Public Expenditure and Economic Development in Nigeria (1981-2022)

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Abstract
This study examined the effect of public expenditure on economic development of Nigeria using time series data from 1981-2022. The research design is ex-post facto with time series data collected from Central Bank of Nigeria Statistical Bulletin and Nigeria Bureau of Statistics. Using Augmented Dickey-Fuller for unit root test all the variables was stationary at first difference. The Johansen co-integration test revealed a long-run equilibrium relationship among the variables. Analyzing the data with Vector Error Correction Model the results reveal that expenditure on economic service, social and community services have positive effect on Nigeria human capital index while administration and transfer have negative effect on human capital index. The study recommend that government should continue to increase it's funding on economic services, social and community services in order to increase the level of productivity and welfare of workforce enhance food security, employment generation and economic and business activities in the agro-allied sector. All these will help improve development of the economy. Nigerian government should limit its expenditure on administration and transfers and devote much in on productive expenditures. The results of this study have provided further empirical evidence on the impact of government expenditure on critical sectors of the economy such as education, health, agriculture which are component of economic, social and community services.

Keywords: Public Expenditure, Economic Development, Economic Services, Social and Community Services

INTRODUCTION

The factors that determine economic development of developing countries like Nigeria have long been a matter of concern among policy makers and economists. Achieving sustainable economic development has been the policy thrust of Nigerian government. This led to the formulation of development plans and rolling plans in the pre and post-independence eras which has expanded fiscal operations with deficit financing over the years. Economic development measures the welfare of the citizens of a nation such as human development index, physical quality of life, life expectancy and literacy level. Conceptually, economic development refers to a discontinuous and spontaneous change in the stationary state which forever altered and displaced the equilibrium state previously existing (Schumpeters, 1911). Economic development is important because an

underdeveloped economy is characterized by general poverty, unemployment and disguised unemployment, underdeveloped natural resources, dualistic economy, economic backwardness, insufficient capital equipment and technological backwardness (Jhingan, 2005). It is a critical function of availability of natural resources, rate of capital formation, capital output ratio, technological progress, dynamic entrepreneurship and other factors. Challenges of economic development in the developing countries have been well documented in literature using different factors as predictors of economic development. Despite the efforts of the scholars to formulate valid models that explain monetary and fiscal variables that determine economic development, the challenges continue to exist.

Public expenditure plays an important role in the aggregate economy in different ways. It is used to produce various public goods and services such as infrastructural development which the market system cannot provide due huge cost. It is also used by the government to adopt various fiscal measures such as capital investment to stimulate economic activities particularly in the developing economy where there is abundant idle resources and during recession. Public expenditure is a kind of government intervention on economic activities to bridge the market imperfection as advocated by the Keynesian economists. In a fiscal system public expenditure is classified under capital and recurrent expenditure.

Government capital expenditure refers to government spending on investment goods. It is government long-term expenditure plans that can affect economic development. It means spending on things that last for a period of time which may include investment in roads, industries, equipment and agriculture. CBN (2011) noted that capital expenditure is fiscal expenditure on goods classified as investment goods. As a component of fiscal policy, capital expenditure if well managed has the capacity of increasing the productive capacity of the industrial sector, create employment and improve capacity utilization Aregenyen (2007). In Nigerian, capital expenditure is classified as economic services, social and community services, transfer and administration. The role of government capital expenditure on the growth of industrial sector has been a growing concern despite the fact that various policies have been formulated to improve the performance of the sector. Government capital expenditure has increase over the years without corresponding increase on the growth of the industrial sector. Empirical evidence and theories have shown that well plan government capital expenditure have the capacity of increasing the productive capacity of the industrial sector and the economy. Recurrent expenditures are expenses of government incurred on a regular basis if the functions and machinery of government must move on throughout the year (Nwaoha et al., 2017). It includes items such as personnel costs and overhead costs, travel and transportation, utility services, telephone services, stationery, maintenance of office furniture and equipment, entertainment and hospitality.

Theories such as the classical growth theory and the neo-classical theory have supported the availability of fund as a mechanism for achieving growth in the economy. Again, empirical evidence has also shown the relevant of expenditure on the realization of macroeconomic goals. Capital expenditure of the government has great multiplier effect on the economy. Increase in expenditure is caused by increase in needs for capital goods that facilitate smooth functioning of

the industries Gabriel and Johnson (2013). However, some theories believed that increasing government expenditure promote economic development while others theories asserted that increasing government expenditure to lead to dwindling economy. It could be observed that the prevailing problems of negative externalities, market failure, lack of well develop factors and product marker, worsening terms of trade and domination by the multinationals producing at decreasing cost which has compounding negative effect government expenditure on economic development. Most empirical studies on public expenditure focused on public expenditure and economic growth while this study focused on public expenditure and Nigeria economic development.

REVIEW OF RELATED LITERATURE

Public Expenditure

Public expenditure is the money spent by the government out of its revenue to meet various needs of the economy (Adigwe, Anyanwu & Udeh, 2016). The concept of public expenditure emanates from the activities of government which includes paying for and providing goods and services, investment in material and human capital as well as transfers. According to Ukwueze (2018) public expenditures can be disaggregated or classified into subheadings, such as recurrent expenditures and capital expenditures. The recurrent expenditures are expenditures or purchases of stationeries, wages and salaries of workers, fuel, electricity bills and other bills, etc. Capital expenditures are constructions undertaken by the government on roads, bridges, health centres, schools, military installations and hardware. the author is of the view that the concept of public expenditures arose from the perspective that any expenditure undertaken by the government is public. Public expenditures are also called public sector spending, public expenditures, or government purchases. From the above views, it is assumed that government has sufficient revenue to expend. Wanjiru (2019) explained that, government spending on education and health sectors leads to development and build-up of human capital that will be more resourceful and adequately creative to enhance economic growth.

Public Expenditure on Education

Human capital investment in education and health enhanced human capital development in developing countries like Nigeria. The critical elements of human capital development are predicated on investment in education and health sectors. Investment in education is the hung that create new skill, knowledge, and inducement which drive economic expansion through making individual more proficient and generate productive economy. Expenditure on education creates new technology, invention and innovation leading to wealth formation and human capital development. Oluwakemi et al. (2018) stated that public expenditure on health, education, social community services, agriculture, transfer services and research and development accelerate human capital development in Nigeria. Edeme et al. (2017) noted that increase in public expenditure improves the level of human capital development. This led to the fact that advancement in human capital development lead to healthier life and greater life expectancy. Public expenditure on education and health sectors help to improve life, reduce poverty and increase employability and productivity leading to increase in human capital development. Schultz (1961), asserts that investments in human capital such as expenditures on education and health account for most of the rise in real earnings per workers.

