



Impact Of Human Capital Expenditures on Labour Productivity in Nigeria (1986 – 2023)

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ABSTRACT

Human capital expenditure plays a crucial role in promoting labour productivity, particularly in developing economies like Nigeria. It is now a generally accepted view that human capital plays a key role in the development of any nation. Therefore, this paper investigated the impact of human capital expenditures on labour productivity in Nigeria from 1986 to 2023. The findings of Johansen co-integration test revealed that there is long run equilibrium relationship between labour productivity and human capital expenditures for the of this study. The findings of Dynamic Ordinary Least Squares (DOLS) revealed that human capital expenditures have a significant impact on labour productivity in Nigeria within the research period. Government capital education expenditure despite being the most significant source of productivity, revealed a negative influence on labour productivity, implying a poor infrastructure, technology and specialized facilities in the system. Similarly, government recurrent education expenditure has a negative impact on labour productivity. In contrast, government capital health expenditure has a positive influence on labour productivity in Nigeria, suggesting for improvement in the infrastructural development of health to boost productivity. Lastly, government recurrent health expenditure has a positive impact on labour productivity in Nigeria within the period of study. Thus, the paper recommended a critical need for the Ministry of

Finance, Budget and National Planning, in partnership with the Ministry of Education, adopt a strategic approach that prioritizes the enhancement of educational infrastructure, the integration of advanced technology, and the development of specialized facilities. Additionally, the formulate and implement a comprehensive policy aimed at strengthening the overall educational system to ensure that skilled and productive workforce capable of meeting national growth and development are achieved.

Key Words: Labour Productivity; Human Capital; DOLS; Education; and Healthcare
JEL Codes: E23, E24, C20, H52, and H51

I. Introduction

Human capital expenditure plays a crucial role in promoting labour productivity, particularly in developing economies like Nigeria. Development Economics literature gives greater importance on boosting the human resources as well as physical resources to promote the growth and development for the well-being of people of specific economy (Black & Lynch, 2015). As the global economy shifts towards more knowledge-based sectors, skills and human capital expenditure becomes a central issue for policy-makers and practitioners who engaged in promotion of labour productivity both at the national and regional level. With the popularization of the concept of human capital



expenditure, both developed and developing countries have come to realize the importance and implication of human capital expenditure on labour productivity in the economy.

It is now a generally accepted view that human capital plays a key role in the development of any nation. It is the human resources of any nation, rather than its physical capital and material resources, which ultimately determines the character and pace of its economic and social development, (Anumudu, 2010). Capital and natural resources are passive factors of production; human beings are the active agents who accumulate capital, exploit natural resources, build a social, economic and political organization, and carry forward national development. Human capital is an essential element required to increase productivity and well-being. It is needed to control physical capital. The human capital theory of Schultz sees human capital as a factor that may likely limit the growth of an economy if it does not increase progressively as physical capital increases (African Development Bank Group, 2018). Human capital is said to develop when there's an avenue for improvement in education, skills, ideas and total well-being of individuals and this process of improvement requires financial commitments of the government and individuals.

Over the years, Nigeria government has been making frantic efforts at ensuring that there is an increase in the level of human capital expenditure. The government has increased budgetary allocations towards the improvement of education and health. The available statistical data in Nigeria indicate that labour productivity during the period of 1986 to 98 stood at 2.6%, and increased to 16.7% in 1991. By 1996, it increased further to 39.8% and decreased to 3.11% in 2001. In 2006, it increased to 27.4%. However, in 2011 to 2016 GDP has continued to be declining from 15.3% to 7.8% (Central Bank of Nigeria [CBN], 2016). In 2020 it stood at 6.7% and fall to 5.8% in 2021, productivity level influence GDP to stand at 3.52% in the fourth quarter of 2022 and fall to 2.54% in the third quarter of 2023. On the other hand, total government expenditure on health stood at 14.4% in 1986, and it decreased to -0.25% and -7.19% in 1991 and 1996, in 2001, 2006 to 2011 the total government expenditure on health is 104.9%, 29.8% and 41.9% respectively. However, in 2016, total government expenditure on health decreased to 0.802% and amounted to 4.27 percent in 2022. Between 2000 and 2023, the share rose by 1.07 percentage. More so, total government expenditure on education stood at 31.7% in 1986, and it

