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**Augustine Sunday Oge**  
Bamidele Olumilua University  
of Education, Science and  
Technology, Ikere Ekiti, Ekiti  
State, Nigeria

**Joshua Adewale Adejuwon**  
Department of Management  
and Accounting, Faculty of  
Management and Social  
Sciences, Lead City University,  
Ibadan, Oyo State, Nigeria

## Capital project decisions and socio-economic development in Ekiti state, Nigeria

**Augustine Sunday Oge and Joshua Adewale Adejuwon**

### Abstract

This study's main goal is to assess how capital project choices affect the socioeconomic advancement of the populace in Ekiti State. The specific goals are to: (i) learn how capital project decisions are made in Ekiti State; (ii) determine the impact of the decision on education on socioeconomic development in the Ekiti State government; (iii) look into the impact of the decision on health on socioeconomic development in Ekiti State; (iv) look into the impact of the provision on socioeconomic development in Ekiti State. To ascertain how choices regarding the construction of high-quality roads impact the socioeconomic growth of Ekiti State. The focus will be on how capital project choices affect the socioeconomic advancement of the residents of Ekiti state. Additionally, it will look at the distribution of resources across capital projects. To put it another way, how decisions are made by decision-makers when approving capital projects in the State government. This study was conducted primarily because there hasn't been much research on how state government resources are allocated to investments or initiatives that might improve the quality of life for citizens and the social and economic growth of the State. The study is anticipated to be useful to academics with a particular interest in budgeting, particularly for capital projects. They will gain from it since it will enable them to see implementation as just one variable among many. It will broaden their view of other factors like formulation that could influence how individuals grow. It is anticipated that going beyond budgeting as a habit and completing all righteousness to take the exercise seriously would be beneficial to the budget practitioners and planners at the state level. The federal government should be interested in the fact that budgeting must be a major concern if every region of the country is to be developed. The purpose of the research is to shed light on the budget preparation process used by the state government of Ekiti State in Nigeria. The capital projects' effects on the socioeconomic advancement of the inhabitants of Ekiti are another goal of the study. It is anticipated that the findings would help people better understand how the budget is created and what can be done to make the system more effective so that the people of Ekiti and Nigerians as a whole may enhance their quality of life. Last but not least, the research would help the government concentrate on employing capital projects to improve the country socially, economically, and culturally in accordance with their main obligation as outlined in the Nigerian constitution.

**Keywords:** Capital budget, social economic development, decision, industrialization and government

### Introduction

Any country's socioeconomic growth, whether it is developed or developing, aims to raise the quality of life for its citizens. It is a procedure to bring about qualitative change and the expansion of the national economy. In Nigeria, the constitution codified socio-economic development as a basic duty of the government to the governed and those given the chance to manage the country's affairs (World Bank, 2018) <sup>[14]</sup>. The constitution of Nigeria clearly and concisely outlined the government's primary duty to promote social and economic development in the country. Although the groundwork for Nigeria's development was undoubtedly established decades ago, the pace of that progress has been very sluggish, according to what is seen on the ground. Therefore, just setting the groundwork to begin the process of socio-economic growth is insufficient. (Patrick, 2014) <sup>[7]</sup> Maintaining the process by building on the development's existing basis is significantly more crucial. One would wish to claim that the nation's growth is not only at a sluggish pace but in a poor condition based on the socio-economic development that has been put in place, particularly when compared to what is in place in industrialized nations. Nigeria's position of 152<sup>nd</sup> out of 157 nations sampled globally in terms of socioeconomic and human development<sup>1</sup> is consistent with this claim. There has never been any question that all three tiers of government-the

**Corresponding Author:**  
**Augustine Sunday Oge**  
Bamidele Olumilua University  
of Education, Science and  
Technology, Ikere Ekiti, Ekiti  
State, Nigeria

federal, state, and local-had a mission. The main goals of all levels of government are to provide for the needs of their people and raise their standard of life. Infrastructures that might contribute to the residents' socioeconomic development must be provided in order to raise their level of life. The availability of resources affects infrastructure supply as well. On the one hand, resources are always a limitation when it comes to providing infrastructure. Therefore, there is a need for an economic policy tool that may be used to distribute resources in a manner that the country's overarching objective can be accomplished. One of these tools that governments use to efficiently and effectively distribute the resources at their disposal is the budget (Vusi, 2020) <sup>[13]</sup>.

