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Social Expenditure on Human Capital Formation and Economic Growth Nexus in Nigeria

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Abstract

High rates of unemployment, poverty, and income inequality are just a few of the ongoing socioeconomic issues that Nigeria has to deal with. The government has poured a lot of money into social spending programs to address these problems, but socioeconomic problems still exist. It is against this background that this paper aims to examine the social expenditure on human capital formation and economic growth nexus in Nigeria. The paper investigated this relationship for the period 1989 to 2024 as Nigeria is in state of downturn effects, and adopted the robust generalized OLS regression model. This paper used real domestic product as dependent variable, while education, defence, communication, technology and physical capital formation. The empirical outcomes obtained in this paper indicate that education and defence expenditure have negative insignificant effects on the economic growth, while communication and technology and physical capital formation have positive significant nexus with economic growth. The paper's findings highlight the vital role that government spending on social protection plays in promoting Nigeria sustained economic expansion. To better match the educational system, and security with the goals of economic growth, specific reforms or increased efficiency may be necessary, as evidenced by the insignificance of government spending on education and defence. For policymakers looking to maximize the effect of social investment on Nigerian economic growth, this paper offers insightful information overall.

Keywords: Social expenditure, Real gross domestic product, Education, Defence, Communication and Technology, Economic growth, Nigeria.

JEL Classification: 115, 125, 016.

Introduction

The importance of human capital development is reminiscent in their role as means of economic growth. However, targeting health as part of development efforts is an effective way to improve welfare in low-income countries such as Nigeria. But it is paradoxical to note that the government budget devoted to health and education sectors remains low in Nigeria. In agreement with the above view, Adebiyi (2004) posited that drops in public expenditure in Nigeria have led to the poor performance in the health sector. For example, between 1986 and 1990, health expenditure as a percentage of GDP, in Nigeria,

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averaged 0.32 per cent and hardly changed between 1995 and 1999 (when it averaged 0.33 per cent). When Nigeria's performance is compared with other African countries, it is observed that in 1990, government expenditure on health as a fraction of GDP was 2.7 per cent against 3.5 per cent in Ghana, 4.3 per cent in Kenya and between 1995 and 1997, 4 per cent in Seychelles (Edeme et al., 2017; Ugochukwu & Oruta, 2021).

In relation to the above, Adesiyan (2017), remarked that despite the importance of educational institution, Nigeria spends an almost insignificant proportion of her financial resources on education. Also, Akande (2021) in agreement with this view, opined that high quality and market-driven education is capable of offering a genuine solution to most economic problems ranging from poverty, unemployment and population pressure, facing Nigeria as a nation. Nevertheless, they remarked that it is paradoxical to note that in spite of its rich endowment in human and material resources, the performance of the Nigerian economy in human capital development has been pedestrian and unimpressive.

The study of Ali, et al. (2018) highlighted how crucial social qualities are to the uptake and spread of technologies. They posit that the amount to which human capital contributes to economic growth will be at least partly reliant on a country's social capacities. Social capacities include variables that allow economic agents to utilize their potential such as the quality of institutions, as represented in the quality of governance, for instance. Similarly, in order for technologically lagging nations to catch up to leaders, they require both human capital and functional institutions (Das & Drine, 2020). The idea of human capabilities is related to the idea of social capabilities. Sen (1983) made the groundbreaking argument that economic policy should aim to improve the quality of life of its citizens rather than just increasing overall output. According to this perspective, human and productive capacities should be enhanced to support human capital, and increased levels of human capital can only have an impact on productivity if the economic system makes effective use of them.

Nigeria has encountered numerous obstacles in its pursuit of economic expansion. One major contributing factor might be the incapacity to build the proper human resource capital. The incidence of illiteracy is high in the country and most of her workers are untrained and bereft of advanced technology needed for today's modern world. According to World Bank data from 2020, Nigeria's government spent just 1.2% of its 2020 GNP on education. According to the United Nations Development Programme (UNDP, 2020) Human Development Index (HDI) data, Nigeria was ranked 161 out of

189 least developed nations and this indicates that Nigeria has a low human development level.

