

Human capital investment and economic growth in Nigeria: the role of education and health

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Abstract: *This study looked at Human Capital Investment and Economic Growth in Nigeria – the Role of Education. Even though there are different perspectives to economic growth, there is a general consensus that growth will lead to a good change manifested in increased capacity of people to have control over material assets, intellectual resources and ideology, and obtain physical necessities of life like food, clothing, shelter, employment, e.t.c. This is why some people have argued that the purpose of growth is to improve peoples' lives by expanding their choices, freedom and dignity. The belief in human capital as a necessity for growth started in Nigeria during the implementation of the 1955-60 Development Plan and today, with the importance of knowledge in the economy, human capital has increasingly attracted both academic and public interest. This study made use of the Unit Root and Augmented Dickey Fuller (ADF) tests and found out that a positive relationship exists between government expenditure on education and economic growth while a negative relationship exists between government expenditure on health and economic growth. Therefore, based on these findings, the study recommended that the Government should increase not just the amount of expenditure made on the education and health sectors, but also the percentage of its total expenditure accorded to these sectors. The ten percent benchmark proffered by the present national plan should be adopted.*

Keywords: Human Capital Investment, Economic Growth, Education.

I. Introduction

The notion of investment in human capital is of recent origin. Jhingan (2005) points out that in the process of economic

growth, it is customary to attach more importance to the accumulation of physical capital than human capital. The new endogenous growth theories are thus significant in the introduction of the active role of human capital

in the growth of economies. Human capital is the term economists often use for education, health, and other human capacities that can raise productivity when increased (Todaro and Smith 2003). Health and education are two closely related human capital components that work together to make the individual more productive.

Taking one component as more important than the other is unrealistic as a more educated individual, who is ill, is as inefficient as an illiterate, but healthy individual. Both components are thus related together because of their close relationship. Appleton and Teal (1998), describe health and education as components of human capital that are contributors to human welfare. They describe these components as different from other types of goods produced in societies. While high incomes may be conducive to health it cannot be directly purchased like material goods and services. Health and education are often subsidized by the state and in some countries, education is compulsory for certain minimum length of time. Nigeria, which was one of the richest 50 countries in the early 1970s has retrogressed to become one of the 25 poorest counties at threshold of the twenty-first century. The belief in human capital as a necessity for growth started in Nigeria during the implementation of the 1955-60 development plan and today, with the importance of knowledge in the economy, human capital has increasingly attracted both academic and public interest.

Thus, the objective of this study is to examine the role of education and health in human capital investment and how this can translate into economic development in a country like Nigeria. The hypothesis formulated in this study stated in its Null form is:

H0: Human Capital Development has no significant positive impact on Economic Growth in Nigeria.

II. Literature review

Health and education as components of human capital

Economists do not always recognize the health component of human capital. Schultz (1961) saw human capital as those resources that are inherent in each human being, which can be traded between the users and the owners to improve their respective living conditions. He outlined these inherent resources in human beings to include knowledge (knowing what to do), skills (knowing how to do what is to be done), and attitude (behavioural demonstration of a favourable inclination while doing that which is to be done). No mention is made here of health. Barro (1991) carried out a study on the effects of human capital on growth. His study was based on data sets pertaining to very diverse array of countries. He used a narrow flow of human capital such as school enrolment rates at the primary and secondary level. Human capital can thus be regarded in two ways: the narrow sense which deals with just education, or the broader sense which adds health to the education component. It has become conventional to discuss human capital in its narrower sense because expenditure on education and training is capable of measurement as compared to healthcare (Jhingan, 2005).

Healthcare shall however be included in this study. Aigbokhan et al (2007) consider education to be a basic and obvious process by which skills, knowledge and attitude are acquired for the performance of socio-economic responsibilities, social integration,

improving personal competence, and seeking better opportunities. In the words of Leeuwen (2007), 'Human capital is implicitly referred to as formal and informal education, yet it can also contain factors such as the costs of raising children, health costs, and ability. 'The health and education, components are recognized, although education comes ahead of health, showing the priority placed on it. In line with this, Igun (2006) defines human capital as 'the total stock of knowledge, skills, competencies, innovative abilities possessed by the population'. These obviously have education as their bedrock.

