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GOVERNMENT EDUCATIONAL SPENDING AND HUMAN CAPITAL DEVELOPMENT IN ECOWAS SUB-REGION: IMPLICATION FOR SUSTAINABLE DEVELOPMENT

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Abstract: The critical need to create economic prosperity and ensure inclusive and equitable education and lifelong learning for all, especially in developing countries has been the motivation behind the various advocacies by the policymakers and other stakeholders in these countries to achieve the SDGs comes 2030. Meanwhile, ECOWAS sub region is characterized with the lowest human capital development alongside the highest rates of illiteracy in the world despite the continuous rise in government educational spending over the years. Against this backdrop, the role of government educational spending on human capital development in ECOWAS sub-region has been investigated with a view to driving one of the strategic goals of Sustainable Development- inclusive and equitable education and lifelong learning for all. In order to achieve this, annual data from 1990 to 2019 was utilized using a panel ARDL as a technique of estimation. The findings that emerged in this work are summarized as follows; the relationship between government educational spending and human capital development in ECOWAS sub region is more of a long run phenomenon. Therefore, government educational spending and human capital development have a positive and significant relationship in the long run. In the light of the above findings, this study therefore makes the following recommendations for the policymakers in ECOWAS sub region and by extension developing countries,

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any time the goal of these policymakers is inclusive and equitable lifelong learning via human capital development, the government at levels should embark on sustainable educational spending. In the same vein, these policymakers should be committed to funding of educational sector as stipulated by both the United Nations and the Abuja declaration of 2001, advocating for 26% of annual budget for educational sector in developing countries.

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Keywords: Human Capital, Development, Government Educational Spending, ECOWAS, SDGs

1. Introduction

The strategic role in which education occupies in advancing economic prosperity has always been the major proposition of the popular endogenous growth model (Barro, 1991; Romer, 1990; Lucas, 1988). Meanwhile, the critical need to create economic prosperity and ensure inclusive and equitable education and lifelong learning for all, especially in developing countries like ECOWAS sub region stimulated the institutionalisation of the Sustainable Development Goals (SDGs) otherwise tagged the agenda 2030 by the United Nations (United Nations, 2015). The strive to achieve SDGs come 2030 has invariably activated the global commitment in developing world to explore development of human capital, which is the invaluable asset in economic development (Mankiw *et al*., 1992; Galor and Weil, 2000; Lucas, 1988).

However, human capital development which is domiciled in adult literacy rate and the combined primary, secondary, and tertiary gross enrollment ratio is one of the critical issues that cannot be undermined currently in ECOWAS sub region. In view of the above, this study is designed to investigate the influence of government educational spending on human development in ECOWAS sub region. This study is very germane in West Africa because this economic sub region is in a dire state of the lowest human capital development alongside the highest rates of illiteracy in the globe, in which a state of emergency is needed to be declared in this regards (The Danish Institute for Human Rights, 2017). Corroborating the above assertion, a cursory look into the human development indicators in ECOWAS sub region shows that about 11 out of the 15 countries in this economic bloc belong to the countries with the lowest Human Development Index in the world (UNDP, 2019).

Meanwhile, investment on education is one of the indispensable catalysts that propels development of individual manpower and the economy as a whole. It has been argued in both theoretical and empirical studies that any country that devotes huge investment to education, research and development will experience a sporadic rate of advancement in human capital development and other important macroeconomic variables (Becker, 1975; Lucas, 1988; Barro and Lee, 2010; Barro, 2013). The quest for most countries in developing world to enhance their productive human capacity and break the vicious cycle of poverty has been the principal motivation for the advocacy of huge investment in education (Anyanwu *et al.,* 1997). Meanwhile, the available evidence proves that government educational spending

among some economies in ECOWAS sub region has increased over the time. For instance, in Nigeria, educational spending rose from ₦171 billion in 2010 to ₦394 billion in 2017. In the same vein, Ghana spent 23.93%, 20.94%, 21.02% and 22.56% of its total expenditure on education in 1990, 2010, 2015 and 2017 respectively. Similarly, other countries such as Cote d'Ivoire and Senegal have witnessed a rise in government education spending in the recent times. Cote d'Ivoire recorded a rise education spending as percentage of total budgets from 18.81% in 1990 to 21.17% in 2000, which further rose to 21.17% in 2015, and 22.12% in 2017 simultaneously. The reports from Senegal indicate that education spending as percentage of total budgets rose from 16.25% in 1990 to 24.05% in 2000 and 25.27% in 2015 concurrently. (World Bank, 2017). This implies that government educational expenditure has been on the increase in ECOWAS sub region in the past few decades.

