EFFECT OF DISAGGREGATED GOVERNMENT EXPENDITURES ON HUMAN DEVELOPMENT IN NIGERIA

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ABSTRACT: *This study empirically investigated the effect of government expenditure on human development in Nigeria from 1981 to 2019. Government expenditure is proxied with government capital and recurrent expenditure on health, government capital and recurrent expenditure on education and government capital and recurrent expenditure on other social and community services while human development is proxied with human development index. The study employed ex-post facto research design and secondary data were utilized. The Secondary data were obtained from Central Bank Statistical bulletin and United Nations development programme report of various years. The study tested for stationarity, and it was found that the variables are stationary at mixed order. Based on this, the study adopted Autoregressive Distributed Lag Model as the estimation technique. The study found that government capital and recurrent expenditure on health has weak and insignificant effect on human development. The study also revealed that government capital and recurrent expenditure on education has significant positive effect on human development in Nigeria. The study likewise revealed that government capital and recurrent expenditure on other social and community services has significant positive effect on human development in Nigeria. The study concluded that government expenditure through investment in education and other social and community services influence human capital development in Nigeria positively. Thus, the study recommended amongst others that the Nigeria government should increase funding of the education sector to meet education, scientific and cultural organization minimum requirement. Government should invest more on other social and community services.*

KEYWORDS: Government Expenditure Capital Expenditure, Recurrent Expenditure and Other Social Expenditure, Human Capital Development

INTRODUCTION

Government expenditure has various functions and purposes which include distribution role, stabilization function, developmental role and has greater influence on human development in every nation, if it is prioritized and implemented effectively and efficiently. It has the objectives of providing the citizens with the chance to realize their full potentials through education, training, and work toward building an inclusive and fair society, and strong competitive economy (Lin, 1994).

Human development is broadly viewed as a process of expanding the people's choice and opportunity open to people in order to promote and improve the standard of living of the entire citizenry. In real sense, human development should actually enhance the availability and expand the life sustaining needs that including decent living, long life, promoting standard of living, sustaining environment that ensure the ultimate improvement of human well-being by providing jobs, better education and other basic human values (Goulet,1991; Tadaro & Smith, 2011). This suggests that government expenditure should translate into human development by impacting significantly in enhancing the human social standard of living condition to satisfy the fiscal social objectives set in the national budget.

Disaggregated and aggregated approach has been subjected to a debate and to the researcher, the issue may still remain open to debate. Disaggregated study of government expenditure has become imperative to examine the impact of government expenditures on human development. Effective ways of attaining human development will be explored and there is the need to analyze government expenditures in disaggregated form in order to evaluate the outcome of government efforts toward human development. This will further assist in a better policy initiative.

In Nigeria, government at the Federal, and State levels have been playing prominent roles toward improving human development to the extent that one should expect positive correlation between progress in expenditure in these sector and human development expenditure (Edeme, 2014). However, human development pace has been so slow despite the rapid growth in public spending on different government sector and yet the growth of human development is rather unstable and erratic (Edeme, 2014). Government expenditure has greater role to play (Sen, 2000, Seers, 1989, Anand & Ravallion, 2003). It means that government is necessary and by no means sufficient condition for prosperity (Verder & Gallaway, 1998). In this regard, disaggregated government expenditure that relate and make-up of various component of human development should be effectively and efficiently manage to add value to human progress and development, and reflect true picture in the improvement of social standard condition of living of the Nigeria People.

Studies (Oluwatobi & Ogunrinola, 2011; Nnanna, Staley & Ijeoma, 2017; Erasumus, 2021) among others adopted human capital development approaches that focused only more on the impact of education and health government expenditure as an independent variables on human development as a major determinants of human development. However, human development is a relative term to the researcher and therefore encompasses other components such as technology in terms of educational learning and quality health services delivery, roads, energy, housing, water resources, agriculture and rural development etc in which in this research is referred to as supportive human development government expenditure. Therefore, this study extended the independent variables by incorporating other social and community services

expenditures. There is also contextual research domain issue where empirical studies that had direct link and established direct relationship between government expenditure and human development in Nigeria are not many (Edeme, 2014).

The primary objective of this study is to examine the effect of disaggregated government expenditures on human development that relate to fiscal policy social objective of the Nigerian government. However, the specific objectives of this research are to:

i. investigate the effect of Government capital health expenditures on human development in Nigeria;

ii. investigate the effect of Government recurrent health expenditures on human development in Nigeria;

iii. examine the effect of Government capital education expenditures on human development in Nigeria;

iv. examine the effect of Government recurrent education expenditures on human development in Nigeria;

v. assess the effect of Government capital other social and community services expenditure on human development in Nigeria; and

vi. assess the effect of Government recurrent other social and community services expenditure on human development in Nigeria.

LITERATURE REVIEW

Disaggregated Government Expenditure

Disaggregated government expenditures are expenditures that are classified, categorized, sub-categorized into major functional component group and further breakdown into related components units for easy allocation, application or operation, management and control, and easy performance evaluation in budgetary fiscal policy operation (Aluthge, Jibir & Abdu, 2021). Disaggregation of government expenditures may differ from Country to Country depending on the area of application (Ketema, 2006).

The use of disaggregated approach in which the study of government expenditure is divided and breakdown expenditure into major components of government expenditures is far rewarding, help in identifying and isolating government expenditure to increase the understanding of public government expenditure importance and its impact, and emphasize that it is not fruitful to seek explanation on total government expenditure (Musgrave, 1969; Mainoma & Aruwa, 2015).

