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IMPACT OF HUMAN CAPITAL AND CORRUPTION ON ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

This study investigates the effect of human capital development and corruption on economic growth in Nigeria. The study employed Augmented Dickey-Fuller (ADF) and Phillip Peron (PP) tests, Johansen Cointegration test and Error Correction Mechanism (ECM) to analyse the data spanning from 1996 – 2020 sourced from World Development Indicators (WDI) and Transparency International. The empirical results show that human capital development has a significant negative effect on economic growth while corruption has a significant positive effect on GDP per capita. The results further reveals that the interaction variable has a negative and significant effect on economic growth in Nigeria. Therefore, the study conclude that human capital development and corruption have significant effect on economic growth in Nigeria. The study recommends among others that government should strengthening institutions of Economic and Financial Crime Commission (EFCC), Independent and Corrupt Practices Commission (ICPC) and Court of Conduct Bureau (CCB) in Nigeria.

KEYWORD: *ADF, ECM, TROP, Economic growth.*

INTRODUCTION

Economic growth is a significant indicator of the economy of a country on the eyes of foreign investors. Hence, foreign investors prefer to invest in countries that have high economic growth. To this end, countries take many actions in order to promote economic growth (Acemoglu & Restrepo, 2017). Bolton and Khaw (2006) state that economic growth is "the most fundamental indicator of an economy's health". They define it as the rate of growth of the national income of a country, measured by the annual percentage rate of change of country's gross domestic product. According to Ogu (2020), economic growth is one of the reasons why advanced countries have become richer and have improved standards of living. Economic growth is also a vital indicator of the economy's health (Bolton & Khaw, 2006). Therefore, it is not surprising that economic growth has attracted researchers' attention to investigate economic growth determinants, particularly in developing countries. Higher growth rates increase people's wealth and living standards (Weil, 2013).

Despite the importance of high growth rates, the World Bank's World Development Indicators (WDI, 2020) have revealed that Sub-Saharan countries such as Central Africa (CAF), Kenya (KEN), Nigeria (NGA) and South Africa (ZAF) have continued to experience fluctuations in their growth rates. It is also a concern that Nigeria has lagged behind other countries in the region in terms of growth rates in the last decade 1996-2020.

Available statistics from the WDI show that the growth rate in Nigeria was lower than in other countries of the SSA between 1996 and 2020. Also, economic growth measured by the gross domestic product (GDP) growth rates fluctuated during this period (see Fig 1.1)

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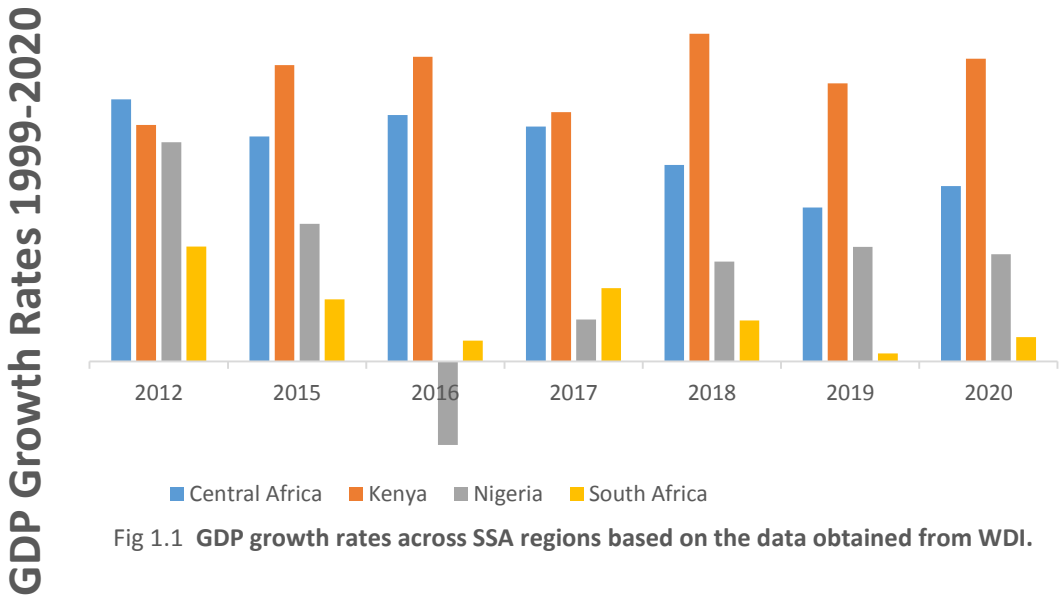