Economists have identified overtime, other components and indicators of human capital. With the two broadly accepted components, come additional factors. For example, Nakamura (1981) for pre-modern Japan defines human capital as labour and managerial skills, entrepreneurial and innovative abilities, plus physical attributes such as physical strength and skills. Newland and San Segundo (1996) also use several measures as indicators of human capital such as physical strength and skills. As such, they see human capital on the one hand as ability and education of an individual, and on the other, the costs of physically raising a child or its health.

From the organizational points of view, Dees and Picken (2000) have this to say: 'human capital is generally known to consist of the individual's capabilities, knowledge, skills and experience as they are relevant to the task at hand, as well as the capacity to add to this reservoir of knowledge, skills, and experience through individual learning. Quantitatively oriented economic historians such as Zanden (2004), measure the price of human capital as the relative wage of skilled labour compared to the unskilled.

This measure includes factors such as on-the-job training and experience. These factors serve to compliment, rather than substitute the health and education components. This is due to the basic role they play in the lives of individuals. Through healthcare and education, individuals can be fashioned to lead useful and happy lives and contribute to societal and economic goals. Appleton and Teal (1998) confirm that human capital is a broad concept which identifies human characteristics which can be acquired and also increase income. It is commonly taken to include peoples' knowledge and skills acquired partly through education, but can also include their strength and vitality, which are dependent on their health and nutrition. This makes health and education two umbrellas under which all other recognized factors can fit. Human capital theory thus focuses on health and education as inputs in economic production.

Human capital development: investing in health and education

The economic rationale for investing in human capital derives from the belief that human capital plays a key role in economic growth. According to Todaro and Smith (2003), human capital must be given direct attention in its own right, even in economies that are growing rapidly. This points to the fact that importance of this key concept centres not on just developing countries who wish to break free of their vicious cycle, but also developed countries that aspire to achieve sustainable growth and development.

Schultz (1961), one of the early contributors to the study of the importance of human capital, identifies five ways by which human capital can be developed. They are as follows:

- Health facilities and services, broadly conceived to include all expenditures that affect the life expectancy, stamina, strength, vigour and vitality of people.

- On-the-job- training, including old type apprenticeships organized by firms.

- Formally organized education at the elementary, secondary, and higher levels.

- Study programs for adults that are not organized by firms, including extension programs notably in agriculture.

- Migration of individuals and families to adjust to changing job opportunities.

These activities all seek to make the individual more productive. Investment in health and education (the two components of human capital) thus leads to the development of human capital. Speaking of which, Jhingan (2005) opines that in its wider sense, investment in human capital means expenditure on health, education and social service in general; and in its narrower sense, it implies expenditure on education and training.

The development of human capital transcends mere acquisition of intellectual ability through the education system, or the living of a healthier life through adequate health-care. It seeks to improve the productivity of the individual and make him more useful to society. Aigbokhan et al (2007) describe it as being concerned with the transformation of the total man to enhance his productivity. This indicates a necessity for the said investment to lead to increased productivity.

III. Human capital development in Nigeria

The importance of investing in education and health is well appreciated and understood in economies that wish to attain sustainable growth. Nigeria is rated by

international standards as 'less developed' and thus has economic growth as a major goal. Indeed, the importance of a prime sector such as education has been stressed in Nigeria since the early sixties following the submission of the Ashby report in September 1960. In recent times, during a keynote address by the former governor of the Central Bank - Dr J.O Sanusi (2002), he stressed the importance of human capital development for Nigeria, saying that the Nigerian economy has to be efficient and competitive in the new world order in which national frontiers no longer constitute barriers to human, material, and capital flows. He noted that one of the greatest barriers facing Nigeria in this millennium is the issue of capacity building to enhance productivity in the economy.