Consequently, despite the fact that government education spending in ECOWAS sub region has increased noticeably, its spillovers on human development remains a subject of debate among the scholars and policymakers. Steaming from the post assessment of the Millennium Development Goals (MDGs) in 2015, it was discovered that the global action to promote universal basic education has been achieved significantly in ECOWAS sub region because the majority of countries within this economic bloc experienced a substantial increment in both primary and secondary schools enrolment rates (World Bank, 2017;Temple, 2010). In spite of this significant successes, human development indices in majority of countries in ECOWAS sub region has not been impressive in the past few years. For instance, inclusive development which is domiciled in the Human Development Index (HDI) of 11 out of the 15 countries belong to countries under the lowest ladder of Human Development Index in the world (World Bank, 2019; UNDP, 2019). In the light of the above, the study regarding government education spending and human development becomes highly imperative in ECOWAS sub region. The urgency of this study lies within these compelling gaps in the literature; firstly, the scarcity of empirical studies regarding this subject matter within ECOWAS sub region. It has been observed that the focus of the recent empirical studies is on nexus between government educational spending and growth of the Nigerian economy in one hand, and innovation and human development on the other hand (see Roland and Joel, 2020; Ejemeyovwi *et al*., 2019; Obialor, 2017; Lawanson, 2015). However, few studies such as Lyndon and Ebiapko (2019), Eneisik (2021), Bello and Waziri (2020) that focus on government educational spending and human development in ECOWAS sub region failed to utilize educational current and capital expenditure as percentage of GNP and HDI which are the principal variables in this study. As a departure from the existing studies, this study has been designed to fill the identified gap by providing empirical answer to the nexus between government educational spending and human capital development in ECOWAS sub region. Similarly, this study is unique in terms of utilizing a panel ARDL as a technique of estimating the objective of this study, in which no study, to the best of our knowledge has employed within ECOWAS sub region in the recent times.

Furthermore, considering the contribution of the government educational expenditure on human capital development, and the overall inclusive development in ECOWAS sub region, and the inevitable threats and shocks of COVID-19 to

revenue generation in this economic bloc, this study contributes to knowledge by examining how government educational spending contributes to human capital development in ECOWAS sub region since the implementation of the MDGs to 2020, in order to forecast if the achievement of the Sustainable Development Goal 4 – inclusive education for all is a mirage or a reality in ECOWAS sub region at the expiration of SDGs timeline in 2030.

2. Review of Relevant Literature

The term "government expenditure" refers to all expenditures made by a country's government to meet the country's collective requirements (Muguro, 2017). These costs are divided into two categories: recurrent and development (capital) expenses. Recurrent expenditures refer to government spending on wages and salaries, products and services, and other administrative costs on a regular basis. They differ from capital expenditures, which often take the shape of investments in development projects such as road and bridge construction, railway construction, school and hospital construction, and so on.

Human capital development refers to methods such as training, education, and other inventions that aim to improve an employee's level of knowledge, skills, abilities, values, and social assets, resulting in improved employee satisfaction and, eventually, improved firm performance. Human capital incorporates the aggregated investment in activities, such as education, health, on-the-job training and relocation that lead to the enhancement of an individual's output in the labor marketplace.

While utilizing data from 13 ECOWAS countries between 1985 and 2016, Samuel and Ngozi (2019) examined how government education affected human capital development using panel OLS and Granger causality to obtain the findings which argue that both government education and health expenditure caused a direct and significant impact on both primary and secondary school enrolment in the countries under consideration. Also, a two way causality run between government education and health expenditure and both primary and secondary school enrolment. In another empirical study, Riasat *et al.* (2011) used the bonds test and ARDL approach to estimate the relationship between educational expenditure and economic growth in Pakistan between 1972 and 2010. It was discovered from the study that the impact of education expenditure was significantly positive on the growth of the country's economy in the long run. Meanwhile, Wang, and Shasha (2016) estimated the linkage between education human capital and economic growth utilizing a panel education data of 55 fifty-five countries between 1960 and 2009. The results of the study indicated that education human capital and economic growth had a significant direct relationship. Lawanson (2015) examined how human capital- education and health affected the growth of the West African countries between 1980 and 2013. The study employed the Diff-GMM dynamic panel technique to argue that both education and health influence the economic growth in the sub region significantly. Mussagy and Babatunde (2015) applied a cointegration and error-correction model to investigate nexus between government education expenditure and economic growth in Mozambique from 1996 to 2012. The authors posited that the expenditure of government on educational sector in Mozambique was not adequate because government spending not greater than 20% of total