Studies have likewise demonstrated that the socio-economic growth of a country is related with the maintenance and promotion of human capital through the provision of public health services to enable the development of the country's full potentials. Nigeria's incapacity to finance vital economic areas like health, defence, and education in order to develop her human capital is frequently cited as the reason for her inability to achieve economic progress. These sectors have played a significant role in the remarkable economies of developed nations. Therefore, if Nigeria is to experience any meaningful economic growth, it must critically evaluate its sectorial allocations to different sectors. This is significant because, after training, she is unable to fully utilize the skills and abilities of human capital because there aren't enough jobs to employ them, which causes widespread unemployment, brain drain, and eventually poverty.

The paper contributes to build upon and diverse from this prior work. First, we discover that the econometric models of growth and human capital lose their significance when panel data approaches are used. But when social capability-related variables are incorporated into growth models, the amount of human capital becomes extremely important. In addition to showing that economic opportunities significantly interact the relationship between human capital and growth, this further expands the endogenous growth literature by emphasizing the significance of incorporating various channels, especially social capabilities, through which human capital can influence economic growth. To the best of our knowledge, no prior study has examined the relationship to date on the effect of social capabilities and human capital on economic growth which makes the relevance of the study.

The paper will seek to provide answer to what extent human capital development influences Nigerian economy? The main objective of this paper is to examine the relationship between social expenditure on human capital formation and economic growth nexus in Nigeria. Specifically, the paper aims to:

i. Assess the effect of education expenditure on Nigerian economic growth.
ii. Determine the effect of defence expenditure on Nigerian economic growth.
iii. Examine the effect of communication and technology expenditure on human capital development on Nigerian economic growth.

iv. Examine the effect of physical capital formation on Nigerian economic growth.

An overview of the connection between growth and human capital and statement of problem is given in this section. The past empirical studies and theories underpinning the study was reviewed in the second section. The research design process and model building in relation to the connection between social capital development and economic growth covered in the third Section. The data analysis that provides answer to the hypothesis of the study is in the fourth section, and finally the fifth section reveals the conclusion and recommendation arising from the findings of the study respectively.

Literature review and Theoretical Framework

The paper dwells on Solow-Swan growth model otherwise known as the endogenous growth models. The model was developed by Romer (1986) and Lucas (1988). The model was adopted as the underpinning theory because it built a model of long run growth without the assumption of fixed proportions in production thus demonstrating steady state growth. In addition, the paper examines Keynesian view regarding the consequences of economic growth and expenditures. That is, the relationship between public sector expenditure and national income. Keynesian school of thought perceived demand as a pre-requisite for economic growth and maintained that public expenditure (on infrastructures) is the real tool to expand the government economic activities (Chinweoke & Chinagorom, 2022). Keynes postulated that causality runs from public expenditure to income i.e public expenditure is an exogenous factor which can be used as a policy instruments to influence economic growth.

Ali et al. (2018). Using data of 132 nations, the results demonstrated that earlier studies on human capital and growth partially hold when the time dimension is added in the empirical model and adjust for country-specific variables. This paper, also pinpoint a particular set of circumstances in which economic growth is consistently positively impacted by human capital. Growth is significantly and favorably correlated with both economic opportunities and the caliber of legal institutions on their own. The findings indicate that a nation tends to derive greater utility from its stock of human capital when it has robust institutions and its citizens have access to a wide range of economic opportunities. The analysis of interaction effects shows that the relationship between human capital and growth is significantly moderated by economic opportunities but not by the quality of legal institutions, even when we measure economic opportunities and institution quality in relation to a frontier.

Furthermore, the underpinned theory of the above study was developed by a number of economists, including Karl Bucher, Werner Sombart, and Frederich List. Karl claimed that the relationship between producers and consumers, which also takes place in communities, cities, and globally, influences a nation's economic growth. Werner Sombart, on the other hand, calculates the role of society in the economic growth of a specific economic stage. This concept discusses economic growth as a process of raising a nation's economic status as a result of an increase in the country's production capacity (output) over an extended period of time, which is reflected in the form of an increase in GNP (Hilmi & Hamka, 2021). Also, Endogenous Growth Theory shows that expenditures made by the government in particular domains, such as education, health, and infrastructure, have the potential to boost economic growth for the long term. Increasing productivity and fostering sustainable economic growth are two goals that can be accomplished by the government's investment in the development of public infrastructure and human capital, according to this view. Infrastructure and human capital: It have been stated that higher productivity and economic growth can be achieved by the government spending money on the development of infrastructure and enhancing the quality of the workforce, particularly in the areas of education and health.

