THE IMPACT OF HUMAN CAPITAL DEVELOPMENT ON AGRICULTURAL OUTPUT IN NIGERIA

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ABSTRACT
This study employed the Ordinary Least Square (OLS) estimation technique to examine the impact of human capital development on agricultural productivity in Nigeria for the period 1981-2022. The objectives of the study were to examine the impact of aggregate investment in education on agricultural output, and aggregate investment in healthcare on agricultural output in Nigeria. The findings showed that aggregate expenditure on education has a positive and significant effect on agricultural output in Nigeria, as well as labour force participation, and life expectancy at birth having a positive and statistically significant effect on agricultural output in Nigeria. On the contrary, aggregate expenditure on healthcare and literacy rate both showed a negative and not statistically significant on agricultural output in Nigeria. This study is inclined to the fact that a high literacy rate and well- being of the citizens contribute greatly to gross domestic product in Nigeria. The study further recommended that; Nigeria government should increase funding in the education sector to sustain the positive outcome of the current spending this will improve literacy rate which is essential for economic growth and development.

Introduction

Improving the productive capacity of agriculture in developing countries through productivity increases is an important policy goal where agriculture represents an important sector in the economy. The agricultural sector provides livelihood directly and indirectly to a significant portion of the population of all developing, especially in Nigeria where poverty is more pronounced. Thus, a growing agricultural sector is enhanced by human capital development in education and health expenditures. The classical economists have identified land, labour and physical capital as the three basic factors of economic growth. The neoclassical economists introduced the concept of human capital. They argue that the endowment of an educated society, trained and healthy workers allow the efficient use of factors Orthodox. They are followed by Hobcroft (1993) who suggested a simplified method for evaluating education, However, the

idea that any investment in education and social benefits in the long-run, for both the individual and society as a whole, dates back to Adam Smith if not further.

For individuals, investment in human capital provides an economic return by increasing both the employment rate and labour income. We can prove this result by examining the level of education, or by direct measures of human capital such as the result obtained in the capacity assessments of reading, writing and arithmetic. In addition to the benefits enjoyed by individuals, investment in human capital can be beneficial to the economy as a whole. In principle, it should be possible to discern the overall economic impact in the economic growth rate, but in practice it is difficult to confirm and quantify. The 2020 publication by the OECD helped to clarify in this regard and have shown that human capital also has many economic benefits. Thus, education tends to improve health. An additional year of schooling reduced according to the estimation, the daily consumption of cigarettes and appear to promote happiness and fosters the education of the next generation.

In addition to the benefits of education and health, it is reported that in countries where the share of agriculture in gross domestic product (GDP) remains high, agricultural output can have an impact on total economic growth through ''direct and indirect links'' related to human capital. Increasing the intensity coefficient of human capital can contribute directly to productivity gains at the farm level, facilitating the migration by lowering costs and improving dietary energy intake that in turn promotes productivity. The skills provide economic value since a knowledgeable workforce can lead to increase in productivity. Human capital is perceived to increase output or productivity, the more investment an organization makes in its employees, the chances of its productivity and success becomes higher. Human capital affects agricultural output by the way in which inputs are used and combined by farmers.

Globally, human capital development is widely perceived as the main factor that is responsible for the wealth of nations. Even Adam Smith (1776) in his popular book cited in Bhatia (2005), An enquiry into the nature and causes of wealth of nations regarded human capital as the inherent abilities of all the inhabitants of all nations. Max (1859) cited in Bhatia (2005), Also regarded human capital physical capital like machine as the congealed mass of labour and argued that human capital in form of labour power cannot be sold like ordinary commodities rather it is the inherent power (labour power) that is purchased. Marshal as cited in Bhatia (2005), Also emphasizes on the importance of human capital investment and in his view states that the most valuable capital is that invested in human being. Recent writers like Adalakun (2011) opined that human capital are very important for any economy and states that it can be developed through investment in education and health.