Human Development

Human development is the development of the society and all its institutions (Fergany, 2003). It increases individuals' abilities and productivities to work (Sen & Karmakar, 2007). Human development is considered as the engine of economic growth as it improves the economy's strength and status by expanding the standard of living of the people, increases the choices and

maximizes the welfare of the society which is the prime objective of any government (Ali, Raza & Yousuf, 2012). Development encompasses both social conditions and economic conditions. Suescun (2007) emphasized that the need to focus attention on human development aspect is the role of government. Human development in the context of (health care, elementary education, sanitation, fresh water usage, adequate shelter, and clean environment) is the ultimate goal of the government.

Government Expenditures

Based on the Central and State government budget formation, government expenditure comprises three broad categories, namely: non-development expenditure, development expenditure, and loan and advances. Non-development expenditures include; defence services, boarder roads, interest payments, fiscal and administrative services, organs of states, pension and other retirement benefits, relief on account of natural calamities (Non-plan expenditures), technical and economic cooperation with other countries, compensation and assignment to local bodies, food subsidy , and social security and welfare (Non-plan expenditure) (Goswami & Bezbaruah, 2011). On the other hand, development expenditures component comprise expenditure on railways, post and communications, social and community services, general economic services, industries and minerals less departmental commercial undertakings, fertilizer subsidy, power, irrigation and flood control, transport and communications, and public works(Goswami & Bezbaruah, 2011). Out of these expenditure items, the social sector expenditures include money spend on social and community services, and rural development (Dev & Mooij, 2002). However, a working definition of government expenditure to the researcher is that government expenditures are all the necessary expenses incurred by all the constituted authorities with mandates in different tiers of government to achieve social and economic or socio-economic objectives by means of providing essential public goods and services in the course of pursuing social equity and justice, attainment of economic growth and development, social wellbeing and progress of the ordinary citizens..

Empirical Review

Capital health expenditure is one of the public expenditures classified under government social and community services expenditure in Nigeria that served as one of the critical determinant of human development. Primary purpose of government health expenditure is to improve the health status by making it accessible for all, health status is governed and measured by the level of investment in the health care (Aranda, 2010). The means by which government can improve healthcare system delivery is by raising government healthcare infrastructures (Berger & Messer, 2002). This is capital intensive and therefore involves huge capital health expenditure allocation in nature. Therefore, health care expenditures and improvement of health care status are means to an end. The means here are expenditures on health while the end is the quality of the health care delivery (output improvement), human development and in turn national growth and development. Health expenditure is a necessity toward achieving sustainable human development (Edeme & Nkalu, 2016).

A disaggregated study investigated by Edeme and Nkalu (2019) examined the effect of government expenditure on human development revealed that government capital education expenditure has positive effect on human development in Nigeria. However, an empirical study conducted by Gugong (2017) shown that government capital education expenditure has insignificant impact on human development, while study investigated by Orji, Nwokoye and

Udu (2017) on disaggregated government expenditure and human development confirmed that government capital education expenditure has negative significant impact on human development in Nigeria. Similarly, a research study carried out by Edeme and Nkalu (2016) found that government capital education expenditure also has negative effect on human development. This also discovered that capital education expenditure crowd-in human development in Nigeria. Although there was functional relationship established between government capital education expenditure and human development in a study examined by Edeme (2014), government capital education expenditure has negative impact on human development. According to Ehimare, Ogaga-Oghene and Obarisiagbon (2014) empirical study, government capital education expenditure shown insignificant effect on human development. The positive effect of capital education expenditure on human development has also been confirmed by previous similar related empirical studies (Chakraborty, 2003). However, increase in recurrent expenditures may cause delay in capital flow for sustainable human development. The positive effect of capital expenditure is mitigated by increase in recurrent expenditure (Diamond, 1990; Devarajan, Swaroop & Heng-Fu, 1996; Edeme & Nkalu, 2016).

A study investigated by Emere (2018) established that social and community services expenditure has shown the existence of a significant relationship with human development, however, this study aggregated the expenditure components (health, education and other social and community services) together under social and community services expenditure and failed to disaggregate into capital and recurrent and furthermore sub-components such as capital health, education and other social and community services expenditures as well as recurrent health, education and other social and community services expenditures. There has been no particular empirical that confirm the existence of a direct relationship between other social and community services expenditure and human development. Therefore this is still open to debate empirically.

Government health expenditure on human development index can be distinguished into (i) Expenditure as an investment that adds strength and economic resilience in the future. (ii) Expenditure that directly provide prosperity and joy for the community. (iii) Savings expenditure that will come, and (iv) Expenditures that provides more job opportunities and wider purchasing power Patta (2012). Jhingan (2002) argues that health facilities and services, generally defined all expenditures that affect life expectancy, strength and stamina of energy, and vitality of people.

Empirical studies on government expenditure and human development disaggregated to some to extent at detail level by Orji, Nwokoye and Udu (2017) shows that government recurrent health expenditure has positive effect on human development. Similar study by Edeme (2014) has also confirmed that government recurrent health expenditure has direct positive effect on human development. However, disaggregated empirical studies examined on government expenditure and human development by Edeme & Nkalu, (2019) revealed that government recurrent health expenditure has weak and insignificant effect on human development in Nigeria, while an empirically study investigated on the crowd-in and crowd-out effect of government expenditure on human capital development by Edeme and Nkalu (2016) indicate that government recurrent health has positive impact on human development and also found that recurrent health expenditure effect was insignificant and crowd-out human development in Nigeria.