Bethencourt and Perera-Tallo (2020). To understand the weak empirical relationship between human capital and macroeconomic performance, this paper presents a model in which human capital is allocated to three activities: production, tax collection (bureaucracy), and public education. The effective tax rate is low in poor countries because tax collection requires human capital, which is scarce. Throughout the transition, the effective tax rate rises, which involves a diversion of human capital from production to bureaucracy and public education. Consequently, human capital has a weak effect on production, even when human capital is efficiently allocated. Differences in institutional quality may involve a spurious negative correlation between gross domestic product and human capital.

Meanwhile, Erasmus (2021) used empirical evidence from 1960 to 2019 to examine the relationship between public spending and human capital development in Nigeria. Public spending is measured by health and education spending, while human capital development is measured by the human development index. Secondary data came from United Nations development program reports and central bank statistical bulletins from various years. The study's hypotheses were tested using the Ordinary Least Square Regression statistical tool with the help of E-view 10 econometric statistical software. The results indicate that public education spending significantly affects the human

development index. The study concludes that public spending through investments in the health and education sectors influences the development of human capital in Nigeria. Empirical evidence indicated that public health expenditure had a positive, significant impact on the human development index with a positive but insignificant impact on the human development index in Nigeria.

Gautam (2022). This study is engrossed in measuring the impact of the government's expenditure on education, health and social sector on the economic growth of Nepal. To measure the economic growth of the Nepalese economy, the basic Cobb-Douglas production function is used. The unit root and stationarity of the variables are checked using ADF, PP, and KPSS. The short-run and long-run relationship of the variables is explored using the ARDL time series econometric model, and the validity of the ARDL model is also examined to confirm the authenticity of the econometric outcome. Government spending on education, health, and the social sector does not have a strong correlation with economic growth; however, government spending on social services and gross capital formation has a positive impact on economic growth. The study's econometric findings clarify that government spending on the education and health sector has a negative impact on economic growth, while government spending on the social sector and gross capital formation has a positive impact on Nepal's economic growth.

Muhammed et al. ((2022). The study is on government expenditure on human capital development and it impact on economic growth in Nigeria from 1970-2011. The variables of study are Real Gross Domestic Product (RGDP), Gross Fix Capital Formation (GFCF), Total School Enrolment (TSCHE) Government Recurrent Expenditure on Health (GREXPH), Government Recurrent Expenditure on Education (GREXPE), Political environment Dummy (PDEMT) and Interactive Government Recurrent Expenditure on Health and Education (DGREEH). Data were sourced from CBN, World Bank and Federal Bureau for Statistics (FBS). The study employed the Ordinary Least Square (OLS) regression model to analyze the data and discovered the growth in RGDP was accounted for by the GFCF, TSCHE, GREXPH, GREXPE, PDEMT, and DGREEH. GFCF and TSCHE are positive and significant while GREXPH, GREXPE, are positive but not significant. Both PDEMT and DGREEH are both negative and insignificant. The study concluded that the positive variables are the ones responsible for economic growth during the period and capital formation should be of topmost priority, education and health sector budget be increased significantly to ensure steady economic growth among others.

Bwana (2022). Capital formation and Government spending on education has been examined to establish their relationships and how they impact the economic growth of Tanzania. Gross domestic products were used to measure economic growth while government spending on education and capital formation were used as independent (explanatory) variables. Time series research design was adopted to analyse data extracted from world development indicator-database, data ranging from the year 1990 to 2020 were used. Before testing, econometric estimates data were subjected to normality, multicollinearity and stationarity test. The study used Johansen co integration to determine existence of co-integrating equations. Findings of this study revealed no long-run causal relationship among the variables since Johansen co-integration test shows no co integrating equations among the variables. Findings from VAR revealed that Tanzania's economic performance in one previous year have a major positive effect on current performance. While the past year's economic performance and capital accumulated in previous years do not have any significant impact on government spending on education in the short run. Capital accumulated one year ago has a significant influence on the status of current economic performance.