Human resources can be transformed to capital with effective input in education, health and moral value. The transformation of human potential into uses with the input in education, health and moral values is called the process of human capital formation Gyimah-Brempong (2005) The problem of tangible capital in the labour surplus countries can be solved by increasing the rate of human capital formation through private and public investments in education and health sectors of the national economy. In other way, the intangible human capital is an effective means of promoting development of a nation since human capital is related to human development and when there is human development the qualitative and quantitative progress of the nation is assured. According to UNDP report 2010, statistical indications of estimating human development index (HDI). The HDI is the combination of the life expectancy index, Education index, and Income index. The life expectancy reveals the health condition of the population, education index reveals the education standard and literacy ratio of the population and the income index reveals the standard of living of the population. If all these indices are trending upward over a long period of time, it shows rising trend in HDI. Therefore, the process of human development is the strong foundation for economic growth and development.

It is expected that macroeconomic policies of each nation be focused towards the promotion of human development and invariably economic growth. Barro (1996), suggested that at the macro-level, human capital management is about three key capacities, the capacity to develop talent, the capacity to deploy talent and the capacity to draw talent from elsewhere. One can strongly argue that organization that possess and

cultivate their human capital will outperform other organizations lacking human capital.

In other words, Agriculture holds the potentials in accelerating the pace of economic growth and development of several countries of the world. It is the largest single employer albeit the service sector and contribute to GDP in most of African economies. In Nigeria, during the pre- and immediate post- independence era, the economy was predicted on Agriculture. Agriculture contributed 90% of the nation's GDP and foreign exchange before oil boom was discovered in Nigeria in the early 1970s in commercial quantity and also provides subsistence for two third of Nigerians who were low income earners in the economy

Despite Nigeria government effort towards human capital development to boost agricultural output, findings in the empirical literature are inconclusive on the impact of human capital development on Agricultural output in Nigeria. While some studies revealed a positive relationship between human capital development on Agricultural output in Nigeria, others found a negative relationship between human capital development on Agricultural output in Nigeria.

Statement of the Problem

Nigeria's investment in human capital development is unimpressive. The Nigerian education sector has received poor budgetary allocations to run the educational system, for instance in the 2022 budget, the education sector got meager allocation of N1.29 trillion (7.9%) out of N16.39 trillion, in the 2021 budget, it got N771.5 billion (5.68%) out of N13.58 trillion, and in 2020 budget, it got N671.07 billion (6.7%) out of N10.33 trillion. There are little or no provisions for the training of young Nigerians in vocational trades. The National Association of Nigeria Students (NANS) lamented the poor funding and management of the Nigerian education sector. The public primary, secondary and tertiary educational institutions in Nigeria lack the required facilities for learning due to poor funding. The public schools are poorly staffed and lack the required classrooms for their student population the employment of teaching staff has been compromised and politicized to allow less qualified teaching academics in the education system.

According to Skyline University Nigeria, the development of good quality human resources and utilization of their potentials ensures the development of a nation. Therefore, the human development index (HDI) emphasizes that people and their capabilities are the key criteria to assess the development of a country, not alone GNP/capita. The upper trend of HDI ensures that the fruit of economic growth are reaching the common citizenry, instead of being parked in a few pockets. HDI consist of three key dimensions of human development; a long and healthy life, being knowledgeable, and having a decent standard of living. It is the geometric mean of normalized indices for each of these three variables boil down to the sense of a commoner as to the availability of the quality of education, health and living conditions enjoyed by the citizens of a nation, which then cuts into a good figure in the index, if the value is closer to 1.0 on the index, the better it's the standing in regard to human development. Additionally, in the year 2022, Nigeria has an HDI of 0.534, indicating somewhere in the middle in a global scenario. Unfortunately, Nigeria is the home of the global highest number of kids (at least 10.5 million) out of formal schooling, though formal primary education is officially free and compulsory. One in five out of school children in the world is a Nigerian. Nationally, only 61% of 6-11 years old children regularly attend primary school, but in the northern part of the country, this figure drops down to 53%, a sharp decrease of 9%. (NBS, 2022).