Edeme and Imide (2014) established a relationship between health expenditure and human development through an empirical analysis of the distributional impact of government expenditure patterns on human development in Nigeria which revealed that relative impact of sectorial changes in government spending on human development varied and the impact of sectorial changes in health and other spending also varied significantly with impact on human development. Health expenditure effect was also found to have positive marginal impact on human development from empirical on the distributional impact of government expenditure on human development in Nigeria (Edeme, Nkalu & Ifelunini, 2017). Government recurrent health expenditure has found to have positive effect directly on HDI both in the short and long-run, however, it was insignificant to some extent (Orji, Nwokoye & Udu, 2017).

This indicates that only empirical by Edeme (2014) and Orji, Nwokoye and Udu (2017) confirmed that government recurrent health expenditure has effect on human development. The few studies shown that public recurrent expenditure have effect or no effect on human development representing dearth of literatures is the motivation that necessitated this research study identified earlier.

Oluwakemi, Ayodejio and Olamide (2018) noted that government spending on health, education, social and community services, agriculture, transfer services, research and development foster human development. Therefore, based on Oluwakemi et al (2018) assertion above, social and community services expenditure is one of the government spending that enhance human development in Nigeria among others. In their study, Social and community services expenditure was regressed with the value of human development index shown to have effect on human development.

Haque and Khan (2019) examined the role of oil production and government expenditure in improving human development index. Time series data from 1990-2016 with 100m barrel were used and employed OLS regression model. The result indicates that oil revenue from export is a driver of human development; education expenditure, housing investment, community services and social security expenditure have positive significant effect on human development. While health expenditure was found to have inverse relationship effect on human development. However, economic services, public services and defense expenditure have no any significant effect on human development. The study have two years' time lag and government expenditures employed were not disaggregated into capital and recurrent expenditure. The real effect of government expenditures on human development improvement in the area of education, health and social and community expenditure services can be determined by disaggregating both recurrent and capital expenditures. Both recurrent and capital expenditures are equally important.

On a contrary, the study therefore only disaggregated government expenditure at a low level of disaggregation on the basis of sub-component of functional government expenditure. It should have been break down further in to detail unit of each of the sub-components of the expenditure on the basis of class (capital and recurrent) in order to have a more robust findings and results of the study as well as significant effect of these results and findings. It was conducted at a very low level of disaggregation as a total of each of the sub-component.

Omodero (2019) assessed the impact of government general spending on human development in Nigeria from 2003-2017. The study applied multiple liner regression model and OLS method. The results showed that government recurrent expenditure has significant positive

effect on human development index (HDI). However, government capital expenditure and inflation have insignificant negative effect on HDI, while corruption has no impact on HDI. The study failed disaggregate government expenditure further on the basis of capital and recurrent.

Ndugbu, Osuka and Anthony (2018) examined public sector investments and human capital development in Nigeria from 1981-2016. OLS multiple regression, Johansen co-integration, vector error correction model (VECM) and Pair wise Granger Causality were used in the data analysis. Variance Influence analysis test was employed in the diagnostic test. The findings of the study indicated that Johansen co-integration revealed long-run relationship between administrative, economic, social and community services, and transfer expenditure, and human development. VECM revealed negative coefficient and insignificant t-statistics at 5% significance level. There was no causal relationship established between expenditures and human development.

Unah (2017) examined promoting human development index through health and education expenditures in Ebonyi State local government council from 1999-2012. Ex post factor research design and multiple regression model was employed in the data analysis. HDI as a dependent variable was regressed with government health and education expenditures as independent variables. The findings indicate that both education and health expenditures found to have significant positive effect with human development index in Ebonyi. The study recommended that there is the need to increase the funding in the area of health and education to enhance human development. This has 4years' time lag and failed to disaggregate government expenditure in to recurrent and capital expenditure to be considered as independent variables.

Theoretical Framework

There are many theories of government expenditure that relate to human development in public finance, these includes; Dalton theory of maximum social advantage, Wagner's theory, Keneysian theory, Musgrave theory, Public goods approach, Peacko and Wiseman, Pigous condition and Bowen's theory. The theoretical framework that form the basis of this research study in terms of the impact of disaggregated government expenditure on human development is built upon the concept of government expenditure theory supported further by the government-led growth also known as the so-called demand-led growth theory and human capital theory.

Therefore, the two main theories underpinning this research study are government expenditure theory supported by government-let growth and human capital development theory.

METHODOLOGY

The study seeks to examine the effect of disaggregated government expenditures on human development in Nigeria. The research design adopted for the study is ex-post facto. Ex-post facto research design seeks to examine the possible relationship between existing conditions, situation and contributing factors (Kerlinger & Rint; 1986: Simon & Goes, 2013).

In this Section, the population of the study comprises the capital and recurrent expenditure of the Federal Government of Nigeria. The population of the study covers fiscal policy operational expenditures of Federal Government Ministries in Nigeria from 1981-2019. The justification for the choice of this period in the study was that convenience threshold sample of more than 30 years' time period for the purpose of robustness of the data analysis was considered. This is to ensure that meaningful results and findings are captured from the long trend patterns and properties of the time series from data analysis in order to support the statistical significance of the inferences in the study since the study focused on confirmatory rather than exploratory data analysis. It has robust and reliable data for the study and the outcome of the data analysis is leveraged to determine the relationship between the effect of disaggregated government expenditures and human development in Nigeria for future effective decision making in the public sector.