According to Becker (2012), investments in human capital raise an individual productivity and earnings. The basic philosophy is that an extremely educated and healthier workforce is projected to be relatively more industrious. Oluwakemi et al. (2018) asserted that investment in education is pivotal to human capital development because it has social benefits of increasing the number of skilled workers, enhanced occupational mobility; reduce the rate of unemployment in the economy. Fundamentally, improvement in education increase earning capacity, productivity, access to health information and enhance human capital development compare to countries with lack of investment in education. Investment in education has been regarded as a medium for sustainable human capital development. Educations enhance people's ability to contribute more to the growth process and improve their level of productivity. Education guarantees people to live longer and healthier life, because knowledgeable person improve human capital development. Richardson & Chigozie (2019) stated that health expenditure plays an immense role in the health condition of a society by lowering the effective price of health, enhancing inputs to create conductive environment for health living. Strategic investment in health not only deliver quality health and improve well-being for more people, but improved efficient economies, create jobs and productivity of labor force. Expenditure on health is a catalyst for economic growth, human capital development and societal growth.

Public Health Expenditure
According to WHO (2010), public health expenditure consists of recurrent and capital expenditure from government budgets, external borrowings and grants (including donations from global agencies and NGOs), as well as obligatory health insurance finances. History is a witness that fundamental breakthrough in public health, diseases control and enhanced nutritional intake have given increase to great takeoffs in economic growth. Nigeria's health transformation agenda is well expressed in the National Economic Empowerment and Development Strategy (NEEDS), engineered by the National Planning Commission (NPC, 2004). The aim of this health restructuring is to advance the health condition of Nigerians in order to achieve internationally satisfactory rank of poverty reduction. Aranda (2010) stated that the major reason for health expenditure is the expectation of improved health status, and that health position is governed by health investment. The demand for health care is derived from the demand for health itself. Both health care spending and enhanced health condition are means to an end; the end is improved output and nationwide growth. Correspondingly, Berger and Messer (2002) explained that one of the fundamental ways by which governments can modify their healthcare delivery systems is to rise public funding of healthcare infrastructure. Clement et al. (2011) identified demographic and non-demographic factors that influence health care spending. The demographic factors include changes in age distribution within the population while the non-demographic factors include increasing incomes, health technology innovation, health policies and institutions. In a related study, Denton et al. (2004) identified structural, behavioral and psychosomatic factors that determine health. The structural factors include age, family characteristics, profession, education, earnings and societal support. Denton and Walters (1999) noted that structures of societal disparity as the most vital determinants of health. Irwin et al. (2008) explained that material circumstances

which include factors such as housing and neighborhoods quality, consumption strength and the physical work surroundings can influence the health condition.

Economic Development

Economic development is the process by which a nation improves the economic, political, and social well-being of its people. The term has been used frequently by economists, politicians, and others in the 20th and 21st centuries. The concept, however, has been in existence in the West for centuries. "Modernization, westernization, and especially "industrialization is other terms often used while discussing economic development. Economic development has a direct relationship with the environment and environmental issues Economic development is very often confused with industrial development, even in some academic sources. Whereas economic development is a policy intervention endeavor with aims of improving the economic and social well-being of people economic growth is a phenomenon of market productivity and rise in gross domestic products. Consequently, as economist Amartya points out economic growth is one aspect of the process of economic development. According to Rana et al. (2015) economic growth and development is a two-way relationship. According to them, the first chain consists of economic growth benefiting human development, since economic growth is likely to lead families and individuals to use their heightened incomes to increase expenditures, which in turn furthers human development. At the same time, with the increased consumption and spending, health, education, and infrastructure systems grow and contribute to economic growth.

Although the broad scope of Development Economics is clear, there are a number of ambiguities in the precise definition and the measurement of Economic Development. Based on what they thought was important for development, different yardsticks or indices have emerged that try to measure the extent of economic development and to rank countries in terms of their economic achievement. Economic Development is assumed to take place when there is a rise in the standard of living of the population. Real per capita income is assumed to be the best index for depicting the average standard of living of the population, and so it is widely used as an index of economic development. According to the UN, "We had some difficulty in interpreting the term underdeveloped countries. We use it to mean countries in which PCY is low when compared with the PC real income of USA, Canada, Australia, and W. Europe (Higgins, 1963). Arthur Lewis (1995) considered per capita output to be the best single measure of development. The World Bank classifies countries based on their Gross National Income per capita. Earlier gross national income (GNI or GNP) was estimated using simple exchange rates to convert the currencies of various countries into US $. At present, the World Bank uses the Atlas conversion factor instead of simple exchange rates, mainly to reduce the impact of exchange rate fluctuations in the cross-country comparison of national incomes. The Atlas conversion factor for any year is the average of a country's exchange rate for that year and its exchange rates for the two preceding years, adjusted for the difference between the rate of inflation in the country and international inflation; the objective of the adjustment is to reduce any changes to the exchange rate caused by inflation

Human Capital Development

Human capital has been renowned internationally as one foremost factor that is accountable for the wealth of a Nations According to Smith (1776), he underlined the significance of "the acquired and valuable abilities of all the residents or members of the public in he's works. Romele (2013) defined Human capital as the entirety of knowledge and skills which have been accumulated throughout life, through education, training, and work experience and which influence labor productivity. Onakoya (2013) as cited in Adeyemi & Ogunsola (2016) described human capital as a vital issue used in converting all resources to benefit mankind. Human capital is represented by the aggregation of investment in activities, such as education, health, on-the-job training and relocation that enhance an individual's output in the labor marketplace. Frank & Bemanke (2007) as cited in OECD (2009) defines that human capital is 'a combination of factors such as education, experience, training, intellect, energy, work habits, steadfastness, and inventiveness that influence the worth of a worker's marginal product. Hence, human capital refers to the method of acquiring and growing the quantity of citizens who have the skills, good health, schooling and experience that are vital for fiscal growth.

Aluko (2015) defined Human capital development to denote enhances the skills, knowledge, efficiency and resourcefulness of citizens through a process of human capital formation generally conceived. Thus, human capital development is a citizen's centered stratagem, and not goods centered or production centered tactic of growth. Torruam & Abur (2014) Human capital development can be seen to mean increasing skills, knowledge, productivity and resourcefulness of citizens through process of human capital formation. It is a citizen's centered strategy of growth which is documented as an agent of nationwide growth in all nations of the globe. Human capital formation refers to the procedure of acquiring and raising the number of people who have the skills, good health, education and experience that are critical for economic development. Human capital development refers to the process of acquiring and increasing the number of human being who have the skill, education, experience which are significant for the fiscal and political growth of a nation.

Human capital development is thus connected with investment in man and his expansion as a inventive and prolific resource. Jhingan (2013) categorized and developed human resources into six ways: Heath facilities and services: this involves all expenditure that affects the life expectancy, strength and stamina, and vigor and vitality of the people, On the job training which includes old type apprenticeship organized by firms, Formally organized education at elementary, secondary school and higher level, Study programmed for adults that are not in agriculture, It involves migration of individual and families to adjust changing job opportunity (factor mobility), Finally, transfer or importation of technical assistance, expertise and consultants. Access to available health services increases life expectancy, reduces infant mortality and improves upon many other health parameters. Healthiness reduces causality due to illness and increases the competence of the workforce, which indirectly contributes to human capital development.