Nigeria represents close to half of all persons who are food insecure in the Sub-Saharan region. In terms of absolute numbers, Nigeria was in the top ten worst food crises in the world in 2017 with an estimated fourteen million people going to bed hungry daily (FAO, 2017), While food import bill and domestic food prices continue to surge. Furthermore, the agricultural sector's health, as measured by the rate of increase in agricultural value -added shows that it has been fluctuating since the 1980s. for example, the agricultural value added increased at a rate of 9% on average between 1970 and 1984. However, the sector experienced negative growth rates of 0.45% in 1985 and 1.15% in 1986. This took place during the structural adjustment period. Between 1987 and 1988, just after the structural adjustment program began, a positive growth rate of 12% was observed. In 1989, agricultural value added grew at a negative rate of 9.85%. a positive growth rate of 1.3% was recorded in 1990. Followed by a

negative growth rate of -3.2% and -2.7% in 1991 and 1992. Between 1993 and 1994, 1995 and 1996 a positive growth rate of 13.4%, 6.6%, 12%, 27% and 14% respectively was recorded.

This trend however declined by a negative growth rate of -13.1%, -7.1%, -1%, -5% and -3,7% for the years 2010 to 2014 respectively. The industry also grew at a negative rate of -0.6% in 2017, while a positive growth rate of 1.6%, 3.1% and 9.5% between 2018 to 2020. The industry however, recorded a negative growth of -1.6% in 2021 and -1.5 in 2022. (NBS, 2023). The fundamental problems faced by the agricultural sector in Nigeria still remains prevalent. In spite of government effort to improving agricultural output by raising public funding on education and health sector development, not minding the introduction of several agricultural development programs (ADPs) agricultural sector is yet to produce at a maximum capacity in Nigeria. Thus, this study seeks to: examine the effect of investment in education on agricultural output in Nigeria, also to determine to what extent aggregate investment in health care ha improved agricultural productivity in Nigeria.

Conceptual Review

Concept of Human Capital Development

The productive investments in people, such as skills, values and health resulting from expenditures on education, on-the-job training programs, and medical care. Human capital consists of the knowledge, skills and health that people accumulate throughout their lives, enabling them to realize their potential as productive members of society. Lawasnon (2009) Improving agricultural output and create more inclusive societies by developing human capital. This requires investing in people through nutrition, health care, quality education, jobs and skills. Without human capital, countries cannot sustain economic growth, will not have a workforce that is prepared for the more highly-skilled jobs of the future, and will not compete effectively in the global economy.

Human capital leads to more innovations in the areas of production and other related activities. Innovation leads to more growth. Human capital also creates the ability to absorb new technologies. Human capital-health, education, and skills- is vital to economic growth and human development.

Concept of Agricultural Output

Agricultural output comprises: output sold (including trade between agricultural holdings); changes in stocks; output for own final consumption; output produced for further processing by agricultural producers; and intra-unit consumption of livestock feed products. It is the measure of individual crop and livestock output. It comprises: (a) Crop enterprise output, which is the total value of crops produced by the farm (other than losses in the field and in store).

It is the value of the final products produced from farming activities. In other words, it is the produce from farming activities for consumption, export, and processing purposes. The output is measured by the ratio between farming output and input. Notably, the market value of the final output determines the actual value of agricultural products.

Agricultural outputs are a product of inputs such as money, labour, and skills. The inputs undergo the conversion or transformation process to outputs. The common agricultural outputs are derived from farming activities through cultivation of crops and animals. Most importantly, the outputs are cultivated to sustain human life through increased food production to improve food security. The agricultural products are also used In other processes, such as the manufacture of clothes in textile industries as well as papers. The agricultural output goes through the manufacturing process, which is commonly known as value addition.

Empirical Review

Education and Agricultural Output

Investment in education and improved healthy condition is fast becoming very significant in the World economies this is because of new challenges being faced in the working environment which serves as input to economic growth and development. This assertion is being supported by many authors such as: Oladeji, 1996 and Blaug, 1996 examined the relationship between human capital development and agricultural output in Nigeria. The authors have empirically tried to trace the linkage between education and aggregate output, using the Vector

autoregressive error correction model. The study revealed that there is a significant functional and institutional relationship between the investment in human capital and agricultural output in Nigeria, since 1% fall in human capital investment led to 48.1% fall in the rate of growth in gross domestic output between 1970-2018. The study concluded that Nigeria economy is confronted by most of the problems that limit the capacity of expansion in education to stimulate growth and development such as under-employment, low absorptive capacity, and shortage of professionals, regional imbalances and brain drain. The persistence of many of these problems in spite of the various policy formulations and responses points to the need for a more focused, responsive, functional and qualitative educational system.