Simba (2023) examined economic growth and public expenditure on human capital formation in India. Employing neoclassical augmented Solow growth theory as the theoretical framework and using panel methodology, the study investigated the role of human capital resources as a factor in stimulating output growth in India. A government interested in improving economic outcomes should prioritize spending on public investment and human capital formation, according to the study, which also demonstrated that human capital formation was positive and significant to Indian economic growth. The findings also indicate that increasing budget allocation to infrastructure development and human capital formation can strengthen its complementary role with private investment and spur economic growth.

Setouto (2023) The study evaluated this association for the period 1985 to 2019 before the Covid-19 effects. To establish the relationship between government social expenditure and economic growth, the study employed the Johansen Cointegration Analysis and Vector Error Correction Model. The Granger Causality test, Variance Decomposition, and the Generalized Impulse Response function were also used in this work to evaluate the causal relationship, trace the dependent variable's reaction to shocks in the error term, and track the variables' time paths in several shocks. Using government social protection, education, and health spending as the main components of government social spending, the empirical findings of this study show that gross fixed capital formation, aggregate government spending, and social

protection spending have positive significant effects on the economy's performance, suggesting that an increase in these variables encourages economic growth; on the other hand, government health spending has a negative and significant impact on economic growth; and surprisingly, government spending on education was not statistically significant. Additionally, examining the variance decomposition results, the findings show that while aggregate government spending, government spending on education, and gross fixed capital formation shocks all have an impact on changes in economic growth, over the long term, these shocks primarily contribute to fluctuations in economic growth, meaning that changes in economic growth are largely influenced by changes in the previous economic growth.

El Asli & Azeroual (2023). The ultimate objective of this research is to identify the type of impact that has public expenditure qualified as social, in our case, education and health, on the genesis of human capital in Morocco over the period from 1990 to 2022 through an empirical study based on four interdependent simple linear regression models. The added value of our research is to confirm the positive contribution of said expenses on the formation of said capital for the Moroccan case, through an impact study on four parameters accounted in the HCI's formula, the new human capital index, adopted by the world bank in 2018, notably, the level of education of individuals adjusted for quality, infant and adult mortality rates and prevalence of stunting. The results show a positive and proportional impact of social spending on the formation of human capital, giving Morocco an index in this area above the average.

Agholor et al. (2024). This study investigated the impact of social expenditure (expenditure on education and health) on economic growth in Nigeria for the period 1989-2020. Secondary data were collected from World Bank Development Indicators and the Central Bank Statistical Bulletin (2021). The variables used include real GDP, education expenditure, health expenditure, inflation rate, debt service payment, real interest rate and real exchange rate. To check if the variables were stationary, unit root test was carried out and cointegration analysis was done to ascertain the existence of long run relationship between the variables and economic growth in Nigeria. The Autoregressive Distributive Lag model (ARDL) was used to estimate the model and the error correction model was used as well to identify the short run effect of social expenditure on economic growth. Based on the objectives of the study, the empirical evidence revealed that health expenditure in the long run, had a positive and significant impact on economic growth. However, for

the period under consideration, education expenditure had a significant negative impact on Nigeria's economic growth.

Oktaviani et al. (2024). The relationship between the two variables is influenced by the institutional quality of a nation. Our empirical analysis employs OLS, fixed-effects, and system-GMM estimators, utilizing a comprehensive panel of 113 developed and developing countries from 1981 to 2015. The key findings indicate that the negative effect of public size on output growth is significant only in nations with low institutional quality. Conversely, when institutional quality surpasses certain thresholds, the detrimental effects of government size on growth become negligible. From a fiscal policy perspective, these results suggest that the effectiveness of public expenditure is more critical than merely having a large public sector. The Human Capital, as indicated by the Human Development Index, demonstrates a positive yet statistically insignificant impact on Inclusive Economic Growth in Indonesia from 2014 to 2023. This suggests that as the Human Development Index rises, there is a corresponding increase in inclusive economic growth within the country. These findings align with the study's hypothesis and theoretical framework, which posits that an enhancement in human capital is associated with a growth in inclusive economic development.