Human Development Index

Nzotta and Okereke (2009) stated that human development index (HDI) is a composite index which includes health, education, income live hood, security and other indicators, in other words human development, health life, knowledge and decent standard of living. Nseabasi (2012) stated

that the chief aim of human development is to provide nations with complete measure of environment they offer for their citizens in terms of opportunities for personnel accomplishment. Ogen (2003) noted that the higher the human development index the better the conditions the company created for its citizens to live and work. Lawal (1997) is of the review that the main idea of human development index is as follows: people are the real value of any nation, and the richness of human life is what every nation's government should worry about. Human Development Index measures long-term progress in three basic areas of human development namely: access to safe and healthy life, access to education, and a decent living standard (United Nations Development Programme (UNDP), 2014). Human Development Index (HDI) is a move towards a more holistic view of development *which* had previously focused more on per capita income. United Nation's Human Development released Human Development Index (HDI) first as part of her 1990 Report. The report stated that "development is much more than just the expansion of income and wealth; it should be a process of enlarging people's choices" (UNDP, 1990).

The United Nations developed Human Development Index (HDI) as a measuring tool that ranks countries' levels of social and economic development based on three criteria: Health Index, Education Index, and Standard of Living Index. The health index represents life expectation (i.e. the numbers of years) of a particular region or country under study. It correctly describes the extent to which life expectancy of the people in the area or country under study is greater than the minimum life expectancy. According to the United Nations (UN), the minimum and maximum life expectancy in the world is set at 25years and 85 years respectively (UNDP, 2014). The education index represents the literacy rate and enrollment rate of people, in a particular region or country under study. The Literacy rate means the percentage of people of 16 years of age and above who are literates (UNDP, 2014). These people must be able to write, read and understand a simple statement regarding their day-to-day life. While enrollment rate is the percentage of children of school-going age (primary, secondary and tertiary), who go to school. The standard of living index represents the per capita income of a region or country expressed in US$ at purchasing power parity (PPP) rate. They consist of the income of a country, the exchange rate between the country's currency and US$, and the price level index of the country in comparison to the US price level. Nigeria's HDI value for 2014 is 0.504, which is in the low human development category ranking the country at 152 out of 187 countries and territories. The Nigeria's HDI value increased from 0.466 to 0.504, between 2005 and 2014, an average annual growth of about 0.81 percent or an increase of 8.1 percent (UNDP, 2014).

Human Capital Development in Nigeria
The trend now is that human capital development is measured in terms of composite indices of development which takes account of different aspects of development. As earlier pointed out, several such indices have been developed and include –physical quality of life index (PQLI), Human Development Index (HDI), Human Poverty Index (HPI), Coefficient of Variation, Theil Index, Kuznets Hypothesis, Gini-Coefficient etc. Measuring human development index is a concept that is complex with many facets. This therefore means that any index on human development incorporates a range of indicators to address the complexities. However, the new acceptable and widely used approach of human development is the Human Development Index (HDI).

The index captures health, education and standard of living with many sub-variables such as life expectancy, adult literacy rate, gross enrolment ratio, and Gross Domestic Product Per capita income. According to Kairo et al ((2017), considering that the HDI includes quality aspects, the approach of HDI focuses on all of individuals' life quality and economic situation. In Nigeria, statistics have shown that key human capital indicators are not only poor when compared to some other developed and developing economies in the world, but are deteriorating in some cases. In a study by UNDP (2013) and Ese et al (2014), a comparison between Nigeria and selected countries that have attained the 20th position in the list of top economies in the world since 2009, shows that as at 2010, net primary school enrolment in Belgium, Poland, Saudi Arabia and Sweden range between 93 and 99%. Nigeria's rate of 57.6% in 2010 was actually a fall from its 2008 value of 58.8%. At, 10,545,105, Nigeria is one of the countries with the highest number of children out of primary school in the world (UNDP, 2013; Ese et al 2014).

A more worrisome development is that the situation is getting worse. The report revealed that the level increased from 9,686,822 in 2009 t0 10,288,599 in 2010. The reverse of this trend is however the case in other countries (Belgium, Poland and Sweden). Though a slight improvement was noticed in Health indicators in Nigeria, infant mortality rate (per 1,000 live births) dropped from 87.7 in 2008 to 77.8 in 2012). This rate was said to be outrageous when compared to statistics from other countries.

Life expectancy was observed to be increasing gradually, but there is still a wide difference between the level in Nigeria and other countries. A number of country were said to have already achieved a high level of human capital needed for sustainable social and economic development. Also revealed by the report was that, as social variables, government in many advanced countries in the world invest heavily in education and health. The level of total and public sector investment in health in Nigeria and other countries showed that health expenditure per capita in Nigeria is less than $100. In 2011, health expenditure per capita in Nigeria was $79, while Belgium and Poland recorded $4962 and $5330 respectively. According to UNDP report (2016) as cited in Oladeinde (2017) Nigeria ranked 152 among the 188 UN member states in the Human Development Index (HDI). According to the report, Nigeria retained its 2015 status with a computation of 0.527 which was two 0.2 percent above 2014 computation of 0.525, Nigeria's HDI value for 2016 positioning it at 152 of 188 countries puts the country on Low Human Development (LHD). The country is followed closely by Cameroon in number 153 and Zimbabwe in 154 positions. The report placed Nigeria below neighbouring Ghana and Zambia positioned at 139, Gabon, 109, and Equatorial Guinea.

The 2016 Human Development Report focuses on those communities that have been left behind, despite development progress over the last 25 years (Ifeanyi, 2017) the report, however and showed a positive outlook for the country as Nigeria's HDI increased from 0.466 to 0.527, a 13.1 per cent increase in the last 10 years under review between 2005 and 2015. This represents a three-point increase over what the nation had between 2005 and 2014, when Nigeria HDI's value increased from 0.467 to 0.514, an increase of 10.1 per cent. Breakdown of the report shows that Kenya was placed at 145 positions on the list of countries ranked low, with Central Africa Republic taking the last position at 188 in sub-Saharan Africa. On the global front, Norway tops the table as the number one country in the HDI, closely followed by Switzerland and Australia which came

joint second. Similarly, Germany was placed on the fourth position while Denmark placed on the fifth position.

Theoretical Framework

Wagner's Law of Increasing State Activities

According to this theory, there are inherent tendencies for the activities of different tiers of government (for instance, in Nigeria we have the federal, state, and local government arms) to continually raise, over time, both intensively and extensively: These increases in state activities necessitate increase in government expenditure. In this vein, a functional relationship is postulated to exist between the growth of an economy and the growth of the government activities to such an extent that the governmental sector grows faster that the general economy. Aigbokham, (1997) opined that this law, economic growth, as reflected in per capita income growth, urbanization, and increased enlightenment on the part of the electorate, naturally results in public sector growth, logic ally, therefore, reduction in public sector growth would require a slowdown, of r economic growth as noted in Bhatia (1982).