The sample and sampling technique used in this study is convenience sampling due to the nature of specific data required from Federal Government of Nigeria budgetary expenditures otherwise known as budgetary fiscal policy expenditures on the health sector in respect of Federal Ministry of Health, education sector in respect of Federal Ministry of Education and Federal Ministry of Finance that has control on other social and community services expenditures in the area of social investment and community services such as subsidies re-investment and empowerment programme (SURE-P) expenditures,

The data for this study is secondary data that spanned from 1981-2019. The relevant data were obtained from Central Bank of Nigeria (CBN), publication that include various annual reports and Statistical Bulletin, report of National Bureau of Statistics, and publications of World Bank, UNDP report and Global Data Lab (GDL), particularly, publication on human development index.

For the purpose of this research and to investigate the effect of disaggregated government expenditures on human development, time series data analysis was leveraged while adopting Auto Regressive Distributed Lag (ARDL) model. As an econometric technique, the model analyzes the long-run and short-run relationship between dependent and independent variables and allows for the estimate of co-integration relationship. ARDL Model was adopted due to the time series data employed for the study.

The dependent variable for this study is made up of human development index (HDI) value determined based on the three (3) major dimensional components of human development that include, (1) Life expectancy-: This is measured based on longevity or age or survival (Health), (2) Education-: This is measure based on the average level of adult literacy rate (Knowledge or education) and (3) Standard of living-: This is measure based on per capital income (GNI) (UNDP, 1990). Human development index becomes an important variable in measuring the success of development of a country or region (Nujum, Plyriadi & Nur, 2013).

HDI value is the proxy used as a starting point for human development approach measurement. The purpose of government expenditure is to improve human live and standard of living condition of the people, not just to enhance the level of income in terms of per capital. But to also expand the range of things widely person can be and do in such a manner that one can be healthy and well nourished, knowledgeable and to the extent of participating in community life. According to innocent, Job, Augustine and Christoper (2017), development is about removing the obstacles to what a person can do in life, obstacles such as lack of income, illiteracy, ill health, lack of access to resources, or lack of civil and political freedom. The study would therefore use the value of human development index (HDI) as a secondary data which is the dependable variable and the justification for the choice of value of human development index was because it integrated the three (3) composites component of human development that represented the average of three indices: income per capital (or GDP) index, life expectancy index and education index developed and adopted by United Nation as a standard for fair measurement of human development outcomes or human progress.

For the purpose of this study, the independent variables consist of government capital and recurrent expenditures on education, health, and other Social and community services limited only to expenditure on the these three variables.

The estimation techniques for this study will be through the use of Ordinary Least Square (OLS) and auto-regression distributed lag ARDL model to estimate the coefficient of both the long-run equilibrium and short-run dynamic of ARDL using Error Correction Model (ECM).

The functional forms of the model that relate to this study are expressed based on the econometric and mathematical relationship expressed above. A separate decomposition is given by the following expression adopted with modification from (Edeme, 2014; Edeme & Nkalu, 2016; Innocent, Augustine & Christopher, 2017) below.

HDI = f(CHLTEX, RHLTEX, CEDUEX, REDUEX, COSCSEX, ROSCSEX)------------------ (3.2)

$Log(HDI) = \beta_0 + \beta_1 Log(CHLTEX) + \beta_2 Log(RHLTEX) + \beta_3 Log(CEDUEX) + \beta_4 Log(REDUEX) + \beta_5 Log(COSCSEX) + \beta_6 Log(ROSCSEX) + \varepsilon$ --(3.3)

The ARDL model of this study is specified as:

$$\Delta \ln HDI_{t-i} = \alpha_0 + \sum_{g=1}^{k-1} a_{1i} \Delta \ln HDI_{t-i} + \sum_{h=1}^{k-1} a_{2i} \Delta \ln CHLTEX_{t-i} + \sum_{i=1}^{k-1} a_{3i} \Delta \ln RHLTEX_{t-i}$$

$$+ \sum_{j=1}^{k-1} a_{4i} \Delta \ln CEDUEX_{t-i}$$

$$+ \sum_{k=1}^{k-1} a_{5i} \Delta \ln REDUEX_{t-i} + \sum_{l=1}^{k-1} a_{6i} \Delta \ln COSCSEX_{t-i}$$

$$+ \sum_{j=1}^{k-1} a_{7i} \Delta \ln ROSCSEX_{t-i} + a_8 \ln HDI_{t-i} + a_9 \ln CHLTEX_{t-i} + a_{10} \ln RHLTEX_{t-i}$$

$$+ a_{11} \ln CEDUEX_{t-i} + a_{12} \ln REDUEX_{t-i} + a_{13} \ln COSCSEX_{t-i}$$

$$+ a_{14} \ln ROSCSEX_{t-i} + \mu_t$$

α_1, α_2, α_3, α_4, α_5, α_6, and α_7 examine the short run dynamic relationship while α_8, α_9, α_{10}, α_{11}, α_{12}, α_{13}, and α_{14} investigate the long-run relationship between dependent variable and independent variables. Since co-integration was established among the variables, the study proceeded to examine the long run effect and the short run dynamics using the Error Correction Term (ECT) equation as follows;

$$\Delta lnHDI_{t-i} = \alpha_0 + \sum_{g=1}^{k-1} a_{1i} \Delta lnHDI_{t-i} + \sum_{h=1}^{k-1} a_{2i} \Delta lnCHLTEX_{t-i} +$$
$$\sum_{i=1}^{k-1} a_{3i} \Delta lnRHLTEX_{t-i} + \sum_{j=1}^{k-1} a_{4i} \Delta lnCEDUEX_{t-i} +$$
$$\sum_{k=1}^{k-1} a_{5i} \Delta lnREDUEX_{t-i} + \sum_{l=1}^{k-1} a_{6i} \Delta lnCOSCSEX_{t-i} + \sum_{j=1}^{k-1} a_{7i} \Delta lnROSCSEX_{t-i} + ECT_{t-1} +$$
$$\varepsilon_t \text{---} (3.6) \text{ Where;}$$

