa (South Africa, Angola, Zambia and Zimbabwe) which makes a total of 15 countries. These countries are selected based on their Human Development Index (HDI), which the summary is used to measure average achievement in key dimensions of human development: a long and healthy life, knowledge, and a decent standard of living. It is also used to distinguish whether the country is developed, developing, or underdeveloped and measure the impact of economic policies on quality of life.

These countries fall into four categories based on their HDI: very high, high, medium, and low human development. South Africa represents the high human development economies; Equatorial Guinea, Angola, Kenya, Zimbabwe, Republic of Congo, Cameroon, Ghana and Zambia represents

the medium human development economies; while Nigeria, Tanzania, Senegal, Rwanda, Uganda and Cote d' Ivoire represents the low human development economies.

6. Result and discussion

Trends and patterns of Human Capital Development

In this study, human capital development is been proxied by human development. Both concepts are interrelated, but by no means identical. The two concepts relate to education and health. They are both forms of investment with different motives. Investment in human capital development is geared towards skill acquisition and development for increased productivity and efficiency of workforce. The study of selected Sub-Saharan African countries over the period 1981-2020, requires a combination of both longitudinal and cross-sectional analyses. This section focuses on the longitudinal analysis, examining the trends of the average of HDI in the selected SSA with the understanding that they share similar peculiarities vis-à-vis human capital development.

Table 1 shows the aggregate trend of HDI in the selected SSA in the period 1981-2020. The HDI ranged between 0.50 in 1981 and 0.61 in 2015. On the average the selected SSA countries, by UNDP ranking, were for most years categorized as countries with low human development, which implies low human capital development.

As shown in Figure 3, the HDI figures hovered around 0.50 in the period 1981-2000; rose steadily from 0.51 in 2001 to 0.59 in 2012; and witnessed some improvement, especially in the period 2013-2017. The HDI figures tapered off from 2018, slightly down to around 0.57 in 2020.

Tables 2 and 3, show the emerging pattern from reclassification by sub-regional grouping (West Africa, East Africa, Central Africa and South Africa) and by level of HDI (low HDI and medium HDI). As shown in Table 2, the HDI figures are uniform across the four regions, except in few periods where West Africa records slightly lower figures than other regions. Table 2 indicates that for the four regions, they all witnessed some shift in level, from low HDI to medium HDI, beginning from 2006-2010, again in virtually uniform fashion. The HDI figures from then on ranged between 0.56 and 0.60.

The regions under review were selected based on the level human development index they fall under given the stipulated period, which were selected based on the following range: (as categorised by (Sasu, 2021); Very high human development: 0.800 and above, High human development: 0.700-0.799, Medium human development: 0.550-0.699, Low human development: Below 0.550.

Table 1: Table of Average Human Development Index in Selected SSA;

Year	HDI
1981	0.50
1982	0.50
1983	0.51
1984	0.51
1985	0.51
1986	0.51
1987	0.51

1988	0.51
1989	0.50
1990	0.50
1991	0.51
1992	0.51
1993	0.51
1994	0.51
1995	0.51
1996	0.51
1997	0.51
1998	0.51
1999	0.51
2000	0.51
2001	0.51
2002	0.52
2003	0.52
2004	0.53
2005	0.54
2006	0.54
2007	0.54
2008	0.56
2009	0.57
2010	0.58
2011	0.59
2012	0.59
2013	0.61
2014	0.60
2015	0.61
2016	0.61
2017	0.60
2018	0.59
2019	0.56
2020	0.57

Sources: Author's Compilation (2022)