budget for the past 15 years. A long run equilibrium convergence was confirmed between economic growth and government expenditure in the country. Mallick, Pradeep and Pradhan (2016) explored 14 major Asian countries while examining dynamics of education spending and economic growth using a balanced panel Fully Modified OLS (FMOLS) and Granger causality between 1973 and 2012. The authors submitted that educational spending contributed a significant positive to economic growth in the countries under investigation. The results of the Granger causality show that a unidirectional causality flows from educational spending to economic growth in all 14 major Asian countries. However, in a related study in Algeria, Mekdad, Dahmani and Louaj (2014) made use of endogenous growth model and Granger causality to assess how education impacted economic growth in Algeria between 1974 and 2012. It was discovered from the study education spending contributed positively to economic growth in the country. While using the framework of computable general equilibrium (CGE)-micro simulation (MS) model, Odior (2011) appraised the dynamics of government education spending and economic in Nigeria between 2004 and 2015. It was discovered from the study that the contribution of government spending on education led to a significant rise in economic growth Nigeria.

Lyndon and Ebiapko (2019) while investigating the linkage between educational spending and the development of the Nigerian economy from 2001 to 2017 with the application of econometric technique. It was discovered from the study that government educational spending caused a direct influence on the development of the national development in the country.

Eneisik (2021) found that that public education expenditure had significant impact on human development index and concluded that public expenditure through investment in education and health sector influence human capital development in Nigeria. The study recommends that the Nigerian government should raise education funding to achieve the basic requirements for education, science, and culture. Education should be made a constitutional provision to ensure that educational quality improves and that political leaders are committed to the growth of the educational sector. The government should create a master plan for human capital development that is based on both a short and long-term time frame, and it must be committed to by both the present and future governments in Nigeria.

Bello and Waziri (2020) examined the nexus that exists between expenditure of government on education and human capital development in Nigeria from 1970-2015. The policy implication of this study is that if public education spending is to contribute to human capital development, more focus on increasing budgetary allocation as well as effective and efficient resource management should be placed on improving quality education. However it recommends that in the context of human capital development in Nigeria, a comprehensive examination of public expenditures should be carried out by prioritizing education for all through greater spending. Furthermore, proper funding is not only necessary but also essential for operations, maintenance, and investment in education facilities, as government capital expenditure on education has a long-term positive impact on enrolment rates. Education spending policy should concentrate not just on recurrent but also on capital expenditures.

Zahari and Sudirman (2017) investigated the effect of government expenditures in education and health against human development index in Jambi province from 2001 to 2015. The study found that there's a positive influence between government spend on education and health to human development index.

Mohammed., Mukaramah and Mohd (2017) examined government funding in education industry. Education institutes are considered suppliers in this study because they provide tertiary education services. Students, on the other hand, are clients who use educational services. Government education financing will attract and encourage students from secondary school to pursue their education at the university level. It is also a type of human capital investment that aims to reduce income inequality, poverty, and economic growth by increasing the number of skilled workers in various industries.

Conclusively, it is evident that the reviewed studies show that a gap exists in the literature in terms of methodology and coverage of the study regarding the relationship between government educational spending and human capital development in ECOWAS sub region.

3. Data and Methodology

3.1 Theoretical Framework

The endogenous growth theory initiated by Romer (1986) serves the purpose of the theoretical framework in this study. In correcting the deficiencies identified in the neoclassical (exogenous) growth model, the endogenous theorists opined that human capital is composed of a strategic factor input that occupies cogent space in the production function. Therefore, the sustainable output growth is an aftermath effect of an endogenized technical progress. However, the enhanced version of this theory as enunciated by Mankiw *et al*. (1992), Ncube (1999) and Lucas (1988) embraced innovation, which happens to be the miniature of human capital development and improvement in technique of production are the catalysts of economic growth.