The third level of governance is the municipal one. The 1999 constitution recognises it as the third degree of government in its modified form. In Nigeria, there are 774 local governments. The main goals and objectives of these local governments are to develop or delegate appropriate services and development activities to local representative bodies in order to make them responsive to local desires and initiatives; to facilitate and bring democratic self-governance close to the local levels of our society; to foster potential for initiative and leadership; to mobilize human and material resources through the involvement of local stakeholders. (Abimbola, 2016) <sup>[1]</sup> The provision and maintenance of primary, adult, and vocational education; the development of agriculture and natural resources other than the exploitation of minerals; the provision and maintenance of health services; and such other functions as may be conferred on a local government council by the House of the Assembly of the State are the duties expressly delegated to local governments by the 1999 Nigerian constitutions, as amended. The local government is required by the constitution to provide local residents with pertinent services and development initiatives. Simply said, it involves the local population in democratic governance to engage them in their business and bring governance very near to them. Quality service delivery from the local government is anticipated in order to foster local socioeconomic development. As the third tier of government, local governments are designed to be more accessible to the populace by offering amenities that will improve quality of life. The local government offers social and infrastructure services to raise the quality of life of the populace at the local level, much like the other levels of government. According to some scholars, local government should act as a catalyst for raising the general population's level of life. (Nomin, 2020) <sup>[6]</sup> The researcher made the case that local governance allows the general public the chance to actively engage in how the country is governed. The effective provision of services should be the primary concern of those who oversee local government. According to a different researcher, the socioeconomic advancement of the populace locally and, ultimately, the growth of the country as a whole, are the primary drivers behind the establishment of local governments. The purpose of local government is to bring the federal government closer to the general populace. Without sufficient financial resources at every level of government, the goal cannot be realized. This is in contrast to researchers' sole emphasis on capital budgeting implementation and their viewpoint on state and federal budgets, which has been accepted by the bulk of empirical studies conducted too far. The local government in the state of Ekiti will conduct the study. The goal of the

project is to further our understanding of the connections between capital budgeting choices and local residents' socioeconomic progress.

### Literature review

The constitution of the nation expressly guarantees the people's socioeconomic growth. The socioeconomic development of the country is explicitly stated as the government's major priority in the Nigerian constitution (Peter, 2020) <sup>[5]</sup>. If so, then a country should not have reached the level of socioeconomic progress that we have after 61 years of existence. The majority of academics concluded that insecurity was to blame for the nation's underwhelming socioeconomic progress. While some of this could be accurate, it cannot be the complete truth. It will be necessary to safeguard the country as it develops socially and economically. Security, however, will only produce a supportive atmosphere. In other words, a country cannot flourish without security. At this point of implementation, money is the main problem. But the lack of funds is one of the factors that led to planning in the first place. There would have been no need for planning or formulation if the fund had infinite resources.

Therefore, the purpose of this research is to investigate the correlation or link between capital budgeting decisions and Nigeria's socioeconomic progress. The United Nations is responsible for coining the phrase "sustainable development". The development of the populace in both urban and rural regions is a priority for all nations according to the United Nations. In the year 1986, the United Nations endorsed the notion that human development should be prioritized. It is anticipated that the people would develop via a social and economic system that will lead to an increase in their actual income, higher educational standards, better health, and an overall improved level of living.

In order to improve the quality of life for the populace, development entails gaining control of the environment and boosting productivity (Temitope, 2020) <sup>[12]</sup>. However, sustained development focuses on maintaining or sustaining the pace and satisfying people's expectations for their quality of life. Human capital development is advancing to a new level thanks to sustainable development. (Eddy, 2018) <sup>[2]</sup> It encompasses development, high standards of living, universal access to opportunities, and equitable income distribution for all.

Enhancing economic growth may help individual's live better lives. The essence of sustainable development is long-term. Sociocultural, political-economic, and public welfare issues are all included. All of them are intended to raise peoples' standards of life. They strive to fulfil and satisfy the demands of the general public. In addition to ensuring that everyone is happy, this also involves maintaining a balance between environmental conservation, economic growth, and human advancement. The wise use of resources to achieve a high standard of living for the current generation and future generations is known as sustainable development. The achievement of sustainable development requires knowledge of agriculture, health, education, culture, and tourism.

### Analysis of earlier empirical works

Researchers from industrialized nations have attempted to identify factors that are either favourably or adversely affecting the socioeconomic growth of the populace. This

group of scholars identified a unique collection of variables as elements influencing socio-economic growth globally. The socioeconomic policy is one of these elements. Some of these scholars are of the opinion that socioeconomic policy ought to serve the needs of the people and significantly raise their quality of living (Svitlana, 2020) <sup>[11]</sup>. An algorithm that might assist management choices based on gathered socioeconomic data was evaluated and developed in the research. A theoretical and methodological framework that might aid in the decision-making process was created as a consequence of the research.