Wiseman-Peacock Hypothesis

A second explanation on the growth of public expenditure was advance by Wiseman and Peacock (1961) resulting from their study of public expenditure in the United Kingdom for the period 1890-1955. They agreed that public expenditure increase in jerks or step like fashion rather than in a smooth and continuous manner, favoring a post-ante analysis of effects on government budgets, they posited that at some times some social or other disturbances take place which at once shows the need for increased public expenditure which the existing public revenue cannot meet. According to their contention, earlier in the period under study, revenue constraint exerted a domineering and restraining influence on public expenditure expansion, which was caused, in part, by insufficient pressure for public expenditure. However, later in the study period, and up to the time of their study in 1961, the pressure increased and caused an upsurge in public expenditure in such a way that the resulting effect was the apparent exposure of the inadequacy in of the present revenue to every economic watch and analysis. The development, was a kind of revenue-expenditure spiral, which, in turn, economic activities in a country.

The Critical-Limit Hypothesis

As in Bhatia (1982), the critical-limit hypothesis is credited to Collin Clerk (1943), who contended that when the share of the government sector activity (represented by its expenditure) exceeds 25 per cent of the total economic activity of the country, inflation would be the natural result; and this would be so even when the county is operating under a balanced budget. Thus, when the government's share of the aggregate economic activity reaches the critical limit of 25 per cent, the income earners would the affected by reduced incentives (owing to apparent high tax incidence), and this would jeopardize their level of productivity. The result is that they would produce less than their capabilities and potentials can support. This would bring about reduced supply. On the other hand, the demand-effects to the government financing (i.e. expenditure) would become quite strong even when the budget remains balanced. This maladjustment between demand and supply would breed inflationary spirals in the economy as a net result.

Empirical Review

Ditimi, Nwosa, and Ajisafe (2019) examined relationship between the components of government expenditure with focus on education, agriculture, health and transport and telecommunication variables on economic growth in Nigeria for the period between 1970 and 2018. The results of the long run and short run regression estimates indicated that expenditure on agriculture was the most significant of the components of government expenditure that impacted on economic growth. Nworji, Okwu, Obiwuru and Nworji (2018) studied the effect of public government spending on economic growth in Nigeria based on variables considered relevant indicators of economic growth and government expenditure for the period 1970 – 2017. The Ordinary Least Square (OLS) multiple regression models specified on perceived causal relationship between government expenditure and economic growth was used. Results of the analysis showed that capital and recurrent expenditure on economic services had insignificant negative effect on economic growth. Capital expenditure on transfers had insignificant positive effect on growth. Capital and recurrent expenditures on social and community services and recurrent expenditure on transfers had significant positive effect on economic growth.

Oziengbe (2016) explored the relative impacts of federal capital and recurrent expenditures on Nigeria's economy from 1980 to 2015. The study investigated the effect of total government expenditure (GOVEXP) on gross domestic product (GDP) using multiple linear regression analysis. The result showed evidence that strongly supported Ram's growth accounting model. The Error Correction Model (ECM) model revealed that the short-run impact of each explanatory variable on GDP was statistically insignificant contemporaneously, but significant with a lag, with RECEXP exerting greater impact than CAPEXP, though the impact of the former was negative while that of the latter was positive. In addition, Akanbi (2018) investigated Government expenditure in Nigeria: Determinants and trends. The study used time series data from 1974 to 2016. It was discovered that capital and recurrent expenditure were resilient to shocks in total government spending and, also, total government expenditure was confirmed to be resilient to shocks in capital and recurrent spending.

Aremu, Babalola, Aninkan, and Salako (2020) investigated the impact of government expenditures on critical sectors on economic growth in Nigeria (1984-2019). The study employed Autoregressive Distributed Lag model (Bound Test Co-integration Approach) to estimate both short and long run impact of Government expenditures on economic growth. The result revealed that government expenditure on defence impacts negatively on economic growth while government expenditure on agriculture enhances economic growth. Government expenditure on education, transport and communication did not impact on economic growth in the long-run. Kanayo, Akujinma and Francis (2016) examined the long run relationship between government expenditure and economic growth Nigeria. Johansen co-integration was the tool of analysis employed in testing the long run relationship while Vector Error Correction Model (VECM) was used to test the short and long run adjustments. Granger causality effect test was adopted to analyse the effect of government expenditure on economic growth. The long run test revealed the evidence of a long run relationship between government expenditure and economic growth in Nigeria. The vector error correction model analysis suggested the possibility of Nigeria achieving a steady level

of growth if preference is given to capital expenditure more than recurrent expenditure. The granger causality effect result obtained showed that recurrent and capital expenditure which have significant effect on economic growth in Nigeria.

Bashir, Hamza and Rafiat (2017) studied the impact of government expenditure on economic growth in Nigeria. The study covered the period of 1981-2016 using Ordinary Least Square (OLS) technique and granger causality test were employed. The result obtained indicated that there was negative and insignificant relationship between human capital and GDP, the relationship between physical capital and GDP as well as between government capital expenditure (GCE) and GDP were positive but insignificant. The granger causality test showed that government expenditure granger caused GDP but GDP did not granger cause government expenditure. Idris and Bakar (2017) examined the relationship between government expenditure and economic growth with the aim of establishing a stable relationship. To estimate the existence or otherwise of the equilibrium relationship among the examined variables the study employed an ARDL model. The data covered a period of thirty-five (35) years from 1980 to 2015. The result from the ARDL estimation indicated an existence of positive and long-run equilibrium relationship between economic growth and government expenditure in Nigeria. Ifarajimi and Ola (2017) studied the relationship between government expenditure and economic growth. Time series data on government expenditure on administration, economic services, social and community services, transfers, government total revenue, nominal exchange rate and real per capital GDP for the period of 1981 to 2015 were employed. The study used ECM computed through Dynamic OLS and found that long run government expenditure on administration and nominal exchange rate were significant and therefore impact significantly on economic growth in Nigeria.

Attahir (2016) reported a long run negative and significant impact of recurrent transfer payment (RTP), capital social-economic expenditure (CSE) and openness (OPP) on economic growth, while recurrent administration spending (RAD) has negative and insignificant impact. Capital administrative expenditure (CAD), investment (INV) and labour (LAB) exert a long-run positive and significant impact on economic growth. In the short-run dynamics of the model RAD and OPP showed a positive and significant impact while RTP provides negative and significant impact on economic growth. Other variables are statistically insignificant. The speed of adjustment term showed that about 41 percent correction towards long-run equilibrium is completed in a year. Impulse Response Function (IRF) showed the response of GDP to shock in RAD and INV to be positive all through the period considered, while the response to RTP, CAD, CSE and OPP was negative. The response to shock in LAB was almost zero though marginally negative.