Furthermore, this theory is based some critical assumptions such as positive externalities motivating increasing returns to scale. Also, in the long run, economic growth is a multivariate function of human capital variables like knowledge, skill and training acquired by individuals in conjunction with technical progress. Therefore, advancement in innovation and research leads to the emergence of progressive technologies, because technical improvement or knowledge is a non-rival good.

3.2 Nature of Data

This study made use of secondary data. And the data was sourced from the World Development Indicators of the World Bank.

3.3 Empirical Model

In building an empirical model to estimate the relationship between human development and government educational spending in ECOWAS sub region, an insight was drawn from Eneisik (2021) as follows

$$HDI = F(EDG) \quad (1)$$

Meanwhile, in order to improve the robustness of model (1), some control variables such as exchange rate, capital formation, trade openness, inflation and population growth were added. The inclusion of these variables should were driven from the argument of the extant literature that these variables have both direct and indirect influence on both government expenditure and human capital development (Oloke *et al*., 2022: Aderemi *et al*., 2021: Akinbode *et al*., 2020: Olowookere *et al*., 2022: Babasanya, Oseni and Awode, 2018).

$$HDI = F(EDG, EXCH, GCF, TRO, INF, POP) \quad (2)$$

If model one (1) is log linearized, it gave birth to model (2) expressed as below:

$$LogHDI_t = \beta_0 + \beta_1 Log\ EDG_t + \beta_2 LogEXCH_t + \beta_3 \text{Log}GCF_t + 4\text{Log}TRO_t + \beta_5 \text{Log}INF_t + \beta_6 \text{Log}POP_t + \mu t \quad (3)$$

Transformation of equation 3 into a panel autoregressive model was motivated from the fact that the pre-estimation of the employed data shows that the data are mixture of I (0) and I (1) variables. Therefore, this study utilizes a panel ARDL as a technique of estimation following the submission of (Pesaran, Shin and Smith, 2001; Pesaran and Pesaran, 1997 Pesaran *et al.*, 1999), which it states as follows;

$$\begin{aligned} LogHDI_{it} = {} & \sum_{i=1}^{p1} \Omega_1\ LogHDI_{it-i} + \sum_{j=1}^{p2} \Omega_2\, LogEDG_{it} + \\ & \sum_{k=1}^{p3} \Omega_3\ LogEXCH_{it} + \sum_{k=1}^{p3} \Omega_4\ LogGCF_{it} + \sum_{i=1}^{p1} \Omega_5\ LogTRO_{it} + \\ & \sum_{j=1}^{p2} \Omega_6\, LogINF_{it} + \sum_{k=1}^{p3} \Omega_7\ LogPOP_{it} + \theta ECM_{it} + \\ & \sum_{i=1}^{p1} \Omega_{11}\, \Delta\, LogHDI_{it-i} + \sum_{j=1}^{p2} \Omega_{21}\, \Delta \text{Log}EDG_{it} + \sum_{k=1}^{p3} \Omega_{31}\, \Delta\, logGEXCH_{it} + \\ & \sum_{i=1}^{p1} \Omega_{41}\, \Delta\, LogGCF_{it} + \sum_{j=1}^{p2} \Omega_{51}\, \Delta \text{Log}TRO_{it} + \sum_{k=1}^{p3} \Omega_{61}\ \Delta \text{Log}INF_{it} + \\ & \sum_{i=1}^{p1} \Omega_{71}\, \Delta \text{Log}\, POP_{it} + u_t \end{aligned} \quad (3)$$

Furthermore, it is important to stress that t is the scope of the study, and ranges from between 1990 and 2020. The reason why 1990 was used as the based year is due to the implementation of MDGs in 1990. Also, the study will focus on four (4) ECOWAS countries as follows Cote d'ivoire, Ghana, Nigeria and Senegal. The reason for using these four countries was majorly motivated by the availability of data.