For some academics, the transfer of learning may lead to socioeconomic development. In a recurrent network, it is about transferring learning strategies and domain adaption. It strives to increase the socioeconomic systems' capacity for effective and efficient decision-making. To do this, a simulation model was constructed.

The impact of investment on the country's socioeconomic growth was evaluated in a research conducted in Poland. (John, 2020) <sup>[5]</sup> The researchers formed the supposition that investments in local government have a significant impact on the socioeconomic advancement of Poles. The Pearson linear correlation coefficient and descriptive statistics were used. The results demonstrated that investments in Poland's rural regions had a substantial impact on the socioeconomic advancement of the population.

### **Socioeconomic progress in developing countries**

In Asia, Mongolia was the site of a research that discovered a link between socioeconomic progress and health<sup>38</sup>. The research looked at how the socioeconomic transformation affected the educational system and the health professions. The research used a multi-level viewpoint technique. The acquisition of data required the examination of documents. The records were stored from 1994 to 2018. Interviews that were semi-structured were conducted. According to the report, Mongolia is now experiencing the effects of the socioeconomic transformation. Among other factors, it has been proposed that this is due to the medical schools' lack of budgetary power, varied levels of high-quality educational services, and inadequate professional development.

If there is a direct link between shopping malls and the socioeconomic health of the community, it has been the subject of research in South Africa. Shopping malls are thought to help the neighborhood by generating employment and boosting the economy. Based on this finding, the researchers looked at how shopping malls may affect the socioeconomic growth of the neighborhood. The theme analysis approach is a technique used to analyse the data that was gathered. The research found that shopping centers have a favourable impact on socioeconomic development through creating jobs, enhancing local infrastructure, and increasing municipal revenue. The research conducted in Asia looked on how fisheries management practises and policies affect the socioeconomic progress of the populace<sup>41</sup>. The researchers discovered that by keeping tabs on and assessing people's progress, a contribution to socioeconomic development was produced. Based on results, the researcher proposed a few actions that might be taken to create a strategy that would influence fisheries management and, in the long term, have a good impact on people's socioeconomic development.

The study's findings in Palestine did, however, diverge somewhat from those of other researchers who had studied

the same topic. The study<sup>43</sup> looked at the contribution that Palestinian Islamic banks' CSR efforts made to the socioeconomic advancement of their citizens. For the study, the researchers combined primary and secondary data. (Jake, 2018) <sup>[4]</sup> Interviews with the banks' management served as the primary source of data. Bank annual reports were examined for the secondary data. The results suggested that while corporate social responsibility was highly valued by Islamic banks, the contribution to the socioeconomic advancement of the populace was extremely minimal.

### **Nigeria's Socioeconomic Development**

The 1999 constitution of Nigeria, as amended, states unequivocally and categorically that one of the main and essential goals of the government is the nation's social and economic development<sup>44</sup>. By it, it is meant that the federal, state, and municipal governments should provide facilities that might guarantee a high standard of life for the populace. Can one argue that the governments at different levels have met the expectations of the people based on the level of the people? There is no such thing as a categorical yes or a categorical no. One may remark that the administration seems to be making progress toward the admirable goal, although slowly. In other words, based on what one can witness on the ground, it appears like the government is not doing anything to promote socio-economic growth in Nigeria.

The socio-economic growth of a country might be thought of as a sub-heading under sustainable development. A nation's progress may be maintained via sustainable development. The United Nations came up with the idea. (Richard, 2017) <sup>[15]</sup> The United Nations is more concerned in the development of the universe's constituent parts than it is in the growth of the whole cosmos itself. The degree of progress achieved in the continued expansion of the universe has piqued the curiosity of researchers all across the globe. The scientific approach reveals this accomplishment. To establish the level of persistent improvement, extensive research has been conducted both within and outside of Nigeria.

### **Capacity building methods**

One of the topics that piques the attention of the academics under the capital project is the methods utilized for valuing capital projects. To determine whether a project should be undertaken, capital project techniques are used. There are several of these methods. They may be generally divided into two groups, however: sophisticated and non-sophisticated. (Robinson, 2014) <sup>[9]</sup> To determine their degree of usefulness and efficiency, researchers conducted study. (Jacinta, 2020) <sup>[3]</sup> One such study<sup>156</sup> compared the methods used by businesses in West Africa and Europe. One hundred and twenty-five West African and two hundred twenty European businesses were polled. The research sought to determine if the people's economic progress was a significant factor when budgeting.