Tajudeen and Ismail (2013) investigated the impact of public expenditure on economic growth in Nigeria for the period 1970-2010 making use of annual time series data. The study employed the bound testing (ARDL) approach to examine the long-run and short-run relationships between public expenditure and economic growth in Nigeria. The bounds tests suggested that the variables of interest put in the framework were bound together in the long-run. The associated equilibrium correction was also significant confirming the existence of long-run relationships. Findings indicated that the impact of total capital public spending on growth was negative. Recurrent

expenditure however was found to have insignificant positive impact on growth. Therefore, government should increase its spending on infrastructure, social and economic activities. Iheanacho (2016) variance decomposition confirms the collective contribution of public expenditure on economic growth for the period 1986-2014. Johansson cointegration and VECM results show that recurrent expenditure is the major driver of economic growth and it coexists with a positive short-run relationship highlighting the dual effects of recurrent expenditure on economic growth. Capital expenditure has negative and significant long-run effects on economic growth. Abu and Abdullahi (2010) results revealed a negative effect of government total capital expenditure, total recurrent expenditure and education on economic growth while expenditure on transport, communication and health has positive impact for the period 1970-2008. Jelilov and Musa (2016) with OLS found that government expenditure has a positive and significant impact on economic growth for 1981-2012. Ogunmuyiwa and Adelowokan (2015) affirmed that public expenditure has a positive and significant impact on economic growth for 1970-2000. Recurrent expenditure exhibits a positive impact on growth at 10 percent significance level while capital expenditure has a positive and insignificant impact on growth.

Acikgoz and Cinan (2017) investigated the effects of public spending on economic growth based on Cobb-Douglass production function with ARDL and Dynamic Fixed Effect (DFE) for 21 developed countries (High-Income OECD countries) for the period 1990-2013 and found that public spending has an important role for economic growth. Dan, Mihai, Ana and Michael (2018) using quarterly data for the period 1995-2015 examined the importance of various categories of public expenditure on GDP growth using ARDL and showed that expenditures on education and healthcare have a positive impact on the economy, while expenditures on defence, economic affairs, general public services and social welfare have negative impact on selected Central and Eastern European countries that joined the European Union. Dimitrios, Christian and Loannis (2018) found support for Wagner's and Keynesians hypotheses when they examined the validity of Wagner's law on UK Public spending expansion for the period 1850-2010. Wagner's Law is that economic development is the key determinant to public sector growth. The cointegration and the Granger Causality tests, indicated presence of a long-run relationship between national income and government spending while the causality is bi-directional. Driton and Lirim (2017) disagree with Wagner and Keynesian theories when they examined the impact of public expenditure on economic growth of Kosovo for the period 2000-2016 indicating that none of the public expenditure categories in Kosovo had any impact on economic growth of Kosovo. They concluded that public expenditure in Kosovo for the period 2000-2016 was characterized by unproductive public expenditure as they had no necessary and reasonable impact on achieving the economic target in Kosovo.

Edmund, Choong and Lau (2017) used a panel data of 25 Sub-Saharan African low income countries spanning from 2002-2015 obtained from World Development Indicators (WDI) database studied the impact of government expenditure on economic growth of Sub-Saharan African low income countries. Using Im-Pesaran-Shin and Fisher ADF Test for unit root tests, Pedroni test for cointegration tests, Generalized Method of Moments (GMM) demonstrated no evidence for government efficiency in accelerating economic growth of low income countries in Sub-Saharan

Africa. Edward (2009) examined aggregated and disaggregated expenditure on economic growth in Ghana for the period 1970-2004. Expenditure on education and health represented human capital development while expenditure on roads and waterways captured infrastructural development. He revealed that the aggregated government expenditure retarded economic growth while that on education has no significant impact in the short-run. The expenditures on health and infrastructure promote economic growth. The political economy variable proxy by nature of governance (democracy) and political instability (years of changes in government and military dictatorship) proved significant in explaining Ghana's economic growth over the study period.

Komain and Tantatape (2013) found no cointegration between government expenditure and economic growth in Thailand using the Granger Causality test and a unidirectional causality from government expenditures to economic growth exists. The results from the least square method with lagged variable of economic growth, government expenditure and money supply show strong positive impact of government spending on economic growth. Laszio and Bekzod (2017) tested Wagner's Law in Australia for the period 1901-2008 by studying the relationship between real per capita income and composite variables of state activity that takes both financial and legislative activities of the federal government into account. Although this composite variables still falls short of capturing all levels and sorts of state or government activities, it is a few more comprehensive measures than any of its components used individually in earlier studies. The results based on this composite measure provide no empirical evidence in favour of Wagner's Law in Australia. Leke and Alban (2017) used quarterly time series data spanning 2004-2016 to test Keynesian view versus Wagner view on the relationship between public expenditure and economic growth in Kosovo using public expenditure (G), GDP, foreign direct investment (FDI), export (EXP) and total budget revenue (TRtax). The Johansen co-integrated test was used to investigate the long-run relationship between public expenditure and economic growth, while the Granger Causality test was used to know the direction of flow between variables. This study discovered a unidirectional causality between government expenditures and economic growth, bidirectional causality between total budget revenue and public expenditure, bidirectional causality between export and economic growth in Kosovo which support the Keynesian view. There is a positive and statistical significant effect of public expenditures and exports on economic growth. Total budget revenue has a positive impact on economic growth but this has not been proved to be significantly significant. FDI is also found to be negative and insignificant.

Lingxiao, Adelina and Handuo (2016) examined the relationship between public expenditure and economic growth from the perspectives of Keynes and Wagner's Law in Romania using annual time series data for the period of 1991-2014. A unidirectional long-term relationship from government expenditure to economic growth in Romania was observed. ARDL and bounds test based on Unrestricted Error Correction Model (UECM) estimation were used. Ojewumi and Oladimeji (2016) examined the effect of government funding on the growth of education in Nigeria from 1981 to 2013 and showed negative impact of both capital and recurrent expenditure on educational growth. The study blamed this situation on high level of corruption prevalent in the educational sector. Shashi (2010) used co-integration and error-correction models to analyze the causal relationship between public expenditure and economic growth in Nepal and provided strong

evidence rejecting the Keynesian view. The cointegration analysis provides positive evidence for the existence of a long-run relationship between public expenditure and Real GDP. The long run causality test based on the standard t-test statistics for the Error Correction Model (ECM) indicates a unidirectional causality from real GDP to public expenditure, not vice versa thereby supporting Wagner's view. The short run causality test based on F-test statistics from the ECM indicates no causality between real GDP to public expenditure. The pair-wise Granger Causality text confirms the absence of the short run causality between real GDP to public expenditure. Thus, the results support the Wagner's hypothesis which states that the growth of public expenditure can be explained by increase in economic activity.

Yusuph and Nerima (2012) analyzed an empirical relationship between healthcare expenditure and economic growth in Uganda using Vector Error Correction Model (VECM) and found a positive and significant long-run impact of healthcare expenditure on GDP. Ezema (2019) examined the responsiveness of economic growth (RGDP) to government expenditure on pensions and gratuities in Nigeria for the period 1981-2016 employing OLS and Error Correction Mechanism (ECM) technique as the analytical tool. Findings showed that pensions and gratuities expenditure of government had a positive and significant response on economic growth in the long run. Shakirat (2018) investigated the effect of government spending on infrastructure for 1980-2016 in Nigeria and found that government spending on transport and communication, education and health infrastructure has significant effect on economic growth. Spending on agriculture and natural resources infrastructure recorded a significant inverse effect on economic growth in Nigeria.