Mean of HCI

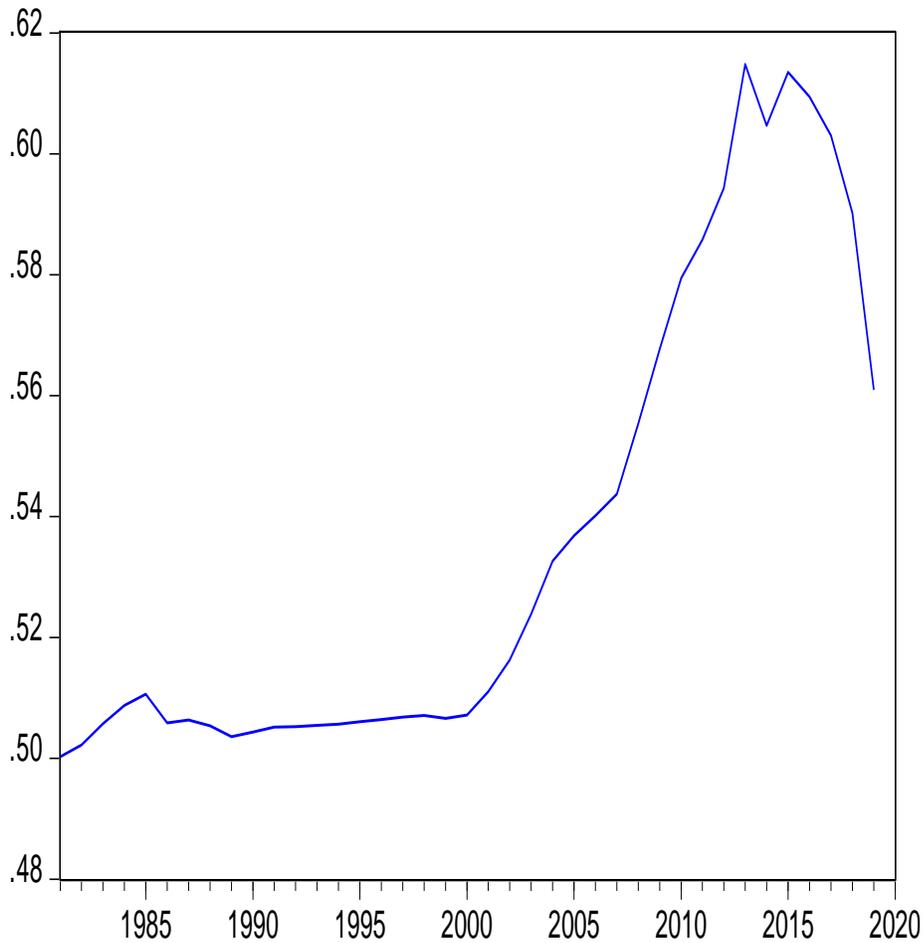


Figure 3: Graph of Average Human Capital in Selected SSA
 Sources: Author’s Compilation (2022)

Table 2: Human Capital Development on Regional Basis

Years	HDI	West	East	Central	South
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1981-1985	0.51	0.51	0.51	0.51	0.51
1986-1990	0.51	0.51	0.51	0.51	0.51
1991 - 1995	0.51	0.51	0.51	0.51	0.51

1996-2000	0.51	0.51	0.51	0.51	0.51
2001-2005	0.52	0.52	0.52	0.52	0.52
2006-2010	0.56	0.56	0.56	0.56	0.56
2011-2015	0.60	0.60	0.60	0.60	0.60
2016-2020	0.59	0.59	0.59	0.59	0.59

Sources: Author's Compilation (2022)