Empirical growth literature founds conflicting results on the relationship between public spending and long-run economic growth. the study of khan et al. (2024) shows that the relationship between the two variables is influenced by the institutional quality of a nation. our empirical analysis employs OLS, Fixed-Effects, and System-GMM Estimators, utilizing a comprehensive panel of 113 developed and developing countries from 1981 to 2015. the key findings indicate that the negative effect of public size on output growth is significant only in nations with low institutional quality. conversely, when institutional quality surpasses certain thresholds, the detrimental effects of government size on growth become negligible. from a fiscal policy perspective, these results suggest that the effectiveness of public expenditure is more critical than merely having a large public sector.

Data and Method

To capture the trend and impact of human capital development on economic growth in Nigeria, the paper used a quantitative research design. This was done between 1989 and 2024 with the use of fixed panel data analysis. The availability of secondary data influenced the study period selection. This was a sample of thirty-five (35) years. This period was chosen in order to identify a trend of the Nigerian economy's buildup of social capital development. The

paper is limited to the period of 1989 and 2024 considering the availability of data used in the study.

Model Specification

To produce a robust result in the context of the Nigerian setting, the augmented Solow human-capital-growth model would be updated to take another variable. This is education expenditure, defence expenditure (THE), total government expenditure on education (EDEXP), and Defence expenditure ((DEEXP) and Physical capital formation (PHCFE). The aforementioned variables is necessary because the development and growth of the social capital expenditure is one major way of achieving the economic growth. Hence, this current study modified Solow human-capital-growth model using RGDP to achieve the current objective as dependent variable and social capital development is the independent variable (education, defence, communication and technology, and physical capital formation) which stated as follows:

The functional form of the model is:
RGDP = f (EDEXP, DEFEXP, CTEXP, PHCFE) (i)

The expanded model is stated as follows:
$RGDP = \beta_0 + \beta_1 EDEXP + \beta_2 DEFEXP + \beta_3 CTEXP + \beta_4 PHCFE + \mu$ (ii)

Where;
RGDP = Real gross domestic product
EDEXP = Total government expenditure on education (both current and recurrent)
DEFEXP = Total defence expenditure (proxy for defence capital)
CTEXP = Communication and Transportation expenditure (proxy for physical capital).
PHCFE = Physical capital formation (proxy for real gross capital formation)

Results and Discussion

The result and discussion of dependent and independent variable of the paper is discussed as follows by the descriptive statistics with average value of the variables, standard deviation, minimum and maximum value of the variables under study. Also, the correlation matrix testing the relationship among the variable, which robust ordinary least square regression is conducted to proffer answer to the underlying hypothesis formulated for the study.

Descriptive Statistics

The statistics above show that while population growth is higher in low-income countries, the mean values of labor force participation and openness to trade vary negligibly for different income groups, and the number of observations is slightly reduced due to data constraints for developing countries. The mean values of gross domestic product per capita, health expenditure per capita, life expectancy, and investment are lower in lower middle-income and low-income countries.

Table 1: Descriptive Statistics Result

Variables	Obs,	Mean	Std. Dev.	Min	Max
RGDP	35	7734056	2.301	0.316	9.521
EDUXP	35	47914.71	73639.34	110.81	231803.5
DEFEXP	35	59117.7	87898.51	607.6	283204.9
CTEXP	35	20674.63	34745.11	291.57	178803.7
PHCFE	35	1566590	3318440	8799.48	1.4107

Source: Generated by Authour(s) from STATA 15 2025.

Correlation Matrix Result

Table 2: Correlation Matrix Result

Variables	RGDP	EDEXP	DEFEXP	CTEXP	PHCFE
RGDP	1.000				
EDEXP	0.8312	1.000			
DEFEXP	0.8482	0.9769	1,000		
CTEXP	0.0857	0.4187	0.2914	1.000	
PHCFE	0.9569	0.8537	0.8300	0.3178	1.000

Source: Generated by Authour(s) from STATA 15, 2025.

Robust Generalized Least Square Regression Result

Using our model, robust ordinary least squares regression (ROLS) to determine the overall effect of social expenditure on human capital formation and economic from Nigeria. In Table 3, the estimation results are displayed.