decreased to -32.3% in 1991, it increased to 247.9% in 1996. However, it decreased to -11.58% in 2001, But in 2006, 2011 and 2016 total government expenditure on education is 37.64%, 68.45% and 2.69% (CBN, 2016). It stood at 4.2% and 4.40% in 2022 and 2023 respectively. Data from the Central Bank of Nigeria statistical bulletin (2021) shows that Government recurrent expenditure on health and education has risen rapidly in nominal terms over the years and reached N620 billion which represent 5% of total government expenditure in 2021. From the above expression, a close scrutiny of the figures revealed that over a few ranges there appears to be no correlation between gross domestic product, total government expenditure on health and total government expenditure on education, despite the frantic efforts of Nigeria's government. Given this scenario, how much impact has human capital development variables such school enrollment index, government expenditure and life expectancy rate affected the growth of Nigeria's economy. Moreover, Nigeria's education standards fall short internationally, with low enrolment rates from primary to tertiary levels compared to regions such as East Asia or the OECD during the 1960s (National Bureau of Economic Research [NBER], 2020).

Governments, corporations and civil society must work together to address the complex and varied issues impacting labour productivity on a global scale. Investments in governance, labour market efficiency, infrastructure, education and training, governance, health outcomes and financial access, particularly in West Africa may be essential to address these issues (Adeniyi & Abiodun, 2021)) which indicated factors that have limited labour productivity include limited access to education and training, poor infrastructure, weak governance, inefficient labour markets, high levels of informality and low levels of job security, poor health outcomes and restricted financial access. Despite Nigeria's vast population and labour force, the manufacturing sector's potential to fuel growth, generate wealth, and bridge wealth disparities has not been fully leveraged (Ogundipe & Olarewaju, 2020). The first step that most developing countries take to advance is to improve health and education. The deterioration in the quality of education services orchestrated by poor funding at all levels, especially at the higher education level further compounds the problem of human capital expenditure in the country. Other issues include poor state of health facilities, uneven distribution of skilled manpower, poor reward system and inability of the country to retain a large proportion of its skilled and



professional personnel in health sector. The health sector in Nigeria is likewise in a state of parlous decay. Budgetary allocation to health as proportion of the national budget fluctuates between 2.70% and 7.00 from 1986 to 2023 (Budget office of the Federation, 2023). Therefore, it is essential to produce a high-quality study on the connection between labour productivity and human capital expenditure in Nigeria from 1986 to 2023. This is the driving force underlying the current investigation to provide answer to the following questions:

- i. How has government education capital expenditure impacted on labour productivity in Nigeria?
- ii. What is the impact of government education recurrent expenditure on labour productivity in Nigeria?
- iii. How has government health capital expenditure impacted on labour productivity in Nigeria?
- iv. what is the impact of government health recurrent expenditure on labour productivity in Nigeria?

II. LITERATURE REVIEW

Conceptual Review

Human Capital expenditure

The National Bureau of Statistics (NBS) defined expenditure as an outflow of resources from the government to other sectors of the economy, whether required or unrequired (NBS, 2017). It is divided into recurrent and capital expenditures. Recurrent expenditures are payments for nonrepayable transactions within one year, whereas capital expenditures are payments for non-financial assets used in production process for more than one year (NBS, 2017). Human capital expenditure refers to investments in employees' knowledge, skills, and health, ultimately enhancing their productivity and contributing to organizational success. It encompasses the resources invested in employees to improve their skills, knowledge, and overall capabilities. This includes expenses on training programs, education initiatives, healthcare, and other investments that enhance employee capabilities.

Human capital expenditure is viewed as an investment in intangible asset that contributes to increased productivity, innovation, and ultimately, profitability. Companies and government at various level invest in human capital to gain a competitive advantage and ensure long-term sustainability. Human capital expenditure encompasses investments in people, viewing their knowledge,

skills, and health as valuable assets that contribute to labour productivity growth. By implication, high human capital expenditure yields high returns in labour productivity in the economy.