The government in Nigeria as explained by Ogujiuba and Adeniyi (2005), primarily controls education. They summarize the breakdown of this control from the federal to the state and the local government level.

In Nigeria, the federal government is primarily responsible for the tertiary institutions although some states and private individuals also fund and run this level of education. Secondary education is mainly a state responsibility although there are some federal secondary schools. Primary education is a local government responsibility but there also exists a National Primary Education Commission (NPEC) that draws up the curricular for corporate bodies, individuals, religious organizations, international agencies, non-governmental agencies and community based organizations with the three tiers of government. Importance of higher education in national development in Nigeria is reflected in the goals for tertiary education as enunciated in the National Policy on education (NPE, 1988), which are to:

1. Contribute to national development through high-level manpower training.
2. Develop and inculcate proper values for the survival of the individual and the society.
3. Develop individual's intellectual capacity to understand and appreciate their local and external environments.
4. Acquire both physical and intellectual skills, which will enable individuals to be self-reliant and useful members of the society.
5. Promote and encourage scholarship and community service.
6. Forge and cement national unity.
7. Promote national and international understanding and interaction.

These set goals are expected to be achieved by tertiary institutions through teaching, research and development, sustainable staff development programs, generation and dissemination of knowledge and a variety of modes of programs.

Aigbokhan et al (2007) note that a cursory look at the magnitude and trend of increases in allocation might be misleading in passing judgment on the budgetary performance until they are placed side by side with their percentage allocations. The characteristic pattern of the government's allocation to education and health in Nigeria as a percentage of the total budget revealed inconsistency. That is, health and education expenditure were not considered as policy targets in the overall budgeting, or else, they would have maintained an increasing proportion of the yearly budget of the nation.

The National Economic Empowerment and Development Strategy (NEEDS), which is presently Nigeria's development plan and poverty Reduction Strategy Paper, stipulates

a goal of increasing government's budgetary allocation to health and education from 8% to 10% between 2004 and 2007. While listing selected targets, education and health are rightfully noted as worthy of closer attention.

Under its specific sectoral strategies, the government and the private sector are identified as key players in tackling issues that are critical for effective economic growth. One of such listed issues is inadequate human capital development. Going ahead to discuss these specific sectoral strategies, the first sector discussed is education.

Under NEEDS, education is considered the key bridge to the future. In this regard, the strategy aims at the empowerment of the citizenry to acquire skills and knowledge that would prepare them for the world of work. In order to achieve this, NEEDS is to address the following crucial issues:

i) Faithful implementation of the free, compulsory Universal Basic Education (UBE) law to among others:

- Improve education infrastructure.
- Expand institutional capacity to produce quality manpower.
- Expand total school enrolment.

ii) Review of school curricular from primary to tertiary to incorporate vocational and entrepreneurial skills.

iii) Re-tooling and repositioning of technical schools to be able to address the technical manpower needs of the economy.

iv) Establishment of more vocational centers to encourage Nigerians to embrace vocational education.

v) Review of school curricular at all levels to incorporate the study of information and communication technology (ICT).

vi) In view of Nigeria's position in, and vision of ECOWAS sub-region, review school

curricula to make study of French compulsory from primary through secondary schools.

vii) Expand existing special education programs including the virtual library project, the distance learning program and the Nomadic education program.

viii) Sustain existing vocational/on-the-job training programs of the Federal government and encourage the states to do the same.

ix) The National Youths Service Corps will be reviewed with a view to using a good part of the service year to develop entrepreneurial and basic business skills in corps members.

The orientation period will be extended to include a one-month period for formal training on entrepreneurship.

Following the training, corps members will be posted mainly to industrial (including small scale enterprises) and agricultural concerns so that the exposure will expose them to consider the possibility of post-service self-employment.