### **Methodology**

The obtained data may be analyzed using a variety of statistical methods. The specific statistical method used will depend on how the research is set up. Selecting the appropriate statistical method is necessary. Through research design, this is accomplished. This research sought to understand the relationship between socio-economic

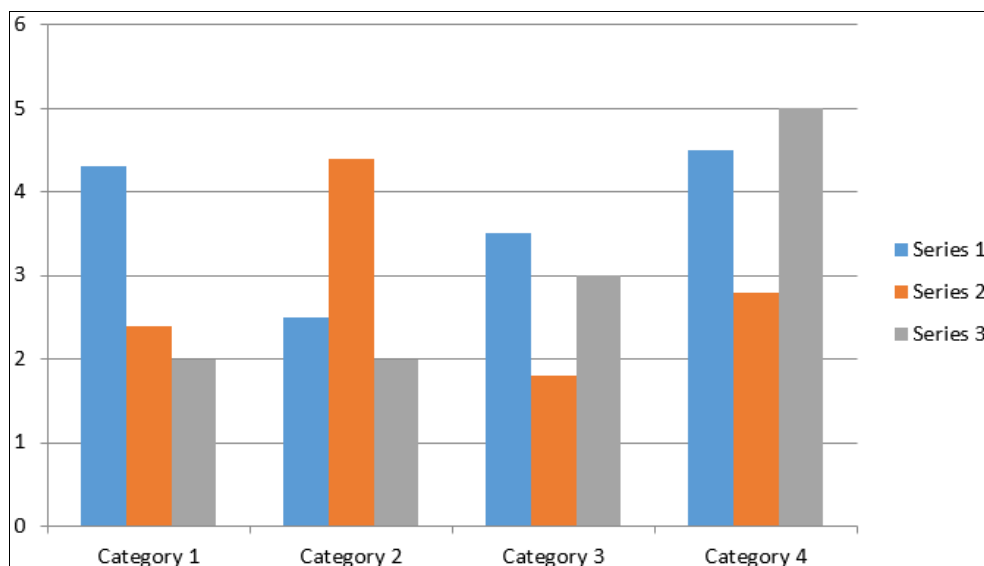
development and capital project choices. To identify each variable's traits or components, the two variables were assessed. Correlational and regression tests were the statistical methods utilized to assess the variables. As a result, the research used a descriptive analysis of correlational and regression techniques. The poll was used since it also looked at public opinion on choices about capital projects and socioeconomic growth.

### The research area

Ekiti State was the site of the research. The three senatorial districts of Ekiti State are Ekiti North, Ekiti South, and Ekiti Central. The five local governments of Ekiti North are Ido/Osi, Ikole, Ilejemeje, Moba, and Oye. Six local governments make up Ekiti South: Ekiti East, Emure, Gbonyin, Ikere, Ise/Orun, and Ekiti South West. There are five local governments in the Ekiti central senatorial districts: Efon, Ado, Ekiti west, Ijero, and Irepodun/Ifelodun. There are sixteen local governments in all.

**Table 1:** Summary of Sample of Population and Staff of Local Government in Three Senatorial Districts in Ekiti State.

Name	Male	Female	Total
Ado	97,538	90,676	188,214
Efon	26,152	26,160	52,312
Ekiti East	42,013	40,991	83,004
Ekiti South West	50,050	49,003	99,052
Ekiti West	54,745	53,015	107,760
Emure	28,660	27,898	56,558
EbonyEbony	45,205	43,594	88,799
Ido/Osi	48,877	47,124	96,001
Ijero	67,418	65,706	133,124
Ikere	41,551	47,584	89,135
Ikole	52,124	50,125	102,249
Ilejemeje	13,206	12,869	26,075
Irepodun/Ifelodun	39,773	39,025	78,798
Ise/Orun	34,646	33,725	68,371
Moba	45,448	41,797	87,245
Oye	41,887	40,791	82,678
Total	729,292	710,082	1,439,374



**Fig 1:** Population and staff of local government in three senatorial districts in Ekiti State CHART

### Models Specification

The models and variables utilized in this investigation are covered in this section. The variables and the related parameters were specified in the model definition. Independent and dependent variables make up the study's two main variables. The choice to allocate capital is the independent variable, and the socioeconomic advancement of the populace is the dependent variable. The independent variable is represented by five elements or indicators. Decisions on education, health, agriculture, market infrastructure, and roads are among the variables. Each independent variable's component will be evaluated in relation to the dependent variable to determine which contributes more and which contributes less to the latter. Below is a representation of how the variables are related:

$$Y = F(X)$$

Y = Dependent variable

X = Independent variable

Y = Socio-economic development

X = Capital budgeting decisions

X = (X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub>)

Where

X<sub>1</sub> = Decision on education;

X<sub>2</sub> = Decision on health;

X<sub>3</sub> = Decision on agriculture;

X<sub>4</sub> = Decision on market infrastructure;

X<sub>5</sub> = Decision on the road.

$$Y = B_0 + B_1 + B_2 + B_3 + B_4 + B_5 + e$$

### Result and Discussion

#### Descriptive Statistics

Table 1 summarizes the descriptive statistics of the included variables for this study.