Table 3: Robust generalized least squares regression result

Variable	Coeff	Robust Std. Error	T	P>t	[95% Conf.	Interval]
C	-1435210	554826	-2.59	0.015	-2568316	-302103.7
EDUEXP	-20.86153	41.71988	-0.50	0.621	-106.0649	64.34183
DEFEXP	66.01072	30.06623	2.20	0.036	4.607297	127.4142
CTEXP	-158.3135	20.20732	-7.83	0.000	-199.5824	-117.0447
PHCFE	6.089345	.2792337	21.81	0.000	5.519074	6.659616
F(4, 30)	2265.46					
P.value	0.000					
Adj. R2	0.9806 (98.1%)					
Root MSE	3.406					
Observation (N)	35					

Notes: RGDP: real domestic product; EDUEXP is educational expenditure, DEFEXP is defence expenditure, CTEXP is communication and technology expenditure. Note: p-values *, **, ***, implies statistical significance at * is 1%, ** is 5% and *** 10% and NGX level of significance respectively, NXG is Nigeria Exchange Group.

The table 3 depicts that the model explains approximately 99.1% of the variation in real gross domestic product (RGDP). This indicates moderate explanatory power, suggesting other factors of 0.9 outside the model may also influence RGDP. On model fitness (p-value = 0.000): The model is positive and significant at the 5 level, confirming the relevance of the independent variables collectively in explaining the dependent variable. Educational expenditure (EDUXP): Coefficient (-20.86153): A 1-unit decrease in educational expenditure is associated with a -20.86% decrease in RGDP, holding other factors constant with a statistically significance (t-value = -0.50, and p = 0.621): The effect is negative t-value and highly significant at the 5% level, indicating strong evidence that educational expenditure positively impacts RGDP. Confidence Interval (-2568316– -302103.7): The negative impact of EDUXP on RGDP is not robust. Defence expenditure (DEFEXP): Coefficient (66.01072): A 1-unit increase in Defence expenditure leads to a 66.0% increase in RGDP and statistically significant (t-value = 0.621, and p-value = 0.036) at the 1% level, emphasizing the importance of defence expenditure in enhancing RGDP. Confidence Interval (4.607297–64.34183):

Suggests the presence of a positive and robust relationship. Communication and Transportation Expenditure (CTEXP): Coefficient (-158.3135): A marginal decrease in communication and transportation expenditure contributes a 15.8% less in RGDP. The t-value of -7.83, and p-value of 0.000 is highly significant at the 5% level, though the scale of the impact is relatively small. Confidence Interval (-199.5824 - -117.0447): Reflects consistent and insignificant results across the economy. Physical capital formation (PHCF): coefficient (6.089345) which means that an increase in 1 unit of PHCF will lead to an increase to RGDP, a significant of t-value =21.81 and p-value = 0.000 is positive and significance at the 5% level. The confidence interval (5.519074 - 6.659616) suggests robustness of the effect.

Conclusion and Recommendation

According to this paper, which looked at the effect of corporate governance and comprehensive financial reporting of listed nonfinancial firms from 1989 to 2024. Utilizing robust generalized list square method, and shows expenditure of education is negatively and insignificantly impacted on economic growth investments in social capital, such as education and defence. Nigeria's education system is flawed, which results in low-quality human capital, graduate unemployment. As a result, they are expensive to maintain and do not significantly contribute to economic growth on their own, and despite huge resource allocation to security Nigeria still facing a lot of criticism on insurgency and kidnapping as lack of equipment by security personnel in Nigeria. Meanwhile, communication and technology expenditure and physical capital formation have positive and significant effect on economic growth. Therefore, it is confirmed that they both has a significant relationship with Economic Growth in Nigeria.

Based on this empirical analysis and conclusion, this paper recommended that appropriate policies can be formulated and be implemented that would boost the positive impact of educational system on economic growth and reduce the negative effects that may want to crop up over time as the economy grows. On defence expective there should mechanism on accountability to checkmate the spending of on security equipment since it has not yielded positive outcome due insurgency positing a negative impact on Nigerian economic growth. From the findings, it is clear that there was a causal relationship between communication and technology expenditure and physical capital formation in terms of expenditure, although there need for improvement due statistical insignificant recorded against economic growth. Therefore, other human capital investment like health, Public-Private Partnerships (PPP) and human

capital investment in Nigeria, with an emphasis on capital projects, can be the subject of future research.

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