Igun (2006), carried out an empirical investigation on the relationship between investment in education and agricultural output in Nigeria, using annual time series data from 1977 to 2017. The study employed Johansen co-integration technique and error correction mechanism. The result showed that, there is a long-run relationship between investment in education and agricultural output in Nigeria. All the variables used including gross fixed capital formation and educational capital are statistically significant (except labour force) in the Nigerian economy. The findings have a strong implication on educational policy in Nigeria, the study recommended that a concerted effort should be made by policy makers to encourage increase in educational investments in order to accelerate growth which would engender economic growth and development in Nigeria.

Additionally, Lucas (1998) investigated education expenditure and agricultural output: The Nigerian experience. The study concluded that the achievement in education is a decision in a right direction as much as it would not affect the average cost of education or reducing the quality of education. Nigerian economy would benefit greatly from an increase in government expenditure that goes to the education sector even if it comes at the expense of a reduction in other aspects of investments.

Olalekan (2014) examined education and agricultural output in Nigeria using primary and secondary data for the period 1985-2017 and adopted using the Ordinary Least Square (OLS) technique, found that only recurrent expenditure had a significant effect on agricultural output, and the academic qualification of teachers had significant impact on students' academic qualification of teachers had a significant impact on students' academic performance. The result of the study is not very different from the several other studies on the impact of public expenditure on education except that it tends to deviate a little by revealing the pivot of recurrent expenditure on learning outcomes as well as growth.

Adesoye (2022), examined the link between government spending and agricultural output in Nigeria for the period 1980-2018 using the time series data and the autoregressive distributed lag model to analyze. The study found that private and public investments had insignificant effects on output during the period under review. The study main policy recommendation was that government spending should be channeled especially to education and infrastructural facilities in order to influence aggregate output significantly and positively in Nigeria. This result corroborates the results of Sadiq (2020).

Oladeji (1996) investigated the effect of higher education on human capital and economic growth in African countries using the panel data over the period 1985-2016, a modified neoclassical growth equation, and a dynamic panel. The study found that all levels of education human capital, including higher education human capital, have a positive and statistically significant effect on the growth of per capita income in African countries. Their result differs from the earlier research that finds no significant relationship between higher education human capital and income growth. It also claimed that the growth elasticity of higher human capital is twice as large as the growth impact of physical capital investment, while this is likely to be an overestimation of the growth impact of higher education, it is robust to different specification and points to the need for African countries to effectively use higher education human capital in growth policies.

Lawson (2019), in his work used the Ordinary Least Squares model to estimate the role of education and health in human capital investment and economic growth in Nigeria. He found that on the average, human capital actually enhances economic growth in Nigeria although, the government expenditure on health and primary

education enrollment have negative coefficients which are inconsistent with a priori expectation.

Health and Agricultural output

Human capital is perceived to increase productivity and thus profitability. The more investment a company makes in its employees, the chances of its productivity and success become higher. Human capital directly influences agricultural productivity by affecting the way in which inputs are used and combined by farmers. The health status of the producer of the agricultural producer determines the output of his labour supply and hence agricultural productivity. The role of health capital on agricultural productivity manifests in the incalculable opportunity cost incurred when the farmers is impaired. This study is reviewed empirical literatures although with mixed findings.

Ajani and Ugwu (2018), examined the impact of adverse health on the productivity of farmers in Kainji Lake Basin North Central Nigeria. It made use of the stochastic frontier production model. The technical efficiency of farmers falls in the range of 0.28-0.99 with a mean of 0.85. this implies that the efficiency of farmers can be improved at the availability technology by about 15.1% in the short run. With the exception of seed and insecticide, other variables in the efficiency model have positive coefficients with fertilizer having the highest coefficient. This probably suggests an overuse of seed and insecticides relative to other inputs and that fertilizer is an important variable input in the agricultural output of farmers in the study area. It was observed that gamma (a measure of variance of output from the frontier attributed to efficiency) is 0.114%. This implies that 0.886 or88.6% of the total variation in output is due to technical inefficiency. The adverse health variable in the inefficiency model has the largest positive coefficient and is statistically significant at $p<0.05$. this implies that health has a greater share in the inefficiency of the farmers and calls for attention of policy makers in Nigeria.