Government Education Expenditure

Government expenditure on education refers to the component of education expenditure that comes from national, regional, and local government units to finance and/or produce educational services, (De Guzman, 2020). It comprises of recurrent and capital expenditure on education. Recurrent expenditure on education is the expenses borne to fulfill day to day services like salary to teachers and staffs. Similarly capital expenditure on education is the expenditure incurred to do development work and it comprises of returns after the year of investment, that is, investments in infrastructure, such as building new schools, renovating existing facilities, and acquiring equipment. Government education expenditure is the total amount of public funds allocated to finance education at all levels, including institutions, administration, and subsidies, aiming to improve human capital and labour productivity growth. Education is seen as an investment that enhances the skills and knowledge of individuals, leading to higher productivity and earning potential. According to Oluwatobi and Ogunrinola (2011), education expenditure is simply the amount of funds devoted to the development of the educational sector. Such education expenditure would expand educational opportunities at all levels, especially for the disadvantaged children; improving quality and enhancing the effective and efficient use of resources in all sectors of an economy. Expenditure in education is analogous to investment in physical capital in the sense that, after an initial investment is made a stream of higher future income can be generated from both expansion and access to education and improvement in health.

Government Health Expenditure

Public health expenditure refers to the financial resources invested by the government to promote and maintain the health of its citizens. World Bank (2014) defined government health expenditure as covering the provision of health services (preventive and curative), family planning activities, nutrition activities and emergency aid designated for health but does not include provision of water and sanitation. All can be financed through domestic funds or through external resources. Government health expenditure consists of recurrent and capital expenditure from government budgets,



external borrowing and grants (including donations from global agencies and NGOs), as well as obligatory health insurance finance (WHO, 2010). Health spending includes all expenditures for the provision of health services, family planning activities, nutrition activities and emergency aid designated for health, but it excludes the provision of drinking water and sanitation (World Health Organization, 2024). Generally, public health spending consists of health and health related expenditures which are defined based on their primary or predominant purpose of improving health, regardless of the primary function or activity of the entity providing or paying for the associated health services.

Labour Productivity

Labour productivity is defined as the ratio of output to labour input, typically measured as output per hour worked or output per worker (OECD, 2017). Labor productivity, a measure of efficiency of an economy in converting inputs (like labour) into outputs (goods and services), often expressed as output per worker or per hour worked. Its improvement is essential for economic growth, reducing poverty, and enhancing overall well-being in economy. Labour productivity is an important measure of economic efficiency and is closely linked to a country's level of economic development (Eatwell & Newman, 2021). Higher labor productivity levels generally lead to higher levels of economic growth and higher living standards. Labour productivity is a critical component of economic growth and competitiveness, as it measures the efficiency with which labour inputs are converted into output (OECD, 2020). Labour productivity growth is essential for improving living standards, as it enables businesses to increase wages and invest in new technologies and processes (McKinsey, 2018).

Labour productivity can be measured using various methods, including output-based measures, such as gross domestic product (GDP) or gross value added (GVA), and input-based measures, such as hours worked or number of employees (OECD, 2020). Output-based measures provide a comprehensive picture of labour productivity, while input-based measures focus on the labour input component. Higher labour productivity also leads to improved competitiveness, as businesses can produce goods and services more efficiently and at lower costs. Furthermore, labour productivity growth is critical for economic growth, as it enables economies to produce more output with the same amount of labour input.

2.2 Empirical Review

Multiple research studies have utilized different data sources and statistical approaches to investigate the impact of human capital expenditure on labour productivity. The relationship between human capital expenditure and labour productivity in Nigeria has been examined by these existing literatures. Agu *et al.* (2024) examined the effect of government expenditure on human capital index in Nigeria between 2001 to 2021. The study adopted an ex-post-facto research design. The findings revealed that government expenditure on administration has a significant negative effect, while economic services government expenditure and government expenditure on social community services has positive effect on human development index of Nigeria. The study recommended that the government should strive to block all the financial loopholes available to corrupt public officers. Ihensekhien, (2023) evaluated the influence of human capital on industrial sector growth in Nigeria from 1986 to 2020 using the Autoregressive Distributed Lag co-integration method. The findings revealed that government's recurrent investment in education had significantly negative short-run but positive long run impact on industrial sector growth. Government recurrent expenditure on health revealed positive short-run but negative in the long run significant impact on industrial sector growth. The study recommended a premeditated government investment in education and health.

Gul *et al.* (2022) investigated the effect of human capital on labour productivity for Pakistan. This study used the Generalized Method Moments (GMM) technique to examine the effect of human capital on labor productivity. The coefficient of employee education indicates that there is positive correlation between employee education and labour productivity. The coefficient of employee training tells us that one percent increase in investment on training will result in 0.10 percent increase in labor productivity. Employee age has negative correlation with labor productivity. James (2021) studied the impact of human capital development, national security and agricultural sector growth in Nigeria using time series data from 1981-2017. The study adopted the Autoregressive Distributed Lag (ARDL) model and established a positive but non-significant relationship between government expenditure on education & health government expenditure on security and agricultural sector growth in Nigeria. The study recommended that government should improve access to healthcare for all Nigerians.