The result in table 2 reveals that a five-year lagged change in GDP is the highest variability. (52.07), followed by Terry (11.06) and HCD (6.53). On the other hand, the lowest variability is DL in this study. Further, the Jarque-Bera test found that all variables except L and Terry reject the null hypothesis of normal distribution at a 1 per cent significance level. This implies that L and Terry are normally distributed in this study. Finally, the included variables are large sample and parametric data, but IQ is nominal data, thus non-parametric in this study.



**Table 2:** Descriptive statistics for human capital development and sustainable environment development in Nigeria

Variable	Mean	Maximum	Minimum	Standard deviation	Jarque-Bera	Observation
Terry berry	37.74	67.69	12.30	11.06	0.57 (0.75)	36
L	11.29	17.7	7.00	3.11	2.52 (0.28)	37
DL	0.03	0.05	0.0000	0.011	11.36 (0.00)	36
K	2.80	8.19	0.28	2.36	7.02 (0.03)	35
HCD	14.33	36.17	4.39	6.53	13.58 (0.00)	35
DGDP	0.23	6.96	- 0.07	1.15	1633.06 (0.00)	36
GDP GDP-5	- 9.08	78.93	- 242.81	52.07	255.25 (0.00)	32
IQ	0.46	1.00	0.00	0.51	6.17 (0.05)	37

**Source:** Authors' computation from E views results

(b) P values are in parentheses (c) D is change

## Matrix Correlation

**Table 3:** Matrix correlations result from HCD and Sustainable environment development in Nigeria

Variable	Terry	HCD	L	DL	DGDP	GDP GDP-5	IQ	K
Terry	1.00							
HCD	- 0.35	1.00						
L	- 0.39	0.17	1.00					
DL	0.02	0.03	0.08	1.00				
DGDP	- 0.13	- 0.26	0.49	0.36	1.00			
GDP GDP-5	0.008	0.13	- 0.03	- 0.005	- 0.21	1.00		
IQ	- 0.40	0.21	0.86	0.06	0.37	- 0.009	1.00	
K	- 0.45	0.35	0.42	- 0.17	- 0.03	0.03	0.28	1.00

**Source:** Authors' computation from E views results

Table 3 shows the degree of correlation between the dependent variable, Terry and the included explanatory variables in this study. All included variables except DL and DGDP<sub>t-5</sub> exhibit a negative relationship with Nigeria's sustainable environment development for 1977-2013. However, the result was contrary to a priori positive expectation but upheld the Lucas growth theory (human capital accumulation) and the environmental Kuznets (lagged period change in GDP) on sustainable environment development in Nigeria. Finally, the correlation results among the included variables are relatively low; thus, there is no presence of multicollinearity in table 2 in this study.

## Time series econometric results

The importance of the unit root test hypothesis in proving that the mean and auto covariance of the variables included in this research are not time-dependent cannot be overstated in time series econometrics.

For robustness, the research specifically leverages three of the six unit root tests included in the Eview7.0 packages. The Augmented Dickey-Fuller (ADF), Dickey-Fuller Generalized Least Square (DF-GLS), and Phillip-Perron (PP) tests are the three-unit three - unit root tests that are

used. First off, the ADF test is better than the two alternative tests because all of the variables it includes-aside from IQ-have high sample sizes and are parametric data. The inclusion of the sometimes irrelevant regressors, which causes the residual to be overestimated, renders the ADF test potentially deceptive. Second, the DF-GLS is a modified ADF test that reduces the misleading results of the ADF test by de trending the included regressors; as a consequence, the DF-GLS is more trustworthy since it only takes into account the stationary test of a variable while ignoring the included regressors in the test. Sadly, the serial correlation issues in the variable are not taken into consideration by the DF-GLS (Elliot, Rothenberg, and Stock (ERS, 1996) mentioned in E views 7 User's Guide II 2010). The third unit root test is Phillips-Perron (PP), which is better than ADF and DF-GLS since it takes serial correlation correction and regressor endogeneity into account. Additionally, it is used in this work for non-parametric variables. However, the three-unit three - unit root tests failed to account for the structural gaps in time series, which led to an incorrect conclusion. Unfortunately, the flaw is beyond the purview of our investigation.