lnHDI = Log of Human Development Index

lnCHLTEX = Log of Capital Health Expenditures

lnRHLTEX = Log of Recurrent Health Expenditures

lnCEDUEX = Log of Capital Education Expenditure

lnREDUEX =Log of Recurrent Education Expenditure

lnCOSCSEX = Log of Capital Other Social and Community Services Expenditure

lnROSCSEX = Log of Recurrent Other Social and Community Services Expenditure

β_0=Constant, which is the assumption that the intercept and the slope terms of the model has constant coefficient.

α_1- α_{14}= Parameter to be estimated which is the average amount the dependent variable increases when the independent variables increases by one (1) unit and other independent variables are held constant.

Δ = Difference Operator

Σ = summation

ECT_{t-1} = lagged Error Correction Term and

ε_t =Error Term

U_t =Error terms that assumed to satisfy the Standard Ordinary Least Square (OLS) assumption.

RESULT AND DISCUSSION

Table 1: Descriptive Statistics

Statistics	Mean	Max	Min	Std	Skewness	Kurtosis	JB	Prob	Obs (N)
HDI	0.446	0.535	0.38	0.058	0.317	1.334	5.16	0.075	39
CHLTEX	21.864	97.2	0.05	18.426	1.399	4.064	14.566	0.000	39
RHLTEX	73.586	388.37	0.04	63.117	1.386	3.887	13.768	0.001	39
CEDUEX	21.261	94.2	0.14	15.649	1.254	3.832	11.35	0.003	39
REDUEX	123.309	593.33	0.16	122.797	1.253	3.398	10.466	0.005	39
COSCSEX	15.058	86.9	0.27	12.733	1.83	5.481	31.773	0.000	39
ROSCSEX	79.161	411.86	0.03	70.182	1.24	3.055	10.008	0.006	39

Source: Eview Output, 2021.

Table 4.1 above shows the minimum value of human development index to be 0.38 and the maximum value to be 0.535. This implies that the highest value of human development index within the periods of study is 0.535. The mean value of human development index is 0.446. This value represents the average value of human development index in Nigeria. The standard deviation figure of 0.058 is less than the mean value of 0.446; this indicates that the data are not widely dispersed from the mean.

The implication of this in the study is that since the SD is less than the mean value which indicate that the dataset of the variables are not widely dispersed, it means that there was existing correlations or relationship among the dataset of the variables of the study because the coefficient of variation explained that the variations in the datasets of the variables is not too far from their averages. It also signifies that the dataset has significance meaning and reliability. Therefore, this shows that government expenditures affect human development.

Capital health expenditures show a minimum value of ₦0.05bn and maximum value of ₦97.2bn respectively. The average value of capital health expenditures for the periods under investigation is ₦21.864bn. The standard deviation of capital health expenditures is ₦18.426bn. The standard deviation figure of ₦18.426bn is less than the mean value of ₦21.864bn; this indicates that the data are not widely dispersed from the mean. As regards recurrent health expenditures, the table shows a minimum and maximum of ₦0.04bn and ₦388.37bn respectively. The mean value of recurrent health expenditures is ₦73.586bn. The standard deviation of recurrent health expenditures is ₦63.117bn.

With respect to capital education expenditure, it shows a minimum of ₦0.14bn and maximum of ₦94.2bn. The average value of capital education expenditure is ₦21.261bn. The standard deviation of capital education expenditure is ₦15.649bn. Similarly, for recurrent education expenditure, there is minimum of ₦0.16bn and maximum of ₦593.33bn respectively. The mean value of recurrent education expenditure is ₦123.309bn.

With respect to capital other social and community services expenditure, it shows a minimum value of ₦0.27bn and maximum of ₦86.9bn. The average values of capital other social and community services expenditure is ₦15.058bn. The standard deviation of capital other social and community services expenditure is ₦12.733bn. Likewise, for recurrent other social and

community services expenditure, there is minimum of ₦0.03bn and maximum of ₦411.86bn respectively. The mean value of recurrent other social and community services expenditure is ₦79.161bn.

The Jarque-Bera probability value of capital health expenditures, recurrent health expenditures, capital education expenditure, recurrent education expenditure, capital other social and community services expenditure, recurrent other social and community services expenditure are 0.000, 0.001, 0.003, 0.005 and 0.000 respectively, these values are lesser than 0.05, showing that they are not normally distributed. While human development index has Jarque-Bera probability value of 0.07, this indicates that human development index is normally distributed. Though, normality of data does not affect the results of the inferential statistics.

Table 2: Correlation Analysis

CP	HDI	CHLTEX	RHLTEX	CEDUEX	REDUEX	COSCSEX	ROSCSEX
HDI	1.000000						
CHLTEX	0.607904	1.000000					
	0.0000	-----					
RHLTEX	0.653714	0.736074	1.000000				
	0.0000	0.0000	-----				
CEDUEX	0.621636	0.759823	0.723010	1.000000			
	0.0000	0.0000	0.0000	-----			
REDUEX	0.675468	0.742829	0.687912	0.730016	1.000000		
	0.0000	0.0000	0.0000	0.0000	-----		
COSCSEX	0.704706	0.585490	0.771055	0.737434	0.708267	1.000000	
	0.0000	0.0001	0.0000	0.0000	0.0000	-----	
ROSCSEX	0.799703	0.658001	0.648916	0.752551	0.758005	0.604973	1.000000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-----

Source: *Eview Output, 2021.*

From Table 2, it can be observed that capital health expenditures, recurrent health expenditures, capital education expenditure, recurrent education expenditure, capital other social and community services expenditure, recurrent other social and community services expenditure have positive significant relationship with human development index because their p value is less than 0.05 significance level.