Bronsoleret *al.* (2021) investigated the impact of healthcare IT on clinical quality, productivity and Workers. They compiled data from the U.S. Census of Population (CPS) and the American Community Survey (ACS) from 1980 to 2015. They have surveyed the evidence of the impact of HICT on clinical quality, productivity, and on the healthcare workforce. The literature points in a broadly optimistic direction in that the more recent cohort of studies suggests a positive effect on patient outcomes, but a more modest impact on productivity. In the study conducted by Baharinet *al.* (2020), examines the impact of human capital on productivity of labor in Indonesia in the period of 1981 to 2014, using the ARDL method. The result show that the short-run analysis of primary, secondary, tertiary education variables and health variables have a significant positive impact on labour productivity. In contrast, the long-run analysis including only primary and secondary educations showed a significant positive influence on labour productivity. It was recommended that the health variables need to be focused more so that the labour health becomes the concern of the workers.

Obasanmi and Idogun (2020) investigated impact of human capital development on real-sector growth in Nigeria using annual time series data from 1990 to 2018. Error Correction Mechanism (ECM) were employed in the study. The result indicated long run relationship between human capital development and output growth in the two sectors investigated. It was recommended that the federal government should endeavor to increase their expenditure on education to boost quality education infrastructure needed in schools. Popoola *et al.* (2019) investigate human capital channels and productivity growth in Nigeria, from 1980 to 2017 using the Vector Error Correction Model. The results of the joint short-run and long-run causality demonstrate that there is no long-run causation, but joint short-run causality was observed in the basic channel, while both joint short- and long-run causality were detected in the advanced channel. Therefore, the study recommended the need to increase investment in research and development to promote productivity and enhance skills needed to adapt and diffuse new technologies.

Mačiulytė-Šniukienė and Matuzevičiūtė (2018) investigated the impact of human capital on labour productivity in European Union member states using panel data analysis. Results of the paper were estimated using the Pooled ordinary least squares (OLS) and fixed effects model (FEM). The results showed that human capital is positively significant in improving the growth of labour

productivity in the EU and the estimates also asserted that the impact occurs after three times lags and also lasts for two years in case of education expenditure. Also, with two years lag and lasts for two years in case of health expenditure. Opeyemi and Adejumo (2017) investigated the analysis of human capital development and productivity growth in Nigeria between 1970 and 2010 using the Engle-Granger causality test. The results revealed that productivity growth has been very low and unstable in Nigeria as it oscillated between -1.5% and 0.6%. The findings revealed that while productivity growth caused human capital development, human capital development did not cause productivity growth. The study recommended that adequate monitoring process through relevant bodies are put in place.

Adekunleand Aghedo (2015) researched on human capital development and productivity growth in Nigeria using secondary time series data from 1980 – 2013. The study applied the error correction modeling (ECM) technique through the ordinary least square (OLS) framework. The result revealed that government recurrent expenditure on education positively and significantly affect productivity growth in Nigeria. However, government capital expenditure on education records negative but significant relationship with productivity growth. They recommended that proper implementation mechanisms.

Theoretical Framework

The theoretical foundation of this paper is based on human capital theory by Becker (1962). According to Becker, human capital refers to the knowledge, skills, and abilities that individuals acquire through education, training, and experience. These investments enhance an individual's productivity, increasing their earning potential and contributing to economic growth. Becker's theory posits that individuals make rational decisions about investing in human capital based on the expected returns. Becker's theory consists of two main components: the investment decision and the human capital accumulation process. The investment decision involves weighing the costs and benefits of investing in human capital. Individuals compare the present value of the costs, such as tuition fees and foregone earnings, with the present value of the expected benefits, including higher future earnings and improved job prospects.