**Table 4:** Unit root tests for human capital development and sustainable environment development in Nigeria

Variable	ADF	DF-GLS	PP	Integrate order
Terry level 1 <sup>st</sup> Diff	-3.21* -7.58*** (0.00)	-3.16* -7.86***	-3.23* -15.86*** (0.00)	I (0) I (1)
L level 1 <sup>st</sup> Diff	1.91 - 6.11*** (0.00)	-0.42 -5.80**	-1.58 -6.08*** (0.00)	I (1)
DL level 1 <sup>st</sup> Diff	-7.45*** (0.00) -6.02*** (0.00)	-7.28*** -8.27***	-7.55*** (0.00) -14.62*** (0.00)	I (0) I (1)
DGDP level 1 <sup>st</sup> Diff	-4.81*** (0.00) -3.12	- .89 -1.68	-6.35*** (0.00) -32.02*** (0.00)	I (0) I (1)
GDP GDP <sub>5</sub> level 1 <sup>st</sup> Diff	-5.44*** (0.00) -9.05*** (0.00)	- 5.62*** -9.38***	-5.47*** (0.00) -27.21*** (0.00)	I (0) I (1)
IQ level 1 <sup>st</sup> Diff	-2.07 -5.83*** (0.00)	-2.01 -6.00***	-2.12 -5.83*** (0.00)	I (1)
K level 1 <sup>st</sup> Diff	-2.74 -7.46*** (0.00)	-2.88 -7.67***	-2.67 -10.54*** (0.00)	I (1)
HCD level 1 <sup>st</sup> Diff	-3.46* (0.06) -10.77*** (0.00)	-3.53** -10.57***	-3.43* (0.06) -11.64*** (0.00)	I (1)

**Source:** Authors' compilation from E views results

Note (a): \*\*\* significant at the 1% level; \*\* at 5% level and \* at the 10% level. (b): P values are in parenthesis.

According to Table 5, all of the variables that were included were stationary at a 1% significant level and an integrating order of one, I (1). Additionally, at 1% and 10% significant levels, only DL, DGDP and DGDTPt-5, as well as Terry, were stationary at integrating order of zero I (0). The three-

unit three- unit root test thus disproves the null hypothesis that each included variable has a unit root and accepts the alternative, indicating that all included variables in this study are stationary at the first differencing order.

**Table 5:** Johansen cointegration test for human capital development and sustainable environment development

Null hypothesis	Trace ( $\lambda$ ) statistic	Critical value	Prob.	Null hypothesis	Max-Eigen statistic	Critical values	Prob.
$H_0: r = 0^*$	254.28	150.56	0.00	$H_0: r = 0^*$	80.16	50.60	0.00
$H_0: r = 1^*$	174.12	117.71	0.00	$H_0: r \leq 1^*$	53.74	44.50	0.00
$H_0: r = 2^*$	120.38	88.80	0.00	$H_0: r \leq 2^*$	39.71	38.33	0.03
$H_0: r = 3^*$	80.67	63.88	0.00	$H_0: r \leq 3$	30.81	32.11	0.07
$H_0: r = 4^*$	49.85	42.92	0.01	$H_0: r \leq 4$	25.01	25.82	0.06
$H_0: r = 5$	24.85	25.87	0.07	$H_0: r \leq 5$	16.45	19.39	0.13
$H_0: r = 6$	8.41	12.52	0.22	$H_0: r \leq 6$	8.41	12.52	0.22

**Source:** Authors' compilation from E views result

Note (a) \* denotes rejection of the null hypothesis at 0.05 significant level.

\*\* denotes Mackinnon-Haug-Michelis (1999) P-values

The trace test indicates 5 cointegrating eqn (s) at the 0.05 level

Maxi-eigenvalue Eigen value test indicates 3 cointegrating eqn (s) at the 0.05 level.

**Table 5:** Summary of Long-run and Short-run VECM estimates.

Regressor				Long run estimates			
D (Tnrry (- 1))				1.000			
D (L (- 1))				- 47.08 (-1.11)			
D (DL (- 1))				-2532.33 (-3.56)***			
D (DGDP (- 1))				-20.15 (-10.28)***			
D (HCD (- 1))				0.64 (1.35)			
D (IQ (- 1))				28.91 (2.95)***			
D (K (- 1))				4.47 (4.22)***			
@trend (77)				0.37 (0.97)			
C				6.51			
Short-run estimates							
Error Correction	D (Tnnry, 2)	D (L, 2)	D (DL, 2)	D (DGDP, 2)	D (HCD, 2)	D (IQ, 2)	0 (K, 2)
Constant	0.8177	0.02118	0.0022	- 0.3409	0.7494	0.0096	0.0957
ECT (-1)	-0.09 (-0.2226]	0.00 [0.0024]	-0.00005 [- 0.0002;	0.06 [0.003]	-0.09 [0.036]	-0.003 (-0.002]	-0.07 (- 0.006)
R <sup>2</sup>	0.25	0.65	0.90	0.89	0.72	0.38	0.74
Adjusted R <sup>2</sup>	-0.02	0.53	0.86	0.86	0.61	0.16	0.64
S.E. of Regression	13.92	0.10	0.008	1.18	5.58	0.24	2.09
F -Stat	0.923	5.164	24.60	23.15	6.98	1.71	7.81