3.3.2 Measurement of Variables

Abbreviation	Description	Unit of Measurement	Source(s) of Data
HDI	The HDI – The UNDP defines HDI as a composite index that measures welfare in the form of the average achievements of a country in three basic aspects of human development: health, knowledge, and standard of living. Life expectancy at birth represents health; knowledge is the combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrollment ratio, and GDP per capita based on Purchasing Power Parity (PPP) indicates standard of living in the HDI calculation (For details on how to calculate HDI, please refer to the technical note of the Human Development Reports available in United Nations Development Program website.	Percentage	World Development Indicators of World Bank
EDG	This used to proxy real government expenditure on educational sector, and is measured as educational current and capital expenditure as percentage of GNP	Percentage	World Development Indicators of World Bank
GCF	Gross fixed capital formation This is defined by World Development Indicators as outlays or additions to the fixed assets of the economy plus net changes in the level of inventories. It was measured in the present study as percentage of gross capital formation relative to GDP. Capital accumulation was included in the estimated model leaning on endogenous growth model, this represents level of physical capital in the economy that can be used in the production of output and knowledge	Percentage	World Development Indicators of World Bank
TRO	Trade Openness; this is addition of imports and exports as percentage of GDP	Percentage	World Development Indicators of World Bank
INF	This is inflation rate	Percentage	World Development Indicators of World Bank
POP	This is population growth rate	Percentage	World Development Indicators of World Bank

Source: Author's Compilation (2022)

Meanwhile, the aprori expectation is as follows $\beta_5 < 0$, *but* β_1 *to* $\beta_6 > 0$. *It should be noted that* Ω_1 *to* Ω_7 *represent* short run parameters and Ω_{11} *to* Ω_{71} represent long run parameters respectively. And θ is the speed of adjustment between short run and long run parameters.

4. Result and Discussion

Table 1: Descriptive Statistics

Descriptive Statistics	EDG	EXCH	GFC	HDI	INF	POP	TOP
Mean	3.523077	30.64963	21.33054	0.570521	10.87328	2.610186	62.75336
Median	3.868000	0.499000	22.93700	0.471000	7.200000	2.552359	60.87000
Maximum	8.160000	315.0000	53.12200	0.611000	72.84000	3.606675	116.0500
Minimum	0.850000	0.033000	8.253000	0.376000	-2.250000	2.085445	20.72000
Std. Deviation	1.832899	67.13771	8.585830	0.058943	13.59583	0.299110	20.13492
Skewness	0.031046	2.371548	1.010860	0.374306	2.218976	1.297141	0.200698
Kurtosis	2.664005	8.064792	4.804848	2.511950	8.571501	5.432700	2.621619
Jargue-Bera	0.578877	238.7392	36.41810	3.959788	251.5712	62.71460	1.508780
Probability	0.748684	0.000000	0.000000	0.138084	0.000000	0.000000	0.470297
Sum	419.2461	3647.306	2538.334	55.99200	1293.920	310.6121	7348.650
Sum Sq. Dev.	396.4230	531881.7	8698.544	0.409962	21811.89	10.55707	47838.96
Observations	119	119	119	119	119	119	119

HDI = Human Development Index (0-1), GCF = Capital accumulation measured as % of GDP, POP = Population growth rate in %, INF = Inflation rate in %, TOP = Trade openness in %. Nigerian HDI data was extrapolated backwards from 2003 to 1990 due to paucity of data and that of Senegal was extrapolated forward from 2018 to 2019.

Source; Authors' Computation (2022)

In table 1, the summary of the various descriptive statistics of the relevant employed variables in this study were presented. This is very germane because econometric analysis largely relies on the normal distribution assumption of the dataset. EDG which is used to proxy educational current and capital expenditure as percentage of GNP, GCF, HDI, POP and TOP in ECOWAS sub region from 1990 to 2019 have mean values that less than standard deviation respectively. This shows that these variables are moderately dispersed from their mean values. However, the rest of the variables show otherwise. All the variables possess positive skeweness which shows that the variables of interest agreed with symmetrical distribution assumption. Therefore, the data was further utilized for econometric analysis.