Adamu (2019), examines the interactions between health and agricultural output on economic growth in Nigeria using annual time series dataset spanning 1980-2018. Body mass index was proxied for health while the real Gross Domestic product captures economic growth. The two stage least squares approach was adopted in the analysis after testing for unit root and cointegration among variables. The result indicates that the interactive variables was positively signed and statistically significant at a 5 percent level both physical and labour exert a significant positive impact on economic growth in Nigeria. Specifically, body mass index and agricultural output significantly spur economic growth. The study recommends, among others, that government should strive a programme that will not only encourage agricultural output but also enhance the health facilities in the country at all levels. Government should increase allocation to health and agricultural sectors in the country for optimal performance of the economy.

Borojo (2016) investigated the link between agriculture and health using the Ordinary Least Square technique between the period 1990-2019. The study found that health can affect agricultural systems by affecting the health of producers. Poor health reduces producer's ability to innovate, experiment with different farming practices and capitalize on farm-specific knowledge. Ill health is a major reason why young people leave rural areas, depriving farm activities of needed innovations. Healthier producers, in contrast, are more productive and able to partake in-the development of agricultural systems.

Anowor and Okorie (2019), examined health outcomes and agricultural output in Nigeria, using the dynamic error correction model. The study showed that HIV/AIDS has lethal effects on health outcomes and aggregate output. It revealed that health outcomes also have a significant impact on agricultural output potentials; and there is a causal relationship between health outcomes and agricultural output in Nigeria. This implies that if the healthcare system in Nigeria can be taken as a policy priority, a tremendous increase in the agricultural sector is unarguably expected. A simultaneous front involving both the public and private sectors in extending the healthcare services is necessary to enable workers and prospective workers access to healthcare delivery; this will invariably boost the agricultural output.

Research Methodology

The study adopted the quasi-experimental research design. This type of design attempts to establish the cause and effect relationship among the variables. It entails examining the effect of one

set of variables. (the independent variables) on a set of variables (the dependent variable). To achieve the aim of this study, the study used both the descriptive and econometric techniques. The study made use of secondary data sourced from the Central Bank Statistical bulletin (various years), and the National Bureau of Statistics (various years) from 1980-2022. The study used the Ordinary Least Square to estimate the data collected. This is because of the BLUE properties of the ordinary least square.

Model Specification

This study is anchored on human capital theory. This theory contends that improvement in human capital variables like education and health facilitates growth. Therefore, the improvement in health outcomes is expected to enhance agricultural output. The measurement of health is referred to as health status (heath outcomes). In basic expression, we present Cobb-Douglas production function which shows that the production effect of one production factor could be represented by the effect of another:

$Q=AK^{\beta}L^{1-\beta}$ ---------- (1)

Where, *Q* is the real product, *A* is transformation parameter, *L* is the labour, *K* is the physical capita, while β is labour elasticity coefficient and (1-β) is capital elasticity coefficient

If β +1-β==1, then the constant returns to scale

The transformation parameter A is a coefficient of the aggregate productivity of production factors, which refers to both factors (also called total factor productivity).

Generally, the augmented two factor production function can be expressed as follows:

Y=f(K,L) ---------- (2)

Where:

Y is the real product, L is the labour and K is the capital.

The variables in the empirical model for this study are rooted in the human capital theory and Cobb Douglas production model with slight modifications as highlighted below.

Equation (2) is taken to be the starting point equation in the study considering the proxies we have in the augmented equation.

On the basis of theoretical and empirical exposition, the model for this study is expressed functionally as.

AGOUT = f(EDUEXP, HLTEXP, LITR, LBF, LF)

This equation is expressed in its linear form as.

$AGOUT_t = \alpha_0 + \alpha_1 EDUEXP_t + \alpha_2 HLTEXP_t + \alpha_3 LITR_t + \alpha_4 LBF_t + \alpha LF + \mu_t)$

Where;

AGOUT = Agricultural output in Nigeria

EDUEXP = Total government expenditure on education in Nigeria.