Using the Johansen maximum likelihood technique, Table 5 established the cointegration connection between the included explanatory factors and the dependent variable, Terry. The study's five and three cointegrating vectors are shown by the two statistics trace (trace) and maximum eigenvalue (max). As a consequence, the data, at a 5% level of significance, reject the null hypothesis that there is no cointegrating vector in favour of the better three cointegrating vectors. This suggests that in the long term, economic growth (dGDP), institutional quality (IQ), labour size (L), human capital accumulation (DL), early economic growth (dGDPT), consistent economic growth (dGDPT-5), and human capital development (HCD) in Nigeria are all related. Our results concur with those of Kuznets (1955), Lucas (1988), and Arrow (1962)

The vector error correction model (VECM) estimates each endogenous variable's speed of adjustments to the long-run equilibrium path within the short-run through the vector error correction term (ECT) coefficient and also estimates the long run relationship of the included explanatory variable with the dependent variable in the system after it has been established that all included variables in the model are I (1) and cointegrated.

The VECM estimations for this study's long-run and short-

run are shown in Table 6. The long-run estimations show that all but one variation in baseline GDP, institutional quality, economic infrastructure, and human capital accumulation are not statistically significant at 1% in this research. Accordingly, a lag-first differential in human capital accumulation, beginning GDP, institutional quality, and economic infrastructure is likely to have a big long-term influence on environmentally sustainable growth in the study's focus country of Nigeria. Additionally, the findings revealed that Nigeria's development of a sustainable environment is favourably impacted by a lag first differential in institutional quality and economic infrastructure. A 1% change in IQ and K will result in errors in sustainable development of 28.91% and 4.47%, respectively. Comparatively, Nigeria's environmental sustainability suffers significantly from the lag first differential between human capital accumulation and beginning GDP. This suggests that a 1% increase in initial economic growth and human capital accumulation would result in a 253.23% and a 20.153% drop in ecologically sustainable development, respectively.

Additionally, neither the growth of the labour force nor the development of human capital in this research are statistically significant at the 1%, 5%, or 10% levels. Long-

term sustainable environment development is also severely impacted by labour size. The research finds that, in contrast, human capital development (HCD) has no long-term influence on ecologically sustainable development. In the long term, the analysis finds that a 1% increase in labour force size and human capital development would result in a decline and an increase in ecologically sustainable development of 47.08% and 0.64%, respectively.

On the other hand, this study's short-run VECM estimate shows that all endogenous or vector variables adapt to the long-run equilibrium route within the short-run at a rapid rate. Additionally, none of the endogenous factors in this analysis are statistically significant at 1%. This suggests that none of the endogenous variables in this research can be relied upon to converge to or diverge from the long-run equilibrium path in the short run.

Table 6 further shows that four of the seven vector variables in this investigation exhibit the predicted negative sign of ECT. This suggests that these four vector variables may converge to the long-run equilibrium position, but their small coefficients suggest an extremely sluggish convergence rate of adjustment in the short-run. Additionally, table 5's two positive ECT values show a slow pace of divergence from the long-run equilibrium position to the short-run.

Last but not least, the F-statistics value shows how important each endogenous variable is to attaining the long run. The outcome shows that all, with the exception of institutional quality and sustainable environment development, have a significant potential to attain long-run equilibrium (stability) in the shorter term of this research.

## Discussion

Table 1's descriptive statistics demonstrate that, between 1977 and 2013, all included variables—with the exception of labour size (L) and sustainable environment development (Terry Terry—are not regularly distributed. The matrix correlation findings in Table 2 further demonstrate that there is no evidence of multicollinearity among the variables used in this investigation. However, the non-normality of the majority of the model's variables gave rise to the need for the unit root test on each of the study's included variables. In this work, the stationarity test's robustness is tested using the ADF, DF-GLS, and PP unit root tests. Except for human capital accumulation (dL), initial economic growth (GDP GDP), and a five-year lagged economic growth at both integrate orders of zero and one (i.e. I(0) and I(1)), all the included variables were found to be stationary at the first difference at a 1% significance level according to the unit root tests. However, the sustainable environment development is at a 10% significance level. The included variables, with the exception of the environment sustainable development and labour size, are not stationary at level but rather at first difference order, and this is another way in which the unit root tests are consistent with the Jarque-Bera-Bera test. As a result, the unit root tests dispel any concerns about erroneous OLS results in this research and confirm that the OLS estimates will be trustworthy provided the included variables are at I(1).