Shih-Ying, Jenn-Hong and Eric (2010) examined the causal relationship between government expenditure and economic growth by conducting the panel Granger Causality test for 182 countries for the period 1950-2004. The results strongly support both Wagner's Law and the hypothesis that government spending is helpful to economic growth regardless of how we measure the government size and economic growth. When the countries are disaggregated by income levels and the degrees of corruption, their results also confirmed a bi-directional causality between government activities and economic growth for the different subsamples of countries, with the exception of the low income countries. It is suggested that the distinct feature of the low-income countries is likely owing to their inefficient government and inferior institutions.

In the literature, there are differences in findings in previous studies based on the type of data, variables chosen, type of design, type of econometric model specification and analysis tools adopted. Majority of the studies disaggregated their variables into administration, economic services, social and community services and transfers and adopted GDP in absolute terms as the dependent variable measuring economic growth. In extending the debate this study adopted human capital development index as measure of economic development. This study brings to currency the topic of discussion considering the period of study (1990-2022). Augmented Dickey-Fuller (ADF) test dominates for unit root test (Attahir, 2016; Usman et al., 2011; Ogunmuyiwa and Adelowokan, 2015), Johansen cointegration test dominates for long-run association, ARDL bounds testing approach and VECM were used for analysis (Attahir, 2016; Ogunmuyiwa and Adelowokan, 2015; Tajudeen and Ismail, 2013).

METHODOLGY

The study adopted ex-post facto research design, relying on already existing secondary data. Time series data obtained from the CBN Statistical Bulletin and the NBS were used. The data were human capital development index as measure of economic development, public expenditure on administration, economic services, social and community services and transfers as predictor variables. In order to obtain a reliable model to capture the impact of public expenditure on economic development in Nigeria, diagnostic tests on unit root to make sure the variables are stationary and co-integration to establish the existence of a long run equilibrium relationship among the variables were conducted. Augmented Dickey-Fuller (ADF) test was adopted for the unit root test, and Johansen co-integration test. The Johansen co-integration test relies on two test statistics, namely: Trace statistic and Max-Eigen statistic. These test statistics enable the researcher to identify the number of co-integrating equations among these variables. Where there is no co-integrating equation, it simply means that the variables do not have any long run equilibrium relationship and may not be suitable in carrying out the regression analysis. The Johansen co-integration test, in literature permits more than one co-integrating relationships (Izedonmi, 2016).

Decision Rule

If the calculated trace and Maximum Eigen values are greater than the critical values, then, the null hypothesis of no co-integration is rejected and it is concluded that there is existence of long-run relationship between the variables in the model and vice versa. VECM is a system having a vector of two or more variables. All the variables in VECM are considered endogenous and none is taken as exogenous. Among the criteria to be met before VECM is employed as an analytical technique include: (i) Variables must all be integrated at order 1 [I (1)], (ii) From the Johansen co-integration test, it must be seen that there exist long run equilibrium relationship among the variables. If the unit root test result is I (1) but there is no evidence of long run relationship, Value At Risk (VAR) technique is employed. VECM is constructed with (P – 1) lag lengths for all the variables in the system.

VECM can be specified as: $\Delta Y = \alpha_o + \Sigma\alpha_1 \, \Delta Y_{t-1} + \Sigma\alpha_2 \, \Delta X_{t-1} + \Sigma\alpha_3 \, \Delta Z_{t-1} = \beta_1 \, (Y - X - Z)_{t-1} + \mu$ (1)

Where: Y, X and Z represent the set of variables used in the study. Δ is the first difference operator; α_o is the constant intercept term; α_1 to α_3 are the short run coefficient while β_1 is the error correction mechanism that measures the speed of adjustment from short run disequilibrium to long run standing-state equilibrium. μ is the error term assumed to be distributed as white noise (Izedonmi, 2016).

The model adopted to suit the objective of this study is specified thus:

HDI   = $\alpha_0 + \beta_1 PEXPA + \beta_2 PEXPES + \beta_3 PEXPSCS + \beta_4 PEXPTR + \varepsilon$ (2)

Where:

HDI = Human capital index
PEXPA = Public expenditure on administration
PEXPES = Public expenditure on economic services
PEXPSCS = Public expenditure on social and community services
PEXPTR = Public expenditure on transfer

α_o = Constant (intercept) term, β_1, β_2, β_3, β_4 = Coefficient parameters of the explanatory variables, e = Stochastic term or error term.
A-priori, $\beta_o > 0$, $\beta_1 > 0$, $\beta_2 > 0$ and $\beta_3 > 0$, $\beta_4 > \beta0$

Unit Root Test
Most of time series have unit root as demonstrated by many studies including Nelson and Plosser (1982) Stock and Watson (1988) and Campbell and Peron (1991). Therefore, their means of variance are not independent of time. Conventional regression technique based on non-stationary time series produce spurious regression and statistic may simply indicate only correlated trends rather true relationship Granger and Newbold (1974). Spurious regression can be detected in regression model by low Durbin Watson and relatively moderate R^2.Therefore, to distinguish between correlation that arises from share trend and one associated with an underlying causal relationship; we use the Augmented Dickey fuller (Dickey and Fuller, 1979, 1981)

$$X_t = \mu + \Theta X_{t-1} + \varepsilon_t \tag{3}$$

The null hypotheses for the ADFstatistic test are H_0.

Non stationary (unit root) and H_a: Stationary respectively

Co-integration

To search for possible long run relationship amongst the variables, we employ the Johansen and Juselius (1990) approach. Thus, the study constructed a p-dimensional (4x1) vector auto regression model with Gaussian errors that can be expressed by its first differenced error correction form as

$$\Delta Y_t = \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + ... + \Gamma_{k-1} \Delta Y_{t-k+1} - \Pi Y_{t-1} + \mu + \varepsilon_t \tag{4}$$

Where Y_t are the data series studied, ε_t is i. i. d, $N(0,\sum)$ $\Gamma_i + -1 + A_1 + A_1 + A_2 + A_3 + ... + A_i$ for i = 1,2,3........,k-1, $\Pi = I - A_1 - A_2 - ......-A_k$. The Π matrix conveys information about the long term relationship among the Y_t variables studied. Hence, testing the co-integration entails testing for the rank r of matrix Π by examine whether the Eigen values of Π are significantly different from zero. Johansen and Juselius (1990) proposed two tests statistics to determine the number of co-integrating vectors (or the rank of Π), namely the trace and the maximum eigen-value (λ-trace) is computed as;

$$\lambda trace = -T \sum_{j=r+1}^{n} In(1 - \lambda_j) \tag{5}$$

The trace tests the null hypothesis that "at most" r co-integration vector, with "more than" r vectors being the alternative hypothesis. The maximum eigenvalue test is given as:

$$\lambda_{max} = -TIn(1 - \lambda_{r+1}) \qquad (6)$$

It tests the null hypothesis of r co-integrating vectors against the alternative hypothesis of r + 1 co-integration vectors. In the equation (3) and (4), is the sample size and λ is the largest canonical correlation.