HLTEXP = Total government expenditure on health in Nigeria.

LITR = Literacy rate in Nigeria

LBF = labour force participation in Nigeria.

LF = Life expectancy at birth in Nigeria.

Expected a priori = $\beta_0 <$ or $\beta_0 > 0$, $\beta_1 < 0$, $\beta_2 < 0$, $\beta_3 < 0$, $\beta_4 < 0$, $\beta_5 < 0$.

Where β_1 to β_5 are the coefficient of the parameters to be estimated.

Regression Analysis and Interpretation of Results

The estimated regression result revealed that the regression line has a positive intercept represented by the constant term. This means that holding all explanatory variables constant, agricultural output in Nigeria will increase automatically by 126.3799 units.

The estimated result revealed that total expenditure on education has a positive relationship with agricultural output, indicating that a unit increase in education expenditure will bring about a corresponding increase in agricultural output by 0.476032 units. On the contrary, the estimated result for total health

expenditure has a negative relationship with agricultural output in Nigeria. This implies that a unit increase in health expenditure will decrease agricultural output in Nigeria by -1.119141.

Furthermore, the estimated result of literacy rate revealed that literacy has a negative relationship with agricultural output. This means that a unit increase in literacy rate will decrease agricultural output by -0.084314. Similarly, the result of the log of labour force participation revealed a positive relationship with agricultural output in Nigeria. This implies that a unit increase in labour force participation will increase agricultural output in Nigeria by about 0.329171. While, the result of the log of life expectancy at birth in Nigeria revealed that life expectancy has a positive but not statistically significant. This implies that a unit increase in life expectancy at birth will increase agricultural output by about 0.4416

Decision Rule: if t-calculated is greater than t-tabulated. Reject (H0), null hypothesis but if otherwise accept the null hypothesis and conclude that the parameter estimate is statistically significant at a certain level of significance.

The t-tabulated at 5% level of significance

Thus, $t=\alpha/2\ (n-1)$

$t=0.05/2(41-1)$

$t=0.025(40)$

$t=1.025$.

At 5% level, the statistical test conducted on education expenditure shows that the parameter estimate is statistically significant, since its t-value calculated (0.460382) is greater than t-tabulated (1.025). this implies that total expenditure on education log (EDUEXP) which is a major factor in influencing agricultural output in Nigeria.

At 5% level, the statistical test conducted on the log of total health expenditure on health (log (HLTEXP) shows that the parameter estimate is statistically significant since t-value calculated of log (-1.042661) which is less than t-value tabulated of (1.025). this implies that total health is not a major factor that influences agricultural output in Nigeria.

Similarly, at 5% levels of significance, the statistical test conducted on literacy rate (LITR) shows that the parameter estimates is statistically insignificant since t-value calculated (-1.385529) is less than t-value tabulated of (1.025).. this implies that Literacy rate is not a major factor that influences agricultural output in Nigeria.

At 5% level of significance, the statistical test conducted on the log of labour force (LBF) shows that the parameter estimated is statistically significant, since its t-value calculated of (2.639202) is greater than t-value tabulated of (1.025). This implies that labour force participation (LBF) is a major factor in influencing agricultural output in Nigeria.

At 5% level of significance, the statistical test conducted on the log (LEXP) shows that the parameter estimates are statistically significant, since the t-value calculated of (2.190732) is greater than t-value tabulated of (1.025). this implies that life expectancy at birth is a major factor influencing agricultural output in Nigeria.

The R-squared of 0.662298 showed that the estimated model has a very good fit on the data. The R-squared of 0.662298 showed that about 98% of the total variations in the dependent variable have been explained by variations in the independent variables. This shows that the model a good fit on the data and high explanatory power.

Similarly, the F-statistics value of 16.190318 showed that overall model is statistically significant at the conventional 5% level of significance i.e. (F- of 16.190318 > F tabulated of 0.000308) this means that the independent variables have an effect on the dependent variables, as such there exist a very high degree of linear relationship between the dependent variable and independent variables in the model.