Table 2: Correlation Matrix

	GFC	INF	EDG	EXCH	POP	TOP
GFC	1.000000	0.370549	-0.302026	0.009224	-0.181824	-0.382072
INF	0.370549	1.000000	-0.330247	0.078225	-0.057934	-0.148741
EDG	-0.302026	-0.330247	1.000000	-0.645898	-0.000827	0.669266
EXCH	0.009224	0.078225	-0.645898	1.000000	-0.013268	-0.581505
POP	-0.181824	-0.057934	-0.000827	-0.013268	1.000000	-0.253045
TOP	-0.382072	-0.148741	0.669266	-0.581505	-0.253045	1.000000

Source: Authors' Computation (2022)

The estimated results of various pairs of correlation analyses displayed in table 2 indicated that the degrees of correlation between various pairs of the explanatory variables were not too high to cause multicollinearity problem in the subsequent estimation. Meanwhile, the above statement is validated by the proposition of Goldberger (1991), which argued that simple correlation between a pair of regressors could cause the danger of multicollinearity in models if it is greater than 0.9.

Table 3: Panel Unit Root Tests- Levin, Lin & Chu t* Test and Im, Pesaran and Shin W-stat Test

Variables	Levin, Lin & Chu t* Test				
	Level	Probability	1st Diff	Probability	Remark
HDI	2.10209	0.9822	1.95106	0.0075	I(1)
EDG	-0.80161	0.2114	-5.33861	0.0000	I(1)
GCF	-1.27372	0.1014	-3.56107	0.0002	I(1)
INF	-0.98212	0.1630	-4.09785	0.0000	I(1)
POP	-9.40460	0.0000	-	-	I(0)
TOP	-1.33861	0.0903	-	-	I(0)
EXCH	-2.41880	0.0078	-5.61910	0.0000	I(1)
Variables	Im, Pesaran and Shin W-stat Test				
	Level	Probability	1st Diff	Probability	
HDI	3.95288	1.0000	-1.54083	0.0417	I(1)
EDG	-0.55513	0.2894	-4.29176	0.0000	I(1)
GFC	-1.52456	0.0637	-4.08284	0.0000	I(1)
INF	-1.60479	0.0543	-5.85220	0.0000	I(1)
POP	-8.09157	0.0000	-	-	I(0)
TOP	-1.72190	0.0425	-	-	I(0)
EXCH	-1.08760	0.1384	-5.50174	0.0000	I(1)

Source: Author's Computation (2022)

Spurious or nonsense regression has been identified as one of the aftermath effects of time series data in empirical analysis. In order to resolve this problem, the test for the stationarity properties of data becomes one of the pre-estimation checks that are very crucial in empirical study that utilizes data that is much trended in nature. Against this backdrop, this study made use of panel unit root tests- Levin, Lin & Chu t* Test and Im, Pesaran and Shin W-stat test to examine the stationarity properties of data employed for this study. The estimated results displayed in table 3 indicate that POP and TOP are stationary at level while other variables are stationary after first differencing. This implies that the variables of interest are the combination of I(0) and I(1) variables.

Table 4: Johansen Fisher Panel Cointegration Test

Trend assumption: Linear deterministic trend
Lags interval (in first differences): 1 1
Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)

Hypothesized Number of CEs	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	111.6	0.0000	69.14	0.0000
At most 1	80.59	0.0000	37.63	0.0000
At most 2	52.75	0.0000	26.49	0.0000
At most 3	31.94	0.0000	12.15	0.0163
At most 4	23.61	0.0001	14.26	0.0065
At most 5	12.94	0.0116	11.46	0.0218
At most 6	8.502	0.0748	8.502	0.0748

Authors' Computation (2022)

*Probabilities are computed using asymptotic Chi-square distribution

The results of Johansen Fisher Panel Cointegration Test presented in Table 4 show that a long run equilibrium relationship exists between the dependent variable and other set of the explanatory variables in the model despite the fact that unit root existed in some set of data which could have led to a short run disequilibrium among these variables.

Table 5: VAR Lag Order Selection Criteria

Dependent Variable: LHDI					
Model	LogL	AIC*	BIC	HQ	Specification
1	356.096514	-6.237187	-5.259256	-5.841189	ARDL(1, 1, 1, 1, 1, 1, 1)

Authors' Computation (2022)

In estimating a panel ARDL, it is instructive to utilize the appropriate and optimal number of lags in order to achieve the best results. In view of the above, lag order selection criteria was estimated in Table 5 in which its results show that lag one (1) is the appropriate and optimal number of lags as suggested by all information criteria.