Fig 1.1 **GDP growth rates across SSA regions based on the data obtained from WDI.**

It is also clear from the comparison of growth rates across countries in the region that has been the least successful in terms of growth rates. For example, the Central Africa (CAF) growth rate appeared to be better than that of Nigeria between 1999 and 2020. Similarly, the Kenya (KEN) country had higher growth rates compared to Nigeria while South Africa (ZAF) outperformed Nigeria in 2016.

Although every country wants to experience a sustainable and high growth rate, the lack of human capital development measured by Human Development Index (HDI) can hinder the desire to achieve sustain economic growth. Human capital development is an objective that every country wants to achieve because of its accompanying benefits of high productivity, improved income and an efficient production base.

Several studies have recognised the importance of human capital development in the process of achieving meaningful and sustainable economic growth. For example (see, Adenike & Sheriffdeen, 2017; Adeyemi, Oseni & Awode, 2018; Amadi & Ololote, 2019; Andabai & Eze, 2018; & Olure-Bank & Usman, 2018). In the absence of a sizeable investment in the development of human capital in any country, sustained economic growth and development cannot be achieved. Therefore, the place of human capital development in economic growth cannot be over emphasized. For example, Adedeji and Bamidele (2003) and Barro (1991) noted that human capital development is a key prerequisite for a country's socio-economic and political revolution. To foster and promote economic growth, countries try as much as possible to develop their labour, in terms of improving educational and health conditions (Amadi & Ololote, 2019). One of the factors responsible for the impressive performance of most developed and developing countries is their commitment to human capital formation and development (Adedeji & Bamidele, 2003; World Bank, 2002; Barro, 1991). Most often, this is achieved by expanding the knowledge, skills and abilities that everyone in these countries gain through training and further education. Human capital plays an important role in versions of neoclassical and endogenous growth models (Mankiw, Romer & Weil, 1992; Rebelo, 1991; Sianesi & van Reenen, 2003).

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Available data from World Bank (2020) show that between 1996 and 2020, Nigeria human development index ranked below Kenya and South Africa countries. The human development indicatros across regions is reported in Table 1.1

Table 1.1: Human development indicators across selected SSA Countries

COUNTRY	1996	2002	2008	2015	2016	2017	2018	2019	2020
Central Africa	0.301	0.314	0.339	0.362	0.372	0.376	0.381	0.397	0.389
Kenya	0.452	0.45	0.515	0.562	0.568	0.574	0.579	0.601	0.59
Nigeria	0.484	0.528	0.485	0.527	0.528	0.533	0.534	0.539	0.5365
South Africa	0.649	0.618	0.644	0.699	0.702	0.704	0.705	0.709	0.707

Source: World Development Indicators (2020)

Following unimpressive human capital development, the SSA region has not achieved the desired GDP growth rate (GDP) needed to reduce poverty, income inequality, unemployment and other socio-economic problems facing the region. Economic growth models suggest that increase in a country's human capital, physical capital and technology determines country's overall economic output. According to Acemoglu and Robinson (2010) these factors are important determinants of economic growth. In addition to that, these factors working independently may not be sufficient in building a resilient and sustainable economy. Recently, the focus has been on the role played by quality of institutions in influencing economic growth. Recently, the focus has been on the role played by corruption in influencing the economic growth. The World Bank defines corruption as the abuse of public office for private gains. Public office is abused through rent seeking activities for private gain when an official accepts, solicits, or extorts a bribe. Public office is also abused when private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit.

The "sand the wheels" hypothesis maintains, by contrast, that corruption decreases economic growth because corruption prevents efficient production and innovation. The empirical evidence tends to suggest that corruption decreases economic growth, especially in countries with low investment rates and low-quality governance (for example, Aidt et al., 2008; Chang and Hao, 2017; Cieślik & Goczek, 2018a and 2018b; D'Agostino et al., 2016a and 2016b; Huang, 2016; Tsanana et al., 2016; Hodge et al., 2011; Mauro, 1995; Mo, 2001; Méon & Sekkat, 2005; Swaleheen 2011) and by leading to a misallocation of public expenditures away from growth-enhancing areas (such as education and health) towards areas which are less productivity enhancing, but are more corruption-intensive (such as large and expensive infrastructural projects) (Mauro 1997; Tanzi & Davoodi, 1997).