Granger Causality

In case we do not find any evidence for co-integration among the variables, the specification of the Granger causality will be a vector autoregression (VAR) in the first difference form. However, if will find evidence of co-integration, there is the need to augment the Granger-type causality test model with a one period lagged error term. This is a crucial step because as noted by Engel and Granger (1987).

$$Y_t = \alpha_o + \sum_{i=1}^{n} \alpha_1^y Y_{t-1} \sum_{i=1}^{n} X_{a1} X\mu \qquad (7)$$

and

$$X_t = \beta_o + \sum_{i=1}^{n} \beta_1^y Y_{t-1} \sum_{i=1}^{n} X_{\beta1} XY_t \qquad (8)$$

Error Correction Model (ECM)

Co-integration is a prerequisite for the error correction mechanism. Since co-integration has been established, it is pertinent to proceed to the error correction model.

RESULTS AND DISCUSSION

Table 1: Presentation of Unit Root Test

Variable	ADF STAT	Mackinnon value 1%	5%	10%	P-Value	Order of Integration	Decision	Remark
HDI	-2.984099	-3.667294	-2.957110	-2.617434	0.0497	1(I)	Reject H0	Stationary
PEXPA	-3.507052	-3.653730	-2.957110	-2.617434	0.0143	1(I)	Reject H0	Stationary
PEXPES	7.081684	-3.711457	-2.981038	-2.629906	0.0467	1(I)	Reject H0	Stationary

PEXPSCS	-5.285030	-3.661661	-2.960411	-2.619160	0.0001	1(I)	Reject H0	Stationary
PEXPTR	-8.396422	-3.661661	-2.960411	-2.619160	0.0000	1(I)	Reject H0	Stationary

Source: E-view 9.0

The time series properties of our data were examined by conducting the unit root test of stationarity using the Augmented Dickey-Fuller (ADF) test and cointegration test using Engle Grange cointegration procedure. Time series data are naturally considered unstable and using them in their unstable nature leads to spurious regression results (Iyeli, 2010). Augmented Dickey-Fuller (ADF) unit root test was employed to determine the stationarity of the variables. From the result in table 1, there is evidence that none of the variables was stationary at level given that the ADF values (in absolute terms) were less than the test significant level at 5 percent (2.972). At first difference, the ADF values (in absolute terms) for the variables. Thus, the variables are adjudged stationary at first difference and integrated at order I (1). With this outcome, cointegration test was carried out to determine the existence or otherwise of long run equilibrium relationship amongst the variables.

Table 2: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.737812	86.93622	69.81889	0.0012
At most 1	0.528236	44.09800	47.85613	0.1079
At most 2	0.248777	20.05714	29.79707	0.4190
At most 3	0.189524	10.90344	15.49471	0.2175
At most 4 *	0.122431	4.179184	3.841466	0.0409

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.737812	42.83822	33.87687	0.0033
At most 1	0.528236	24.04085	27.58434	0.1333
At most 2	0.248777	9.153699	21.13162	0.8198
At most 3	0.189524	6.724261	14.26460	0.5222
At most 4 *	0.122431	4.179184	3.841466	0.0409

Source: Extract from E-view 9.0

Based on the Johansen cointegration test result in table 2, the Trace statistic indicated that there exist one cointegrating equations at five percent level of significance. From the result, the Trace statistic at was less the critical value and this indicated that the variables are related in the long run. Similarly, the Max statistic indicated that there exist one cointegrating equations at five percent level of significance given that the Max statistic 3.841466 * (at the second rank) was less the critical value 4.179184 thereby indicating that the variables are related in the long run. Having determined that the variables were integrated of order 1(1)) and that there exist long run

equilibrium relationship among the variables from the Johansen cointegration test, the study employed vector error correction modeling (VECM) technique.

Table 3: Vector Error Correction Estimates

Cointegrating Eq:	CointEq1	CointEq2		
HDI(-1)	1.000000	0.000000		
PEXPA (-1)	0.000000	1.000000		
PEXPES (-1)	-65.82331	8.863504		
	(16.8082)	(2.84645)		
	[-3.91614]	[3.11388]		
PEXPSCS (-1)	-3.003324	-0.327331		
	(12.9186)	(2.18775)		
	[-0.23248]	[-0.14962]		
PEXPTR (-1)	-17.15202	3.060854		
	(2.48787)	(0.42132)		
	[-6.89424]	[7.26494]		
C	2406.193	-391.5123		

Error Correction:	D(HDI)	D(PEXPA)	D(PEXPES)	D(PEXPSCS)	D(PEXPTR)
CointEq1	0.009098	0.013497	0.091809	0.029537	0.028876
	(0.20702)	(0.02761)	(0.02028)	(0.03070)	(0.15343)
	[0.04395]	[0.48891]	[4.52766]	[0.96209]	[0.18821]
CointEq2	0.148111	0.111551	0.534246	0.171741	-0.192908
	(1.20717)	(0.16098)	(0.11824)	(0.17902)	(0.89467)
	[0.12269]	[0.69294]	[4.51825]	[0.95932]	[-0.21562]
D(PEXPA (-1))	-0.427939	0.045729	-0.011768	0.055957	0.023801
	(0.33941)	(0.04526)	(0.03324)	(0.05033)	(0.25155)
	[-1.26084]	[1.01032]	[-0.35398]	[1.11170]	[0.09462]
D(PEXPA (-2))	-0.565120	-0.075015	-0.079226	0.120800	-0.605446
	(0.34541)	(0.04606)	(0.03383)	(0.05123)	(0.25600)
	[-1.63607]	[-1.62854]	[-2.34165]	[2.35821]	[-2.36505]
D(PEXPES (-1))	-1.477939	-0.712188	-0.694254	-0.463266	0.264267
	(1.97626)	(0.26355)	(0.19357)	(0.29308)	(1.46467)