The Durbin Watson statistic is used to test for autocorrelation among variables in the model. The Durbin Watson (DW) statistic of 1.985405 shows that there is presence of serial positive autocorrelation in the model, which implies that the model can be used for policy formulation and forecasting over time.

Since t-calculated (1.787662) > t-tab (1.025) we conclude that the parameter estimate is statistically significant at 5% level, we therefore reject the null hypothesis and accept the alternate

hypothesis which states that aggregate expenditure in education has no significant impact on agricultural output in Nigeria, viz a viz aggregate expenditure on health has no significant impact on agricultural output in Nigeria.

Discussion of Findings

The positive and statistically significant relationship between aggregate expenditure on education and agricultural output in Nigeria indicates that education is an important factor that contributes to stimulating agricultural output hence economic growth and development in Nigeria. The negative and statistically relationship between health expenditure indicates that health expenditure does not contribute to agricultural output in Nigeria. The findings as analyzed in the empirical result of aggregate model revealed that literacy rate has negative and insignificant impact on agricultural output indicating that literacy rate has no impact on agricultural output in Nigeria. The findings as analyzed in the empirical result of aggregate model revealed that labour force participation has a positive and statistically significant relationship with agricultural output in Nigeria. Further, the positive and statistically significant relationship between life expectancy at birth and agricultural output in Nigeria.

Summary of Findings

This study examined the impact of human capital on agricultural output in Nigeria using time series data from 1981-2022. The review of literature was carried out under conceptual issues and empirical literature. The theoretical foundations of the study is anchored on the Human Capital Theory which is used in the study, the theory maintains that. The theory maintains that improvement in human capital development like education and health facilitates growth. Therefore, the improvement in health outcomes and literacy rate is intended to improve economic growth and development, which is intended to improve agricultural output in Nigeria. The model is specified to examine the relationship between human capital and agricultural output in Nigeria overtime as extensively discussed in the theoretical framework. The study employed thorough econometric analysis using the framework of Ordinary Least Square (OLS) to examine the model. Data were sourced from the National Bureau of statistics and the Central Bank of Nigeria and were analyzed using E-views 10 package. The positive and statistically significant relationship between education expenditure and agricultural output indicate that education is a major factor that contributes agricultural output in Nigeria, while the negative and not statistically significant relationship posits that health expenditure is not a major factor that contributes to agricultural output in Nigeria.

Conclusion

This study has attempted to analyze the impact of human capital development on agricultural output in Nigeria from 1981-2022. The findings of the study so far indicate that the parameter for education is consistent with a priori expectation but for health. And all things been equal, government should develop measures to improving literacy rate among the Nigerian populace this will enhance improvement in agricultural output.

Policy Recommendation

Based on the findings, the following recommendations were made:

I. the positive impact of educational expenditure shows the need for government to sustain the increase in educational funding. This would enhance improvement in literacy which will transform to agricultural output in Nigeria.

II. Government must increase funding in the health sector, this would enable improvement in health outcomes, agricultural output and above all agricultural output in Nigeria.

III. Government should enable labour force participation, this would improve agricultural output and also stimulate economic growth in Nigeria.

Method: Least Squares
Date: 10/20/23 Time: 08:38
Sample: 1981 2022
Included observations: 42

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	126.3799	70.69560	1.787662	0.0823
LOG(EDUEXP)	0.476032	1.033994	0.460382	0.6480
LOG(HLTEXP)	-1.119141	1.073351	-1.042661	0.3041
LITR	-0.084314	0.060853	-1.385529	0.1744
LOG(LBF)	0.329171	0.124724	2.639202	0.3099
LOG(LEXP)	2.122251	0.968741	2.190732	0.4416

R-squared	0.662298	Mean dependent var	12.96108
Adjusted R-squared	0.587617	S.D. dependent var	2.500520
S.E. of regression	1.956779	Akaike info criterion	4.312040
Sum squared resid	137.8435	Schwarz criterion	4.560279
Log likelihood	-84.55285	Hannan-Quinn criter.	4.403030
F-statistic	16.190318	Durbin-Watson stat	1.985405
Prob(F-statistic)	0.000308		

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