For policymakers, the theory highlights the importance of investing in education and training programs that enhance human capital. Human capital theory, developed by Gary Becker, posits that



investments in education, training, and health can increase an individual's productivity and earnings. The equation for human capital theory can be represented as:

Human Capital (H) = f (Education, Experience, Training, Health)

Where:

H = Human Capital

Education = Formal education and qualifications

Experience = Work experience and on-the-job training

Training = Formal and informal training programs

Health = Physical and mental well-being

Mathematical Representation:

$H = \beta_0 + \beta_1(\text{Education}) + \beta_2(\text{Experience}) + \beta_3(\text{Training}) + \beta_4(\text{Health}) + \varepsilon$

Where:

- β_0 = Constant term

$\beta_1, \beta_2, \beta_3,$ and β_4 = Coefficients representing the impact of each variable on human capital

ε = Error

Human capital and labour productivity have a strong correlation. Human capital affects economic growth and can help to develop an economy by expanding the knowledge and skills of its people (Nickolas and Liberto 2023). It argues that improvements in productivity can be tied directly to faster innovation and more investments in human capital from governments and private sector institutions. Therefore, if the government of Nigeria in particular chooses to invest adequately in the human capital, increased productivity will be achieved.

III. Methodology

The study adopted the ex post facto research design which allows a causal link between the dependent and independent variables. This was used to examine the nexus between human capital expenditure (in terms of recurrent and capital investment on education and health) and labour productivity without undue influence or manipulations of the variables (data) which were already in existence. Secondary data of time series on labour productivity (LP), recurrent and capital expenditure of both education and health sector were sourced from National Productivity (2023) (NPC), World Bank (2023) and United Nations Programme (2023) (UNDP) and online journal publications covering a period of 38 years (1986-2023) to carry out this analysis.

Model Specification

The paper adapted the work of Ayeni and Omobude(2018) with a few modifications in order to suit the objectives of this study. Ayeni and

Omobude researched on educational expenditure and economic growth using this model below:

$RGDP = F (REDX, CEDX)$

Where;

RGDP = real gross domestic product, REDX = recurrent educational expenditure, CEDX = capital educational expenditure.

However, the modified model for this study is as follows:

$LP=f(HRXPn, HCXPn, ERXPn, ECXPn) \dots\dots\dots 1$

Where:

LP= Labour productivity

HRXPn= Health Recurrent Expenditure

HCXPn= Health Capital Expenditure

ERXPn= Education Recurrent Expenditure

ECXPn= Education Capital Expenditure

The mathematical form of the model is specified as:

$LP_t = \beta_1 + \beta_2HRXPn_t + \beta_3HCXPn_t + \beta_4ERXPn_t + \beta_5ECXPn_t \dots\dots\dots 2$

The econometrics form of the model is specified as:

$LP_t = \beta_0 + \beta_1HRXPn_t + \beta_2HCXPn_t + \beta_3ERXPn_t + \beta_4ECXPn_t + \mu_t \dots\dots\dots 3$

Where:

t= time from 1986-2023

β_0 = intercept

β_1 - β_4 =parameter estimates of the regressors

μ_t = stochastic error term.

A priori expectations

Theoretically and in accordance with the literature, an increase in government education and health expenditure (both recurrent and capital) results in increase in labour productivity and vice versa. Thus, the parameters of the model should be positive, i.e, β_1 - $\beta_4 >$

IV. Data Presentation and Analysis

This section presents the descriptive statistical analysis of key economic indicators, including Labour productivity (LP), Education Capital Expenditure (ECXPn), Education Recurrent Expenditure (ERXPn), Health Capital Expenditure (HCXPn) and Health Recurrent Expenditure (HRXPn). The analysis includes measures of central tendency, dispersion, and normality.



Table 1: Descriptive Statistics

	LP	ECXPN	LERXPN	HCXPN	HRXPN
Mean	460.7445	49.31863	4.131770	20.46184	113.6734
Maximum	681.6600	149.2030	10.74785	54.23000	388.3700
Minimum	281.8900	0.871000	-1.237874	0.380000	0.150000
Std. Dev.	133.9394	49.33572	2.630987	19.48677	132.5630
Skewness	0.297834	0.737864	0.228661	0.529810	0.882185
Kurtosis	1.464576	2.260348	3.340889	1.830352	2.312039
Jarque-Bera	4.294548	4.314360	0.515135	3.943875	5.678292
Probability	0.116802	0.115651	0.772929	0.139187	0.058476
Observations	38	38	38	38	38