The health sector is next for which specific sectoral strategies are listed. Major strategies of NEEDS to improve the service delivery of this key sector are as follows:

i) Redefinition of the roles and responsibilities of the federal Ministry of Health (FMOH) and other Federal public health structures and institutions in the provision and financing of quality services to Nigerians.

ii) Reorganization and restructuring within the context of the redefined roles and responsibilities.

iii) Review of existing health policies and strategies as well as health legislations culminating in the publication of a new National Health policy and the enactment of health system and the health functions of each of the three levels of government.

iv) Strengthening the capacity of FMOH in policy formulation and implementation.

v) Improving the existing and/or setting up of new mechanisms to generate and use evidence and information for health policy/ program/plan development and implementation.

vi) Increase in antenatal, postnatal, and family planning services and outlets to reduce maternal and infant mortality from the present 704/100,000 and 77/1000 respectively.

vii) Intensification for the campaign of the eradication of harmful traditional practices such as female genital mutilation and child marriage.

In a January 2008 publication of the Guardian Newspaper, an article by Sanyaolu describes human capital as the bedrock upon which productivity in Nigeria rests. The contributions of prominent individuals to the topic were documented and presented as advice to the President of the country as key points worthy of note. The National President, Senior Staff Association of Nigerian Universities, Mr. Promise Adewusi, the former Director, Institute of Education, Lagos State University, Prof. Ademola Onifade, and the Registrar and Chief Executive, Certified Institute of Cost Management of Nigeria, Mr. Victor Omoregie were among the contributors. Their contributions can be streamlined to consist of the following issues: Better funding of educational Institutions, tackling unemployment, provision of infrastructural facilities, and research and development.

A later publication of February 2008 included an article describing a contribution to human capital development by a joint project of Chevron Nigeria Limited, Coca-Cola Nigeria, and Discovery Channel Global Education Partnership. The project involves eight new learning centers and

teacher training programs to enable teachers from eight primary schools in Lekki and Ikoyi areas to use educational media technology and programming to complement classroom learning for more than five thousand (5000) students. This would also reach an additional fifteen thousand (15,000) community members. The implementation of this project is founded on the belief that human capital and economic performance will be positively affected.

IV. Model specification

In an attempt to determine the effect of human capital development on economic growth in Nigeria, it is necessary to develop a model to justify the correlation that exists between the variables. In this regard, a multiple regression model is thus developed to determine the effect of human capital development on economic growth.

The model for this study is theoretically stated as: Gross Domestic Product (GDP) depends on Government's Expenditure on Health (GEH), Government's Expenditure on Education (GEE), Primary School Enrolment Rate (PER), Secondary School Enrolment Rate (SER), and Tertiary Institutions Enrolment Rate (TER).

Thus: $GDP = f(GEH, GEE, PER, SER, TER)$

GDP is chosen as a proxy for Economic Growth because it reveals the overall contribution of each sector of the economy.

Government's Expenditure on Health and Education and Enrolment Rates into the three levels of education are chosen as proxy for human capital development because the concept entails investment in health and education.

The explanation of the multiple regression model for this study is as follows:

$$GDP = \beta_0 + \beta_1 GEH + \beta_2 GEE + \beta_3 PER + \beta_4 SER + \beta_5 TER + \mu$$

Where:

B_0 = Intercept of the equation

$\beta_1 GEH$ = Estimate parameter with the corresponding regressor of Government's Expenditure on Health.

$\beta_2 GEE$ = Estimate parameter with the corresponding regressor of Government's Expenditure on Education.

$\beta_3 PER$ = Estimate parameter with the corresponding regressor of Primary School Enrolment Rate.

$\beta_4 PER$ = Estimate parameter with the corresponding regressor of Secondary School Enrolment Rate.

$\beta_5 PER$ = Estimate parameter with the corresponding regressor of Tertiary Institutions Enrolment Rate.

μ = Stochastic error term

The economic apriori criteria refer to the sign and size of the parameters and the economic relationship between the variables. The apriori expression of this multiple regression model is that $\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 > 0$; $\beta_4 > 0$; $\beta_5 > 0$.

A positive sign is expected from the coefficient of the relationship between GDP and GEH, GDP and GEE, GDP and PER, GDP and SER, and GDP and TER.