	[-0.74785]	[-2.70233]	[-3.58650]	[-1.58067]	[0.18043]
D(PEXPES (-2))	0.136452	-0.168732	-0.079274	-0.464253	3.619094
	(1.86855)	(0.24918)	(0.18302)	(0.27711)	(1.38484)
	[0.07303]	[-0.67714]	[-0.43313]	[-1.67535]	[2.61336]
D(PEXPSCS (-1))	1.805621	0.671700	0.788662	-0.028023	6.072044
	(2.66804)	(0.35580)	(0.26133)	(0.39567)	(1.97736)
	[0.67676]	[1.88787]	[3.01783]	[-0.07082]	[3.07078]
D(PEXPSCS (-2))	1.059759	-0.069507	0.383939	0.097482	-1.514175
	(2.54697)	(0.33965)	(0.24948)	(0.37772)	(1.88764)
	[0.41609]	[-0.20464]	[1.53899]	[0.25808]	[-0.80215]
D(PEXPTR (-1))	1.069114	0.259665	0.376593	-0.142191	2.304656
	(1.35471)	(0.18066)	(0.13269)	(0.20090)	(1.00401)
	[0.78918]	[1.43733]	[2.83807]	[-0.70775]	[2.29544]
D(PEXPTR (-2))	-1.052950	0.228281	0.392949	-0.134210	-0.546341
	(1.41358)	(0.18851)	(0.13846)	(0.20963)	(1.04765)
	[-0.74488]	[1.21098]	[2.83801]	[-0.64021]	[-0.52149]
C	-1.797482	0.227606	-0.471850	1.028426	-3.830603
	(4.97944)	(0.66404)	(0.48773)	(0.73846)	(3.69041)
	[-0.36098]	[0.34276]	[-0.96743]	[1.39267]	[-1.03799]
R-squared	0.533932	0.757696	0.829398	0.617181	0.829289
Adj. R-squared	0.498935	0.531545	0.670169	0.259883	0.669959
Sum sq. resids	9685.173	172.2385	92.92112	213.0077	5319.819
S.E. equation	25.41020	3.388594	2.488924	3.768357	18.83228
F-statistic	1.227439	3.350406	5.208843	1.727357	5.204847
Log likelihood	-129.2255	-68.78340	-59.52646	-71.97012	-120.2381
Akaike AIC	9.615031	5.585560	4.968431	5.798008	9.015874
Schwarz SC	10.31563	6.286159	5.669029	6.498607	9.716473
Mean dependent	1.088333	0.382667	0.002667	0.093333	-0.993333
S.D. dependent	26.76887	4.950918	4.333770	4.380280	32.78074
Determinant resid covariance (dof adj.)	1.73E+08				
Determinant resid covariance	2700943.				
Log likelihood	-477.5456				
Akaike information criterion	38.63637				
Schwarz criterion	43.40044				

Source: Extract from E-view 9.0

From the short-run result presented in Table 3 evidence showed that the adjustment term (0.148111) is statistically not significant at the 5% level, suggesting that previous year's deviation from long run equilibrium is corrected for within the current year at a convergence speed of 14.8%. The result showed a positive and significant relationship between public expenditure on economic services and social and community services and Nigeria human capital index. That is, 1 percent increases in variables in previous year led to 1.05 and 1.06 percent increase in current year's human capital index in the short run. There is a negative and insignificant relationship between public expenditure on administration and transfer and Nigeria human capital index. For example, 1 percent increases in variables in previous year led to 0.4 and 1.0 percent decrease in current year human capital index in Nigeria. The coefficient of determination (R^2) of 0.533932 showed that about 53.3 percent of variations in human capital index in Nigeria were due to changes in lagged one year of human capital index , and lagged one year public expenditure on administration, economic services, social and community service and public expenditure on transfer . The remaining 46.7 percent changes in human capital index are due to other factors not included in the model.

Table 4: VAR Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-659.6471	NA	7.55e+11	44.37648	44.65672	44.46613
1	-594.4506	99.96804*	1.14e+11*	42.43004*	44.39172*	43.05760*
2	-560.5995	38.36459	1.80e+11	42.57330	46.21641	43.73876

Source: Extract from E-view 9.0

Since the research adopted annual data set, it is important to select the appropriate lag structure for the unit root test and co-integration test. In the study, Akaike Information Criterion (AIC), Hannan and Quinn's Information Criterion (HQIC), and Schwartz Information Criterion (SBIC) were adopted to determine the optimal lag length. In all the information criteria, the lag length with the lowest SBIC, AIC and HQIC values were considered the best. From the results in Table 4, the lag length with the lowest SBIC, AIC was indicated at lag 1 (AIC = 42.43004 *and HQIC = 43.05760*) hence lag 1 was selected as the best optimal lag length to carry out the unit root test and co-integration test to determine the stationarity of the variables and existence of long run equilibrium relationship among the variables, respectively.

Discussion

The study found positive and significant relationship between public expenditure on economic service and social and community services and Nigeria human capital index. This positive and significant outcome in the long run is in conformity with theoretical expectation of Keynesians because with increasing government expenditure on education there will be skilful workforce to engineer productivity; on health it translates to a healthy workforce which is encouraged to improve productivity and thus, enhance economic growth; on agriculture it increases economic and business activities leading to growth in food security, employment generation which are prerequisite to economic development. This finding corroborates Acikgoz and Cinan (2017) which

found a positive and significant effect of education and health expenditure on economic growth. This finding contrasts Omodero (2016) which found a negative and insignificant effect of government expenditure on health on economic growth in Nigeria. However, this finding corroborates Yusuph and Nerima (2012) which found existence of a positive and significant long term impact of healthcare expenditure on gross domestic product in Uganda. This finding might be attributed to the fact that Nigeria remains amongst the 20 African countries whose total government health expenditure per capita exceeded US$44 (Piabuo and Tieguhong, 2017). With such feat, coupled with all other policies, programmes and efforts put in place by the Nigerian government on emergency planning and preparedness, disease prevention and control and promotion of health of Nigerian citizens; it is not surprising that government expenditure on health had positive and significant impact on economic growth in Nigeria. This finding is inconsistent with Shakirat (2018) and Asmau (2020) which found a negative and significant effect of government agriculture expenditure on economic growth in Nigeria. Perhaps, this outcome might be attributed to the diversification efforts of the government which has increased government funding in the agricultural sector and the various agricultural programmes and initiatives embarked by the government in recent years. The study accepted the null hypotheses four and five that there is no significant impact of government expenditure on pensions and gratuities, public debt servicing on economic growth in Nigeria. Ezema (2019) found that pension and gratuities expenditure had positive and significant effect on economic growth in Nigeria; our finding here is in contrast to this. This output might be attributed to delays in pension and gratuities payment as well as existence of accumulated pension arrears, which has resulted in decrease in aggregate demand, decrease in consumption and decrease in economic activities thereby leading to decrease in Nigerian economic growth. The negative affect of public expenditure on transfer and administration contradict our a-priori expectations, the negative findings confirm the findings of Sasmal and Sasmal (2017) which found a negative and insignificant impact of public debt servicing on economic growth.

CONCLUSION AND RECOMMENDATIONS

The study investigates the effect of public expenditure on economic development of Nigeria and concludes that in the long run, total public expenditure on social services, economic and community services helps strongly to improve economic development in Nigeria while public expenditure on administration and transfer deterioration in the economic development of Nigeria.

i. The study encourages the government to continue to increase it's funding on economic services, social and community services in order to increase the level of productivity and welfare of workforce enhance food security, employment generation and economic and business activities in the agro-allied sector. All these will help improve development of the economy.

ii. Nigerian government should limit its expenditure on administration and transfers and devote much in on productive expenditures. The results of this study have provided further

empirical evidence on the impact of government expenditure on critical sectors of the economy such as education, health, agriculture which are component of economic, social and community services.

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