Source: Authors Computation, (Eviews-10), 2025

The table 1 provided presents descriptive statistics for five variables: LP, ECXPN, ERXPN, HCXPN and HRXPN. These statistics summarize the key characteristics of the data collected for each variable, such as central tendency, dispersion, and distribution. The findings of descriptive statistics in table 1 revealed that labour productivity in Nigeria from 1986 to 2023 had the minimum and maximum values of 281.8900 and 681.6600 respectively. Labour productivity was averaged 460.7445 during the period with a standard deviation of 133.9394 implying their deviation from both sides of the mean. This suggests that labour productivity in Nigeria was relatively widely dispersed during the period of study. The implication of this disparity shows fluctuations in the labour productivity. Skewness, which measures the shape of the distribution, revealed that a coefficient of 0.297834 (which is greater than zero) implied that labour productivity is positively skewed, it is symmetrical around the mean, thus deviating from the normal distribution. With a kurtosis value of 1.464576, it implied that labour productivity is platykurtic (fat or short-tailed), meaning that the distribution is not peaked relative to the normal distribution. The descriptive normality results also showed that labour productivity was normally distributed. This was captured by the Jarque-Bera probability value of 0.116802, found to be greater than 0.05.

Table 2: Unit Root Test Results

Variables	ADF	5% CV	P - Value	Order
LP	-5.635736	-2.945842	0.0000	I (1)
ECEPN	-5.793602	-2.945842	0.0000	I (1)
ERXPN	-6.556768	-2.948404	0.0000	I (1)
HCXPN	-6.013552	-2.945842	0.0000	I (1)
HRXPN	-6.848175	-2.945842	0.0000	I (1)

Source: Authors Computation, (Eviews-10), 2025

The findings of the unit root test table 4.3 revealed that, labour productivity, government capital education expenditure, government recurrent

education expenditure, government capital health expenditure and government recurrent health expenditure were not found to be stationary at level,



as their ADF statistic values are lesser than their critical value and their probability values greater than 5% level of significance. However, they became stationary at first difference, as their ADF statistics were found to greater than their critical values at 5% level of significance with their respective probability values less than 5%. Thus, labour productivity, government capital education expenditure, government recurrent education expenditure, government capital health expenditure and government recurrent health expenditure are integrated at first difference [I (1)].

Table 3: Dynamic Least Squares (DOLS) Result
Dependent Variable: Labour Production (LP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECXPN	-19.24487	5.387423	-3.572184	0.0022
LERXPN	-13.50554	6.352271	-2.126096	0.0476
HCXPN	47.07291	12.88757	3.652584	0.0018
HRXPN	1.447347	0.167998	8.615250	0.0000
C	352.1189	12.92429	27.24473	0.0000
R-squared	0.976415			
F-statistic	46.57405			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	1.495333			

Source: Authors Computation, (Eviews-10), 2025

The above table presents the results of the Dynamic OLS model, focusing on both the short-run dynamics and the long-run relationship between the dependent variable (labour productivity) and the independent variables (government capital education expenditure, government recurrent education expenditure, government capital health expenditure and government recurrent health expenditure)

The intercept parameter of that model tells us the value of the dependent variable when all other independent variables are held constant, therefore in the regression result obtained above, the intercept was found to have 352.1189 which is statistically significant at 5% level, as suggested with the probability value of 0.0000, which gives the estimate of labour productivity in Nigeria when government capital education expenditure, government recurrent education expenditure, government capital health expenditure and government recurrent health expenditure are held constant.

The R-square value of 0.976415 implies that 97.64% variation in labour productivity is been accounted for by government capital education expenditure, government recurrent education expenditure, government capital health expenditure

and government recurrent health expenditure while 2.36% is been accounted for by the other variables not captured in the model. The value of F-statistics of 46.57405 with associate probability of 0.0000 which is less than 5% level of significance. This implies that the model has a better fit or that the total significance of the estimated equation is strong. The Durbin Watson statistic value of 1.495333 implies that there is positive autocorrelation between human capital expenditure (government capital education expenditure, government recurrent education expenditure, government capital health expenditure and government recurrent health expenditure) and labour productivity in Nigeria within the period study.