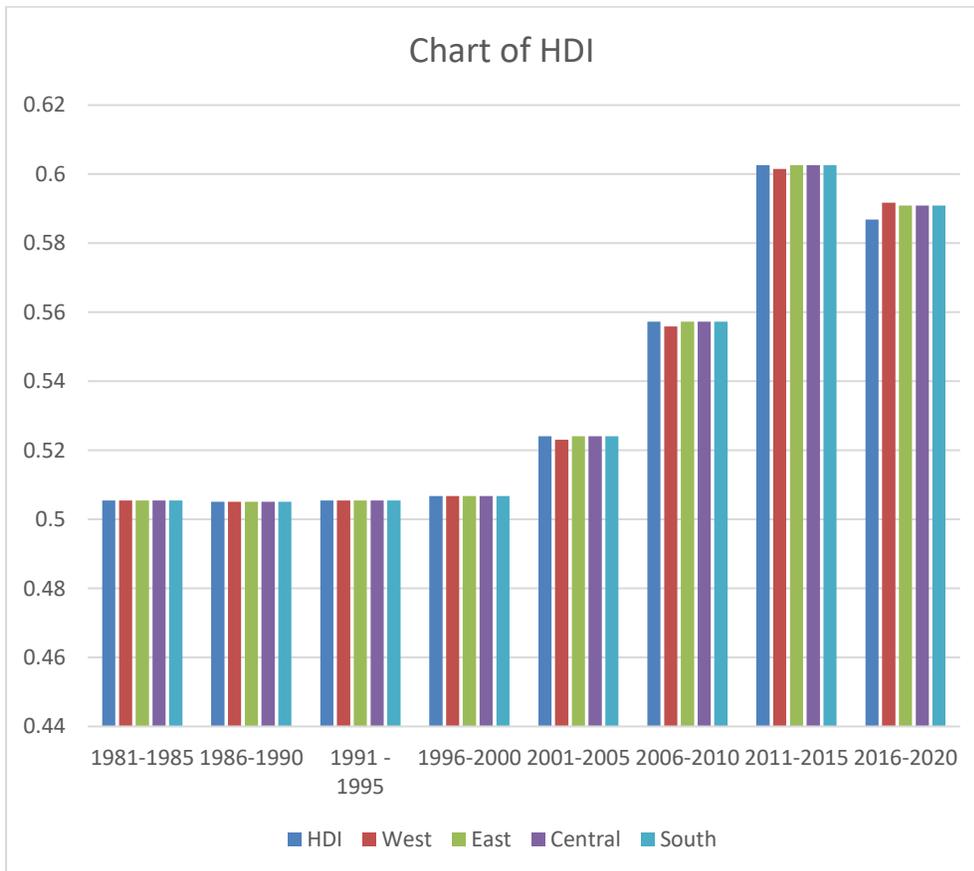


Figure 4: Graph of Human Capital Development on Regional Basis
 Sources: Author's Compilation (2022)

7. Discussion of Findings

As evident by the forgoing trends and patterns over the years, human capital development in SSA countries proxied using HDI reveals virtually the same level of development either regional grouping or levels. The result reveals that the SSA countries shares similar demographical problems such as poor infrastructure in healthcare, low quality of educational delivery, resulting in poorly equipped graduates and low standard of living with slight difference in some countries. These problems represent the basic elements of human development index which are paramount and significantly important for development, which are commonly attributed to SSA countries.

The trend analysis in section 4.1., is based on annual HDI figures, showing some slightly upward trend or improvement in human development. Noteworthy is the fact that changes in human capital development as well as human development are not subject to short-term, but long-term variation – that is, they do take time. In discussing human development index in SSA countries, there's need to lay emphasis on the standard of living of the people given the years under review. Generally, SSA countries are categorised as developing countries with high rate of poverty.

According to UNDP (2006), SSA is afflicted by many forms of poverty. HDI scores in most countries of SSA have stagnated or declined since 1990, leaving this region as the poorest in the world. Indeed, 28 of the 31 low humans- development countries are in SSA (UNDP, 2006). Furthermore, much of SSA countries can be characterised as neopatrimonialism where power and political relations are reliant upon informal patronage systems and clientelism. Therefore, it is necessary for the government of SSA countries to be transparent, responsive, accountable and corrupt free in order to attain a high human development index.

8. Conclusion

The findings of the trends and patterns over the years indicates that human capital development in SSA countries proxied using HDI reveals virtually the same level of development either regional grouping or levels. This is on the basis that changes in human capital development as well as human development are not subject to short-term, but long-term variation – that is, they do take time. In view of this, the main findings on these may be summarised as follows:

(a) Low Standard of Living and High rate of Poverty

It is pertinent to note that SSA countries shares similar demographical problems such as low standard of living and high rate of poverty. These problems represent the basic elements of human development index which are paramount and significantly important for development. Moreover, poverty is more common in young families, for example, when asset ownership is lower and dependency ratios are higher. For others in SSA, poverty is chronic rather than transitory. The higher the poverty rate, the lower the standard of living of the people.

(b) Poor Quality Education

The quality of education in the SSA countries is poor. Education, especially at secondary and tertiary levels, is fundamental for the construction of democratic societies and globally competitive economies. In short, education is a powerful instrument for reducing inequality and poverty and

for laying the foundations for sustained economic growth, effective institutions and sound governance (Bruns et al., 2003).

There are a number of reasons why educational levels are low, for instance, Africa has many under-15s and governments are therefore faced with the challenge of educating increasing numbers of school-aged children within tightly constrained budgets (DFID, 2001). In poorer households, education is not a priority when simply surviving is a challenge, and children are kept out of school to work; in cases of extreme poverty, children may contribute up to 40% of family income (DFID, 2003).

(c) Poor Health care system

Government expenditure on health system is low mostly in SSA countries. With the level of poverty attributed with SSA countries, there's need for increase in government expenditure. The relationship between ill health and poverty is complex and works in both directions: illness can cause poverty and poverty can contribute to poor health (Grant, 2005).

9. Policy Recommendation

Given the findings which have emanated from this study, the following policy recommendations are made: The government should absorb excess labour force in SSA countries through investment in education, health and vocational training. By so doing we are transforming the raw labour to human capital, which is very essential as the argument is that, the more of human capital, the more the growth in an economy. Therefore, the excess supply of labour after been transformed to human capital through training, education and health brings about positive impact in the economy.

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