However, there are studies showing that corruption promotes economic growth as well by enabling investors to avoid bureaucratic delay through the use of 'speed money' and by encouraging low-paid government employees to work harder if they could supplement their income by levying bribes. When bureaucrats are indifferent to business and/or have other priorities, corruption may work like piece-rate pay for bureaucrats, which induces a more efficient provision of government services, and it provides a leeway for entrepreneurs to bypass inefficient regulations (see Huntington, 1968; Leff, 1964; Lui, 1999). There are many studies on the impact of corruption on economic in the region (see Abdul-Faroq, Mohammed & Frederic, 2013; Alege, Adamu & Muhamad, 2014; Amin, Ahmad & Zaman, 2013; Dharmarathna, 2020; James, 2008; Ibrahim, 2021) and corruption and public spending (Dan, 2018).

Nigeria spurs to promote growth, but the presence of corruption in an economy might make it difficult to achieve desire growth rates. No doubt Nigeria is facing corruption problems. For example, authors such as Abu et al. (2013), Abu et al. (2015a, 2015b) asserted that corruption is a very serious crisis facing countries in SSA region. Of course, corruption exist across all countries of the world, but it appears to be higher in the Nigeria (see Table 1.1).

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Table 1.2: Corruption Index of Selected SSA Countries

COUNTRY	2012	2015	2016	2017	2018	2019	2020
Central Africa	-0.99278	-1.30806	-1.28	-1.17323	-1.23355	-1.22844	-1.23099
Kenya	-1.09352	-1.01348	-0.89279	-0.95378	-0.8523	-0.77725	-0.81477
Nigeria	-1.16913	-1.07939	-1.02501	-1.07772	-1.04616	-1.09495	-1.07055
South Africa	-0.11558	0.025145	0.118392	-0.02301	-0.02305	0.084924	0.030938

Source: corruption perception index across selected Countries in SSA.

Given high corruption in Nigeria and sluggish growth, it is possible that the low level of development in Nigeria might depend on the role of corruption. It is against this background that the present study seeks to examine the impact of human capital and corruption on economic growth in Nigeria.

In the light of the above that this study intends to evaluate the impact of human capital and corruption on economic growth in Nigeria. The objective of the study is to examine the impact of human capital and corruption on the economic growth in Nigeria. In line with the above objective, the study seeks to test hypothesis of no significant relationship between human capital and corruption and economic growth in Nigeria. In order to achieve the above objective, this paper is divided into five different sections. Section one is the introduction. Section two is on literature review. Section three covers methodology. Section four focuses on data presentation, analysis and discussion of findings of the study. Section five is on summary, conclusion and recommendations emerging from the study.

2. LITERATURE REVIEW

There is no consensus on the exact meaning of corruption. Many writers have defined it differently under different conditions to encompass a wide range of conduct of misconduct. For instance, El- Rufai (2002) opines that corruption covers a wide range of social misconduct raging from massive fraud, extortion, embezzlement, bribery, nepotism, influence peddling, bestowing of favors to friends, rigging of elections, abuse of public property, sale of fake or expired drugs, etc.

Besides, there numerous recent empirical studies that have investigated the effects of corruption on economic growth in different countries. Beginning with the pioneering work of Mauro (1995) which examined the effect of corruption on growth rates of per capital GDP of sixteen countries from 1960-1985. The result of this systematic study shows that one-standard deviation decline in the corruption index leads to an increase in annual growth rates of GDP per capital by 0.8 percent. In yet another study Mauro (1997) shows that the size and composition of government expenditure is significantly affected by corruption. The study found that corruption tends to make public expenditure neglects education and health in favor of sectors where corruption might not be perceived easily. Consensus has not been established on the empirical relationship between corruption and economic growth for panel of countries while related studies in West Africa are not common. However, theoretical justification remains ambiguous. Empirical evidences with the use of different panel estimation methods by Boussalham (2018); Gründler & Potrafke (2019); Tidiane (2019) established inverse relationship between corruption and economic growth for 160 countries; 175 countries and WAEMU region, respectively. This implies that corruption sands the wheel of economic growth in the countries. On the other hand, Saha and Sen (2019) found positive relationship and concluded that corruption and economic growth have direct relationship in autocracies as compared to democracies.