Table 2 also presents the correlation matrix of the independent variables. It is observed that the variables correlate fairly well (between 0.77 and 0.58). The common rule of thumb is that if the correlation coefficient between two regressors is greater than 0.8, then multicollinearity is a serious issue. There is no correlation coefficient greater than 0.8. This indicates that multicollinearity is not an issue in the model valuations, hence there is no problem of multicollinearity of data (Neter, Kutner, Nachtsheim & Wasserman, 1996; Cassey & Anderson, 1999; Wallace & Naser, 2005).

Unit Root Test

Table 3: Augmented Dickey-Fuller Unit Root Test

LEVEL			FIRST DIFFERENCE			
Variables	ADF Test Statistic	Critical Value @ 5%	ADF Test Statistic	Critical Value @ 5%	Max Lag	Order of Integration
Log(HDI)	-1.773020	-3.540328	-9.569178	-3.540328	3	1(1)
Log(CHLTEX)	-1.846469	-3.533083	-6.206636	-3.536601	3	1(1)
Log(RHLTEX)	-3.694322	-3.533083			3	1(0)
Log(CEDUEX)	-1.928462	-3.536601	-8.269525	-3.536601	3	1(1)
Log(REDUEX)	-3.094884	-3.533083	-5.835593	-3.548490	3	1(1)
Log(COSCSEX)	-4.723313	-3.533083			3	1(0)
Log(ROSCSEX)	-3.559765	-3.533083			3	1(0)

Source: E-view 10 Output, 2021.

At level, HDI, CHLTEX, CEDUEX and REDUEX were not stationary because their absolute value of the ADF test statistic of -1.773020, -1.846469, -1.928462 and -3.094884 are less than the critical values of -3.540328, -3.533083, -3.536601 and -3.533083 at 5% level of significance respectively. After first difference, HDI, CHLTEX, CEDUEX and REDUEX became stationary as their ADF test statistics values of -9.569178, -6.206636, -8.269525 and -5.835593 became greater than their critical value of -3.540328, -3.536601, -3.536601 and-3.548490 at 5% level of significance. It is also observed that RHLTEX, COSCSEX and ROSCSEX is stationary at level because the ADF test statistics of -3.694322, -4.723313 and -3.559765 are more than their critical value of -3.533083, -3.533083 and -3.533083 at 5% level of significance.

Lag Order Selection Criteria

Table .4: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-171.2772	NA	4.72e-05	9.904291	10.21220	10.01176
1	-36.62919	209.4525*	4.27e-07*	5.146066	7.609318*	6.005807*
2	9.363722	53.65840	6.99e-07	5.313127	9.931723	6.925141
3	71.29915	48.17200	9.41e-07	4.594492*	11.36843	6.958779

Source: *E-view 10 Output, 2021.*

Table 4. shows that Akaike Information Criterion (AIC) has the lowest value of 4.594492 at lag 3. Therefore, lag 3 is selected as the maximum lag.

ARDL Co-integration Test (Bound Test)

Table 5: ARDL Co-integration Test Results

Test Statistic	Value	Signif.	I(0)	I(1)
F-Statistics	1.239597	10%	1.99	2.94
K	6	5%	2.27	3.28
		1%	2.88	3.99

Source*: E-view 10 Output, 2021.*

Tables 5 presents the result of the ARDL bound test approach to Co-integration. The result revealed that there is no presence of co-integration among the variables. The f-statistics value of 1.239597 is less than the lower bound value of 2.27 and upper bound values of 3.28 at 5% level of significance. Hence, there is a sufficient proof of the absent of a long-run equilibrium relationship among CHLTEX, RHLTEX, CEDUEX, REDUEX, COSCSEX, ROSCSEX and HDI in Nigeria between 1981 and 2019. The result thus shows that CHLTEX, RHLTEX, CEDUEX, REDUEX, COSCSEX and ROSCSEX have no long run relationship with HDI in Nigeria within the period under study.

ARDL Error Correction Regression

Table 6: ARDL Error Correction Regression
Dependent Variable: DLOG(HDI)

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(HDI(-1))	-0.099886	0.158542	-0.630028	0.5462
DLOG(HDI(-2))	-0.627031	0.148397	-4.225362	0.0029
DLOG(CHLTEX)	0.006335	0.017247	0.367297	0.7229
DLOG(CHLTEX(-1))	-0.039470	0.025745	-1.533133	0.1638
DLOG(CHLTEX(-2))	0.027879	0.016421	1.697822	0.1280
DLOG(RHLTEX)	0.047668	0.026574	1.793798	0.1106
DLOG(RHLTEX(-1))	-0.014668	0.027856	-0.526546	0.6128
DLOG(RHLTEX(-2))	-0.015466	0.031079	-0.497617	0.6321
DLOG(CEDUEX)	0.119582	0.017725	6.746516	0.0000
DLOG(CEDUEX(-1))	0.044296	0.025972	1.705531	0.1265
DLOG(CEDUEX(-2))	-0.017406	0.017780	-0.978962	0.3563
DLOG(REDUEX)	0.048834	0.021394	2.282637	0.0519
DLOG(REDUEX(-1))	0.037772	0.025814	1.463228	0.1816
DLOG(REDUEX(-2))	0.032553	0.031652	1.028445	0.3338
DLOG(COSCSEX)	0.021134	0.008988	2.351277	0.0466
DLOG(COSCSEX(-1))	-0.037243	0.012216	-3.048581	0.0159
DLOG(COSCSEX(-2))	-0.012923	0.009153	-1.411887	0.1957
DLOG(ROSCSEX)	0.034182	0.012657	2.700644	0.0270
DLOG(ROSCSEX(-1))	-0.042680	0.013791	-3.094869	0.0148
DLOG(ROSCSEX(-2))	-0.039258	0.014851	-2.643340	0.0296
Ecm(-1)	-0.327822	0.076024	-4.312071	0.0026