Table 4: Results of Post - Diagnostic Checks

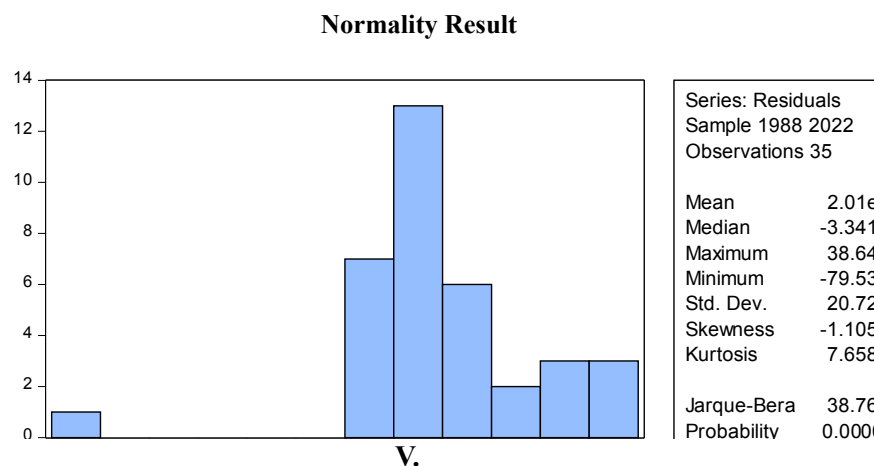
Test	F-Stat/ Coefficient	Prob.
Breusch-Godfrey Serial Correlation LM Test	1.966871	0.1788
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.429168	0.9524
Heteroskedasticity Test: ARCH	0.475511	0.4954
Normality	38.76972	0.0000

Source: Authors Computation, (Eviews-10), 2025

Table 4 revealed that the variables are free from problem serial correlation since the F-statistics is 1.966871 and the P- value of 0.1788, which is greater than 5% level of significance. This outcome suggests the absence of serial correlation in the model. Similarly, the Heteroskedasticity results shows that variables are free from the problem of Heteroskedasticity since the F-statistics of 0.429168 and the P-value of 0.9524 are greater than 5% level of significance. This outcome suggests the absence of Heteroskedasticity in the model. Furthermore, the result of ARCH shows that the variable from ARCH effect given the F-statistics value of 0.475511 and the P-value of 0.4954 which are greater than 5% level significance. This outcome suggests that there is no ARCH effect in the model. Lastly, Jarque-Bera test of normality shows that the error term specified in the equation is not normally distributed. This is the evidence by the respective significance of Jarque-Bera statistics of 38.76972 and P-value of 0.0000, which is less than 5% level of significance.

Normality Test

Figure 1:



VI. Discussion of Findings

The findings from the study revealed that government capital education expenditure have a negative but significant impact on labour productivity in Nigeria. This outcome implies that despite the spendings on education through

infrastructure, technology etc. government capital education expenditure still has a negative influence on labour productivity. The findings shows that government capital education expenditure is not consistent with the a priori expectation of the study. The outcome is in line with studies like Adekunle,



and Aghedo (2015) who studied human capital development and productivity growth in Nigeria and concluded that government capital expenditure on education records negative but significant relationship with productivity growth in Nigeria.

The study also found that government recurrent education expenditure has a negative but significant impact on labour productivity in Nigeria. This suggests that government should make strategic plan to invests in education to facilitate the desired productivity in Nigeria. The findings shows that government capital education expenditure is not consistent with the a priori expectation of the study. The outcome is in line with studies like Ihensekhien, (2023) who studied the influence of human capital on industrial sector growth in Nigeria and conclude that government's recurrent investment in education had significantly negative impact on industrial sector growth. Similarly, government capital health expenditure has a positive and significant impact on labour productivity in Nigeria. This implies that improvement on capital health expenditure will contribute significantly to the productivity of Nigeria in the long run. This outcome concurs with the a priori expectation of the study. The finding is consistent with other studies like Zhang (2020) conducted a study in China, whose findings indicated that an increase in public health spending had a favorable and substantial effect on labor productivity.

On the other hand, government recurrent health expenditure has a positive and significant impact on labour productivity in Nigeria. This implies that motivating health professionals with more incentives, medical supplies, and utilities will contribute meaningfully to productivity in Nigeria. The outcome concurs with the a priori expectation of the study. The finding is consistent with other studies like Ihensekhien, (2023) who found that government recurrent expenditure on health revealed significant impact on industrial sector growth.