Christopher, Shafuda and Utpal (2020) examined the impact of human capital on Namibia's economic growth from 1980 to 2015. The results of the analysis revealed a significant long-run positive relationship between human capital and economic growth.

Furthermore, Shahriyar, Ilkin and Sugra (2020) investigated the government's education expenditures on Azerbaijan's economic growth from 1995 to 2018 using ARDL, DOLS, and CCR. The results show that the government's expenditures on education impact positively on economic growth in the long-run. Bitterhout and Simo-Kengne (2020) did a panel analysis of the effect of corruption on then economic growth of BRICS countries.

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They used data from 1996 to 2014 and the fixed effect model and GMM estimation method to correct endogeneity problem. They established that corruption and economic growth have direct and significant relationship and long run equilibrium relationship existed among the variables used for the estimation. The coefficient estimate of investment was insignificant and did not meet the *a priori* expectation. Political stability, population growth rate and openness were not significant in the determination of economic growth, though were not significant while government consumption expenditure met the *a priori* expectation and was significant. In addition, Hoinaru, Buda, Borlea, Vaidean, and Achim (2020) used panel of 185 countries and data set for the period 2005 to 2015 to test the "Sand the Wheels" and "Grease the Wheels" hypotheses of corruption by examining the impact of corruption and shadow economy on the economic and sustainable development. They used correlation matrix and found that most of the variable used were strongly correlated. The fixed effect and the random effect estimation result showed that the relationship between corruption and economic development was not consistent. However, they found an inverse relationship between corruption and the shadow economy on one hand and the same inverse relationship between corruption and economic development. The result supports the 'sands the wheel corruption hypotheses. More so, Sule (2020) employed OLS method to examine the effect of institutional quality on Nigeria's economic growth from 1979 to 2018. The results show that institutional quality has a positive and significant impact on economic growth. Similarly, Khalil and Hafeez (2019) investigated human capital and economic growth nexus in corruption in developed and developing economies, East, West, and South Asia. The study employed GMM and the findings show that human capital and corruption positively impact economic growth.

Gründler & Potrafke (2019) provided new empirical evidence on the link between corruption and economic growth of 175 countries and data for the period 2012 to 2018 and the use of GMM. They found that corruption and its lag values were consistently significant and negative in the determination of economic growth. The found that rail lines, net migration, interpersonal globalization and trade were significant and positive in the determination of economic growth while economic globalization was negatively significant. Furthermore, Salama, Ijaz and Irfan (2018) explored the influence of human capital on Pakistan's economic growth from 1972 to 2013 using Johnson co-integration technique and found that human capital development has a positive and significant impact on the economy of Pakistan.

Boachie, Ramu and Polanjeva (2018) re-examined the relationship between public health expenditure and health outcomes in Ghana from 1980 to 2014 using OLS and the two-stage least squares (2SLS) estimation techniques. The results sugget that, apart from income, public health expenditure contributed to improved health outcomes for the period covered by the study.

In addition, Irfan, Sofia, Saima and Amber (2018) investigated the relationship between health expenditure and GDP in an augmented Solow growth model for Pakistan from 1985 to 2015 using ECM estimation technique and found that there is a positive relationship between health expenditure and GDP in Pakistan.

From empirical literature, it is worth noting that most of these studies were conducted in locations other than Nigeria. However, it is challenging to generalize the effects of human capital development and corruption on economic growth on a global scale. In addition, we are unaware of any research that integrates the concepts of human capital development and corruption into a unified framework. Therefore, this research aimed at filling the assumed gaps.

3. METHODOLOGY

This part dealt with the econometric techniques used to achieve the objectives of the study. Specifically, it discusses the model specification, data type and sources and further presents discussion on the estimation strategy including stationarity tests, Cointegration analysis and error correction techniques.