Table 6: Panel ARDL Estimation of Government Educational Spending and Human Capital Development in ECOWAS Sub-Region

Regressors	Long Run Coefficient	Prob.	T-statistics	Short Run Coefficient	T-statistics	Prob.
LEDG	0.356042***	0.0412	2.078556	0.052041	1.127491	0.2632
LGFC	-0.123328*	0.0000	4.374491	0.125622	1.546750	0.1262
LINF	-0.019141	0.2199	1.237505	0.000580	0.420653	0.6752
LEXCH	0.002951	0.8578	0.179788	-0.004872	0.287766	0.7743
LPOP	0.291500**	0.0791	1.780818	-0.346686	0.660614	0.5109
LTOP	-0.037674	0.1969	1.302193	0.011796	1.100466	0.2747
COINTEQ01	-0.206871	1.070091	0.2881			

Notes: The value in parenthesis denotes the p-values *Significant at1% ***significant at 5% **Significant at 10%
Source: Author's Computation (2022)

Table 6 shows the estimated panel ARDL of both the short run and the long run results showing the relationship between government educational spending and human capital development in ECOWAS sub region. It is important to state that none of the short run parameter is significant. This implies that there is a lack of short run relationship between government educational spending and human capital development in ECOWAS sub region. In the same vein, the adjustment between the short-run and the long-run in the model is very weak because the coefficient of the convergence parameter (-0.206871) has the expected sign, but not significant at 10% level of significance. The implication of this is that relationship between government educational spending and human capital development in ECOWAS sub region is more of a long run phenomenon. Hence, the long run relationship between the variables of interest are discussed as follows; firstly, government educational spending and human capital development have a positive and significant relationship in the long run. A unit change in government educational spending leads to 0.35 rise in human capital development in the long run in ECOWAS sub region.

Meanwhile, gross fixed capital formation and human capital development have an inverse and significant relationship in the long run. A unit change in gross fixed capital formation brings about 0.12 reduction in human capital development in ECOWAS sub region. Population growth rate and human capital development have a direct and significant relationship. If population growth rate changes by a unit, it

brings about 0.29 rise in human development in ECOWAS sub region in the long run. However, both inflation rate and trade openness have a negative but insignificant relationship with human capital development in the long run in ECOWAS sub region. Exchange rate and human capital development have an insignificant positive relationship in ECOWAS sub region in the long run.

Consequently, it could be submitted that government educational spending has a positive and significant relationship with human capital development in ECOWAS sub region in the long run. The finding in this study corroborates the assertions of Samuel and Ngozi (2019) in a similar study focusing on West Africa, Lyndon and Ebiapko (2019), Eneisik (2021) in related studies in Nigeria and Sudirman (2017) in a related study in Indonesia despite the variation in the techniques of estimation.

5. Conclusion and Recommendation

In this study, the role of government educational spending on human capital development has been investigated between 1990 and 2020 in ECOWAS sub-region with a view to driving one of the strategic goals of sustainable development- inclusive and equitable education and lifelong learning for all. Consequently, in order to achieve this, this study employed annual data from 1990 to 2020 using a panel ARDL as a technique of estimation. The findings that emerged in this work are summarized as follows; the relationship between government educational spending and human capital development in ECOWAS sub region is more of a long run phenomenon. Therefore, government educational spending and human capital development have a positive and significant relationship in the long run. Gross fixed capital formation and human capital development have an inverse and significant relationship in the long run Population growth rate and human capital development have a direct and significant relationship in ECOWAS sub region in the long run. However, both inflation rate and trade openness have a negative but insignificant relationship with human capital development in the long run in ECOWAS sub region. Exchange rate and human capital development have an insignificant positive relationship in ECOWAS sub region in the long run. It is important to stress that the major limitation of this study is domiciled in its scope (ECOWAS countries). In the light of the above findings, this study therefore makes the following recommendations for the policymakers in ECOWAS sub region and by extension to African policymakers, any time the goal of these policymakers is inclusive and equitable lifelong learning via human capital development, the government at levels should embark on sustainable educational spending. In the same vein, these policymakers should be committed to funding of educational sector as stipulated by both the United Nations and the Abuja declaration of 2001, advocating for 26% of annual budget for educational sector in developing countries.

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