Estimation method

Recall that the study formulated this hypothesis:

H0: Human Capital Development has no significant positive impact on Economic Growth in Nigeria. To test this hypothesis, it is necessary to ensure that some tests are carried out to make adequate allowance for the dynamic relationship, non-stationarity, and spurious regression problems.

Table 1: Unit Root Analysis

Variable	ADF Test Statistical Value	MacKinnon Critical Value at 1%	MacKinnon Critical Value at 5%
GDP	4.31173	-3.7497	-2.9969
GEE	6.23814	-3.7667	-3.0038
GEH	0.75219	-3.7497	-2.9969
PER	0.72669	-3.7497	-2.9969
SER	-0.67016	-3.7497	-2.9969
TER	-1.78513	-3.8572	-3.04

Source: Researcher's Computation

From the results obtained in Table 1 above, it is observed that all the variables are

non-stationary as their t-values are greater than the critical values at 1% and 5%.

Table 1: Unit Root Analysis

Variable	ADF Test Statistical Value	MacKinnon Critical Value at 1%	MacKinnon Critical Value at 5%	MacKinnon Critical Value at 10%	Order of Integration
GDP	-6.085464	-4.5346	-3.6746	-3.2762	I(2)
GEE	-3.35995	-4.5	-3.6591	-3.2677	I(2)
GEH	-6.11233	-4.4415	-3.633	-3.2535	I(1)
PER	-4.58112	-4.4691	-3.6454	-3.2602	I(2)
SER	-3.74268	-4.4691	-3.6454	-3.2602	I(2)
TER	-3.44056	-4.8025	-3.7921	-3.3393	I(1)

Source: Researcher's Computation

The results in Table 2 above shows that Gross Domestic Product (GDP), Government expenditure on Education (GEE), Primary School Enrolment Rate (PER), and Secondary School Enrolment Rate (SER), are stationary at second-order difference. Also, Government expenditure on Health (GEH), and Tertiary Institutions Enrolment Rate (TER), are stationary at first-order difference.

Interpretation of results

The cointegration test results show that the residuals, and thus the variables, are cointegrated. This necessitates the development of the error correction model for short-term adjustment. ECM(-1) is -0.75589. The percentage value of ECM is thus 75.6%, showing that the variables have

Table 3: Error Correction Model Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEE(2)	26.52724	6.856537	3.868898	0.0038
GEH(1)	-0.98187	8.815632	-0.111375	0.9138
PER(2)	-140934	88708.6	-1.588733	0.1466
SER(2)	357033.1	389459.1	0.916741	0.3832
TER(1)	4292078	761860.4	5.633681	0.0003
ECM(-1)	-0.75589	0.388065	-1.957818	0.0819

R-squared	0.992261	Mean Dependent var	1894281
Adjusted R-Sqd	0.987961	S.D Dependent var	2469049
S.E. of Regression	270910.6	Akaike info criterion	28.146414
Sum sqd Resid	6.61E+11	Schwarz criterion	28.42936
Log likelihood	-205.096	Durbin-Watson stat	2.154743

to be adjusted approximately 76% to restore equilibrium in the short-run. The t-statistic value of -1.957818 is also significant. The R-Squared is 0.992 showing that the explanatory variables explain 99.2% of changes in the dependent variable. It remained strong even after adjusting for the degrees of freedom to 98.7% (Adjusted R-Squared). This means that in Nigeria, the variables chosen are strong in explaining economic growth. The Durbin-Watson statistic, which is 2.15, falls within the acceptable range in applied research of no autocorrelation (between 1.8 and 2.5). The model is thus free from autocorrelation. The coefficient of Government Expenditure on Education (GEE) is 26.52724. This is a good performance in terms of a priori expectation as it is a positive value. This implies that a positive relationship exists

between government expenditure on education and economic growth. The coefficient is also found to be statistically significant as evidenced by an examination of the t-statistic value (3.868898) and the corresponding probability value (0.0038). In the long-run therefore, a one unit increase in government expenditure on education will generate about 2652 percent increase in GDP which will by extension, lead to economic growth.