VII. Conclusion

This paper examined the impact of human capital expenditures on labour productivity in Nigeria from 1986 to 2023. The findings of Johansen co-integration test revealed that there is long run equilibrium relationship between human capital expenditures and labour productivity. The findings of Dynamic Ordinary Least Squares (DOLS) revealed that human capital expenditure has a significant impact on labour productivity in Nigeria within the period under review. Government capital education expenditure despite being the most

significant source of productivity, revealed a negative influence on labour productivity, implying a poor infrastructure, technology and specialized facilities in the system. Similarly, government recurrent education expenditure has a negative impact on labour productivity. In contrast, government capital health expenditure has a positive influence on labour productivity in Nigeria, suggesting for improvement in the infrastructural development of health to boost productivity. Lastly, government recurrent health expenditure has a positive impact on labour productivity in Nigeria.

VIII. Recommendations

Based on the findings of this paper, the following recommendations were made:

- i. The negative impact of government capital expenditure in the education sector suggests a critical need for the Ministry of Finance, Budget and National Planning, in partnership with the Ministry of Education, adopt a strategic approach that prioritizes the enhancement of educational infrastructure, the integration of advanced technology, and the development of specialized facilities. Additionally, the formulate and implement a comprehensive policy aimed at strengthening the overall educational system to ensure that skilled and productive workforce capable of meeting national growth and development are achieved.
- ii. The Federal Government, through the Ministry of Finance, Budget and National Planning in collaboration with the Ministry of Education, should undertake measures to strengthen the educational system, by ensuring prompt and consistent payment of salaries and allowances to educational personnel, as well as provision of essential resources such as stationery, utilities, and facility maintenance. Such investments are critical to sustaining an effective educational environment conducive to improve productivity.
- iii. The positive impact of government health capital expenditure on labour productivity, calls for Federal Government through Ministry of Health to intensify investments in healthcare infrastructure, medical equipment, and the training of health professionals. This is essential because it would foster a healthy environment that supports sustained improvements in productivity.
- iv. Federal Government through Ministry of Health and National Health Insurance Authority should improve in the area of supply chain management, medical supplies and pharmaceuticals because its essential improving productivity.



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APPENDIX I

(Data Used for Analysis)

YEA R	LP(₦ million)	HXP(₦ Billion)	HRXP(₦ Billion)	ECXP(₦ Billion)	ERXP(₦ Billion)
1986	334.18	0.47	0.46	1.104	1.59
1987	335.73	0.49	0.47	1.133	1.79
1988	337.03	0.46	0.51	1.068	1.66
1989	341.39	0.48	0.42	1.111	1.31
1990	341.35	0.53	0.50	1.221	2.40
1991	353.10	0.38	0.62	0.871	1.26
1992	360.69	0.54	0.15	1.241	0.29
1993	344.12	0.91	3.87	2.071	8.88
1994	328.91	1.27	2.09	2.901	7.38
1995	319.95	2.34	3.32	5.351	9.75
1996	325.48	2.20	3.02	5.021	11.50
1997	326.76	1.75	3.89	4.001	14.85
1998	326.63	5.93	4.74	13.551	13.59
1999	319.82	4.38	16.64	10.011	43.61
2000	327.25	7.10	15.22	16.221	57.96
2001	338.41	13.55	24.52	30.931	39.88
2002	281.89	8.25	40.62	18.831	80.53
2003	399.94	14.16	33.27	32.331	64.78
2004	426.34	7.63	34.20	17.421	76.53
2005	442.14	18.13	55.66	41.391	82.80
2006	457.41	19.99	62.25	45.641	119.02
2007	475.26	38.33	81.91	87.521	150.78
2008	494.37	38.65	98.22	88.261	163.98
2009	520.59	36.81	90.20	84.061	137.12
2010	553.68	38.55	99.10	88.031	170.80
2011	568.19	23.58	231.80	53.851	335.80
2012	601.45	24.74	197.90	56.491	348.40
2013	645.17	39.30	179.99	89.731	390.42
2014	673.81	28.27	195.98	64.551	343.75
2015	681.66	21.08	257.70	48.131	325.19



2016	662.03	20.23	200.82	46.191	341.88
2017	637.89	37.57	245.19	85.781	39490
2018	621.53	51.67	296.44	117.981	46530
2019	608.34	52.38	388.37	129.129	476.40
2020	612.87	53.87	369.35	145.312	478.90
2021	635.06	54.23	348.92	149.203	489.20
2022	575.70	53.49	368.88	141.214	481.50
2023	572.17	53.86	362.38	145.245	483.20
Source		UNDP	UNDP	WORLD BANK	WORLD BANK
e	NPC				