R-squared	0.823451	Mean dependent var	0.009140
Adjusted R-squared	0.588053	S.D. dependent var	0.044268
S.E. of regression	0.028413	Akaike info criterion	-3.992765
Sum squared resid	0.012109	Schwarz criterion	-3.069045
Log likelihood	92.86976	Hannan-Quinn criter.	-3.670362
Durbin-Watson stat	1.872470		

Source: *E-view 10 Output, 2021.*

Post Estimation Diagnostics Tests

Table 4.: Post Estimation Diagnostics Tests

Test	P-Value
Heteroskedasticity Test	0.3712
Serial Correlation LM Test	0.1214
JB Normality Test	0.1637

Source: *Author's Computation from E-view 10 Results, 2021.*

The result as presented in the above table revealed that there were no evidences of heteroskedasticity, serial correlation, and the data are normally distributed in the estimated ARDL-ECM model have the *p-values* of 0.3712, 0.1214 and 0.1637 respectively. They were found to be greater than 0.05 level of significance.

Robustness Test

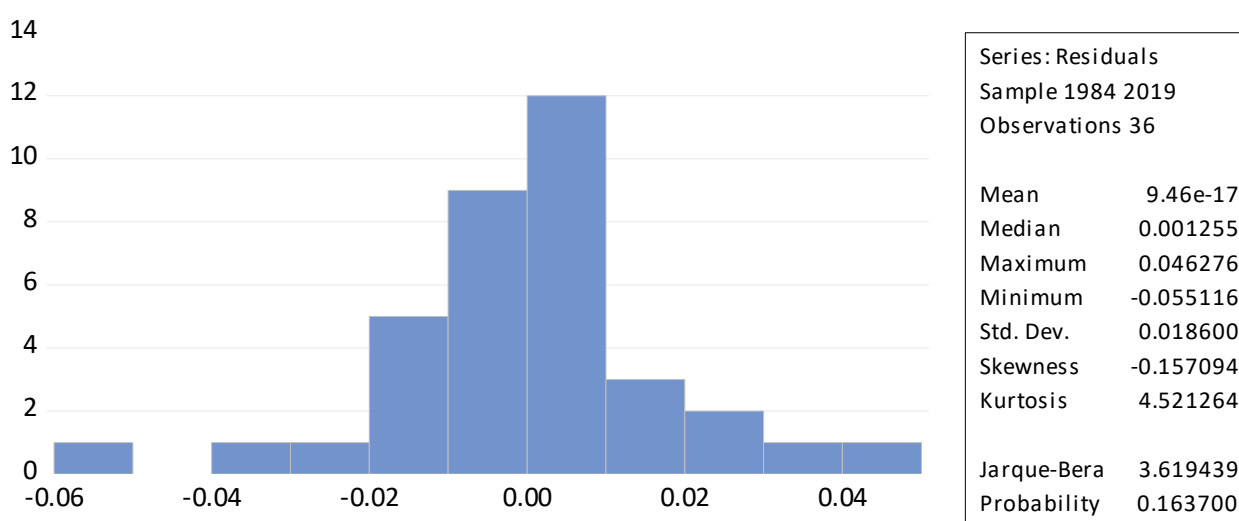| Series: Residuals	
Sample 1984 2019	
Observations 36	
Mean	9.46e-17
Median	0.001255
Maximum	0.046276
Minimum	-0.055116
Std. Dev.	0.018600
Skewness	-0.157094
Kurtosis	4.521264
Jarque-Bera	3.619439
Probability	0.163700

Figure 2: Histogram and Jarque-Bera Residuals of Normality Test

The Jarque-Bera in figure 2 above which was already explained in table 4. is 3.6194 and the p-value is 0.1637. Since the p-value is higher than 0.05 level of significant, it is an indication that that regression of the data in the model of the study is normally distributed and has fulfilled the normality assumption.