The coefficient of Government Expenditure on Health (GEH) -0.98187 is inconsistent with a priori expectation implying a negative relationship between government expenditure on health and economic growth. However when tested for statistical significance, the t-statistic value of -0.111375 indicates statistical insignificance. The coefficient of Primary school Enrolment Rate (PER),

which is -140934, is also inconsistent with a priori expectation. A negative relationship between primary school enrolment rate and economic growth is implied from the result. The t-statistic value of -1.588733 also indicates statistical insignificance.

The coefficient of Secondary school Enrolment Rate (SER) performs well in terms of a priori expectation. It has a value of 357033.1, which is positive. This points to a positive relationship between enrolment in secondary schools and economic growth. The coefficient of Tertiary institutions Enrolment Rate (TER) is positive with a value of 4292078. This is in accordance with a priori expectation. The t-statistic value of 5.633681 implies statistical significance. This indicates the existence of a positive relationship between enrolment in tertiary institutions and economic growth such that a one percent increase in tertiary enrolment leads to a significant and more than proportionate increase in GDP and ultimately, economic growth.

This result can be described as good and reliable as the model was properly treated to avoid spurious results. The variables that are consistent with a priori expectation are also found to be statistically significant. The R-squared is strong even when adjusted for degrees of freedom. Also, there is no indication of any violation of econometric assumptions as there is no autocorrelation. The result is thus reliable for policy formulation and forecasting purposes.

V. Policy recommendations

Based on the conclusion that human capital development enhances economic growth, and the finding that Nigeria is yet to fully benefit from it in terms of enhanced economic growth, the study makes the following

recommendations to improve the growth-enhancing tendencies of human capital development in Nigeria.

1. The planned strategies by the government in the education and health sectors as enunciated in the NEEDS document should be fully carried out with reports provided of progress made at each stage.

2. The Government should increase not just the amount of expenditure made on the education and health sectors, but also the percentage of its total expenditure accorded to these sectors. The ten percent benchmark proffered by the present national plan should be adopted.

3. The private sector should improve its participation in the provision of private schools and hospitals. While these are already available, efforts should be made to make these services more affordable to the general public.

4. Teachers/lecturers and doctors should be paid higher rates than what they presently earn. This should be done so as to curb the imminent brain drain problem of the country.

5. Better infrastructural facilities should be provided for existing schools and hospitals, while new educational and medical institutions should be established to provide quality education and healthcare for the populace.

6. The free basic education (UBE) and health care programs established by the federal and state governments should be improved on, and sustained.

7. An enabling environment of macro-economic stability should be provided by the government to encourage investment in human capital by the private sector and the government itself.

8. A Government free from corruption, discontinuity, and political stability is needed. If the government is transparent and morally sound, then these policies can be implemented and sustained for better performance of the Nigerian economy through the development of human capital.

VI. Conclusions

Based on the theoretical presentations, findings and mathematical manipulations of this study, the following conclusions can be drawn:

First, there exists a clear-cut and obvious relationship between human capital development and economic growth.

Second, the contribution of human capital development to economic growth in Nigeria has been less than satisfactory and there is much room for improvement.

Third, the education and health sectors are in a deplorable state and as such, demand urgent attention.

Fourth, the government has the major responsibility of provision of quality education and satisfactory health care, with the

private sector playing a complementary role.

Fifth, the importance of human capital development in economic growth is noted in the past and present national plans of the country, however, adequate action to back this realization is lacking.

Sixth, only through well-planned policies, can Nigeria begin to fully benefit from human capital development, such that it enhances economic performance and growth.

Nigeria is endowed with abundant resources, one of which is human resources. The proper development of this resource will lead to improved economic performance while mismanagement of the resource will hamper whatever growth process has begun. The issues discussed in this study are of optimum importance to the economic growth of the country depending on how well economic managers and policy makers approach them. It is indeed desirable that in the coming years the human capital of the country will be transformed from being merely potential, to kinetic so that sustainable, people-oriented growth can be realized.

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