The research used the Johansen maximum likelihood cointegration test to confirm the long-term link among the co-movement variables in this model in addition to testing the reliability of the individual variables using the unit root method. Table 4's trace and maximum eigenvalue statistics

revealed a high correlation between the endogenous variables, with the indicated connection being more stable the more cointegrating vectors there were (Huq, Arshad & Islam, 2013). Additionally, the results of the pre-estimation tests (unit root and cointegration) and the study's primary goal support the use of the vector error correction model (VECM) procedures in this investigation.

The VECM estimations for the long- and short-runs are shown in Table 6. The long-run estimations discovered that the environmental sustainability of development in Nigeria is greatly influenced by a one-year delayed change in institutional quality and economic infrastructure. These findings show that in order to provide a dependable long-term favourable climate and sustainable growth, the government should improve institutional quality and economic infrastructure.

This outcome is consistent with research by Tim *et al.* from 2010 that discovered a connection between environmental quality and economic development.

Additionally, early economic growth and a one-year lag in the shift in human capital accumulation have a detrimental long-term effect on the development of a sustainable environment. The environmental Kuznets theory specifically supports our findings of early economic growth and environmental sustainability (1955).

More crucially, the VECM long-run projections revealed that between 1997 and 2013, in Nigeria, human capital growth had a negligible influence on ecologically sustainable development.

The second difference in labour size and beginning economic growth, however, was shown to have a positive predicted sign of ECM in the short-run VECM estimations. This suggests that within the brief duration of this investigation, endogenous variable variables have a propensity to converge towards the long-run equilibrium route. Unfortunately, the negative low ECM coefficients suggest that the study's long-run equilibrium speed adjustment will proceed more slowly. However, none of these ECM coefficient values are statistically significant at either 1% or 5%, therefore this study's conclusion on the reliability of their convergence to a long-run equilibrium path is invalid. Additionally, each endogenous variable's high F-statistics value suggests that it has a considerable impact on the system's ability to reach a long-run equilibrium within the short time frame of this investigation. Contrarily, the second difference in labour size and early economic growth's positive ECM coefficients show divergence from the long-run equilibrium position during the study's short term. Additionally, the second difference in start economic growth contributes far more to the divergence from the long-run equilibrium path than the second difference in labour size in this research, according to the F-statistics value of 23.15 for initial economic growth. Kuznets environment (1955), which asserts that early economic progress leads to environmental deterioration, supports this conclusion.

## Conclusion and Recommendation

Using vector error correction model (VECM) approaches, this research investigated the empirical long-term link between human capital development and sustainable environment development in Nigeria from 1977 to 2013.

According to the empirical long-run VECM estimations, human capital development and environmental

sustainability are only moderately positively correlated in Nigeria. Additionally, this discovery shows that, between 1977 and 2013, in Nigeria, institutional quality and economic infrastructure had a favourable and large long-term influence on environmentally sustainable growth, not human capital development. The short-run VECM estimate also finds that the strongest endogenous variable to quickly shock other cointegrating variables or restore long-run equilibrium (stability) within the short-run period is human capital development (HCD), which is followed by economic infrastructure and institutional quality. However, the analysis comes to the conclusion that in Nigeria during the study period, it would take a longer time for HCD to restore long-run equilibrium within the short-run timeframe.

This research has two implications for policy. First, the government or decision-makers should prioritise Human Capital Development (HCD) in order to influence other pertinent factors that would provide sustainable environment development within the short term, as indicated in the short-run VECM estimate inside the research period. The government or policymaker should increase favourable policies on institutional quality and economic infrastructure than others, as also demonstrated in the long-run VECM estimate in this research, in order to produce a long-run environment of sustainable development. Due to time and resource limitations, the researcher would have wanted to gather data from every state in Nigeria, but was unable to do so. Limitations related to data collecting and processing are anticipated to be experienced throughout the investigation. Through the use of both quantitative and qualitative methods, the researcher intended to gather data. Obtaining the appropriate individuals and trustworthy quantitative data might be difficult. The data analysis might suffer if the appropriate data are not made public.

We might expect difficulties while using surveys to collect data. This is due to the possibility that respondents may have trouble expressing their opinions and comprehending the ideas and constructs being employed. The obtained unmeasurable data might make interpretation challenging.

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