Cusum Stability Tests
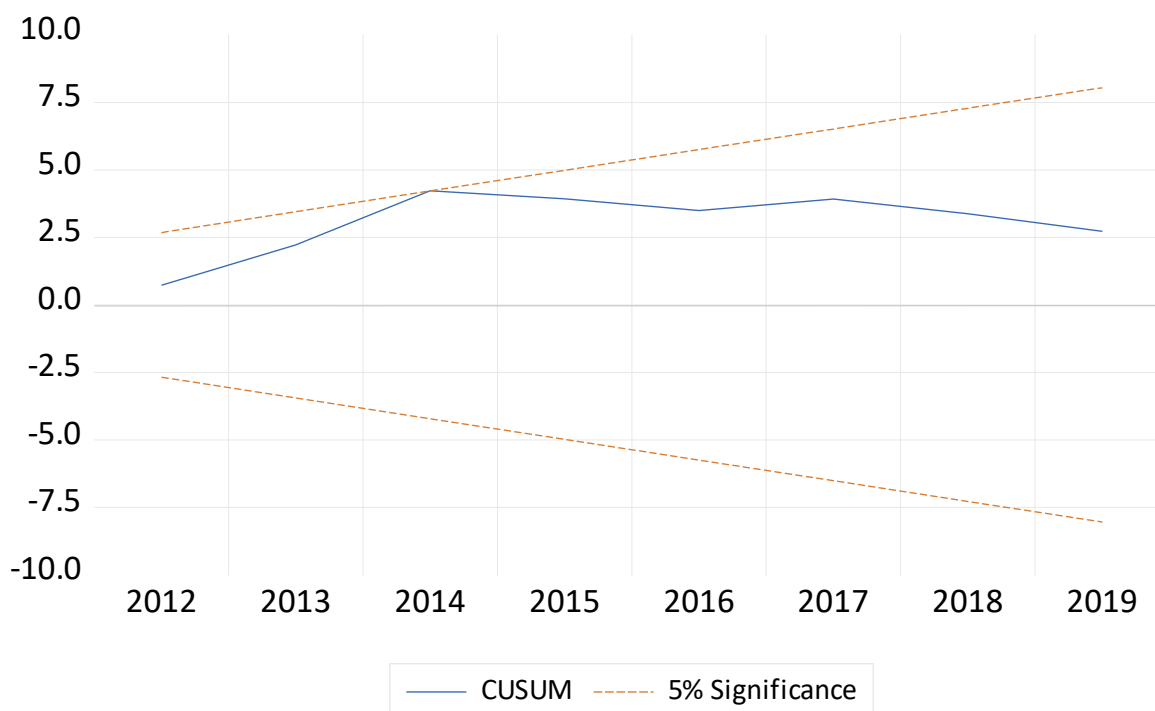
The CUSUM stability tests in Figure 3 revealed that the model is stable and the regression equation is correctly specified as the plots of the charts lie within the critical bounds at 5% significant level.

DISCUSSION OF FINDINGS

In the ARDL-ECM regression result, government capital and recurrent health expenditure has insignificant positive effect on human development in Nigeria. Based on the correlation analysis result, an existing positive as well as significant relationship between capital and recurrent health expenditure and human development has been established on the ground that the correlation coefficient of capital and recurrent health expenditure including that of the human development index are positive and all the p-values of capital and recurrent health expenditure from the correlation analysis are less than the 5% level of significance as well as correlated fairly well. However, the ARDL-ECM indicate that for every naira (₦) increased in capital and recurrent health expenditure, there was an insignificant slight improvement on human development. Furthermore, for every naira (₦) increased in recurrent health expenditure, human development improved but the improvement is not statistically significant because the p-values of capital and recurrent health expenditure have found to be greater than

the 0.05 level of significance. It shows that government capital and recurrent expenditure on health has a weak and insignificant effect on human development in Nigeria, though there is a slight increase in human development as a result of capital and recurrent expenditure on health, but the improvement in human development are not statistically significant. Hence health care system in Nigeria need to be reform.

In the case of government capital and recurrent education expenditure on human development, significant positive effect was found. It is evidence from the correlation analysis results that all the correlation coefficients of capital and recurrent education expenditures and human development index are positive. All their p-values in respect of capital and recurrent education expenditure and human development index respectively are found to be less than the 0.05 level of significance. This confirmed the presence of an existing strong significant relationship. The ARDL-ECM result therefore revealed and confirmed that both capital and recurrent education expenditure has significant effect on human development because capital and recurrent education expenditure are statistically significant since their p-values are less than the 5% level of significance. This indicates that government capital and recurrent expenditure on education contribute significantly to human development in Nigeria. This suggests that government investment in education increases the output level of human development in Nigeria.

Based on the ARDL-ECM regression result, government capital and recurrent expenditure on other social and community services has significant positive effect on human development. The study revealed and confirmed that there was established existing relationship between capital and recurrent other social and community services expenditures and human development as a result of present of positive correlation coefficient of both the capital and recurrent other social and community services expenditure and human development index with their p-values less than the 5% level of significance from the correlation analysis. Capital and recurrent other social and community services expenditure has significant effect respectively on human development since their p-values are statistically significance which are all less than the 0.05 level of significance from the ARDL-ECM. The findings shown that for every naira (₦) increase in capital and recurrent other social and community services expenditure, human development improves. This means that there will be a significant improvement in human development as a result of increase in government expenditure in other social and community services in Nigeria. The findings of this study on both government capital and recurrent other social and community services expenditure is neither directly in agreement with nor contradict previous studies. However, this finding of government capital and recurrent other social and community services expenditure is related to similar studies like Ndugbu, Osuka and Anthony (2018).

CONCLUSIONS AND RECOMMENDATIONS

Based on the result from the correlation and ARDL-ECM regression analysis in this study that examined the effect of disaggregated government capital and recurrent health, education and other social and community services expenditures on human development in Nigeria, the study concluded that government capital health expenditure has weak marginal and insignificant effect on human development over the years in Nigeria. This was insignificant based on the fact that the probability value was greater than the level of significant.

Based on the findings of this study, the following recommendations are suggested: There should be an overhauling of the entire health care system in Nigeria through a sound policy reforms process by revisiting the already health care policies on ground in comparative to other counterparts that had the best practice on continue basis and at regular interval not too long or short. The funding of the health sector and the health care service delivery should be improved upon, sustain and leverage in a manner that would enhance human development and spur economic development.

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