Model Specification

The baseline model for this study is based on the endogenous growth model. Based on the theoretical literature, the baseline model for the study is specified as:

$$Y_t = f\ (CPI, HDI, GFCF, TROP) \qquad 1$$

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where Y_t represents economic growth (RGDPPC as proxy) which measures the average income of citizenry; CPI is the corruption perception index, HDI is the human capital index and other control variables such as, gross capital formation (GCF) as proxy for investment, and trade openness (TROP) which takes cares of the extend the economy is opened to the rest of the world, and t is the time.

$$GDPPC_{t-1} = f(CPI_{t-1}, \quad HDI_{t-1}, \quad GCF_{t-1}, \quad TROP_{t-1} \qquad 2$$

Where all the variables are as previously defined.

For all two models, the study includes all control variables as expressed in equation 2 respectively. To express the econometrics model, the study define it as:

$$LNGDPPC_{t-1} = \beta_0 + \beta_1 CPI_{t-1} + \beta_2 HDI_{t-1} + \beta_3 LNGCF_{t-1} + \beta_4 TROP_{t-1} + \mu_1 \qquad 3$$

Where β_0 represents the constant term, β_i is the parameter coefficient (where i=1,2,3...n), Ln represent natural logarithm,, t-1 is the time lag and μ represents the Gaussian white noise.

Error Correction Model (ECM)

A long-term relationship (Cointegration) was first tested for, and then the study looked into both the long- and short-term parameter estimates using the error-correction model (ECM) within Ordinary Least Squares (OLS) The Schwartz Information Criterion (SIC) is used as the lag length selection criterion.

4. DATA ANALYSIS AND DISCUSSION OF RESULTS

This section presents the findings of this study, and begin with the summary statistics of the variables used in this study.

Table 1. Descriptive Analysis

	LNGDPPC	CPI	HDI	GCF	TROP
Mean	7.57	-1.15	0.50	4.42	0.38
Median	7.63	-1.15	0.50	4.01	0.37
Maximum	7.84	-0.89	0.53	8.13	0.54
Minimum	7.20	-1.43	0.45	1.45	0.26
Std. Dev.	0.23	0.11	0.02	2.49	0.08
Skewness	-0.45	-0.39	-0.36	0.06	0.31
Kurtosis	1.64	3.31	1.86	1.31	2.30
Jarque-Bera	2.78	0.74	1.91	2.97	0.91
Probability	0.24	0.68	0.38	0.22	0.63

Source: Author' Computation, (2023) E-views 10.0

Table 1 shows that the average values of gross domestic product per capita (GDPPC), corruption perception index (CPI), human capital development (HDI), gross capital formation (GCF) and trade openness (TROP) are 7.57, -1.15, 0.50, 4.42 and 0.38 respectively.

The Jarque-Bera statistic shows that gross domestic product per capita, corruption, human capital development, gross capital formation and trade openness are normally distributed. In addition, the Jarque-Bera statistic value not being significant implying rejection of null hypothesis of normality.

This suggests that estimating at levels may result in the spurious outcome because the variables show significant variance in terms of size. The strength of the linear link between the variables that were observed is gauged by the pair-wise correlation matrix.

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Table 2. Correlation Matrix Results

VARIABLE	GDPPC	CPI	GCF	HDI	TROP
GDPPC	1.0				
CPI	0.401112	1.0			
GCF	0.946345	0.445910	1.0		
HDI	0.310770	0.139977	0.487011	1.0	
TROP	0.557475	0.619347	0.561840	0.006172	1.0

Source: Author' Computation, (2023) E-views 10.0

Table 2 show the correlation coefficients of the variables (gross domestic product per capita, corruption, human capital development, gross capital formation and trade openness. The result in table 2 shows a strong positive relationship between GDPPC and other variables used in the model.

Unit Root Test

The unit root test is used to determine if a time series is stationary. Time series data for the key variables in the model (GDPPC, CPI, GCF, HDI, and TROP) were tested for the period 1996-2020 to guarantee their stationarity; otherwise, false regression findings can be generated, leading to estimates that are biased and inconsistent. Unit root testing often makes use of a number of well-established procedures. Stationarity and sequence of integration are established through the use of the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit tests. The time series is considered stationary if the absolute value of the ADF test statistic is larger than the Mackinnon critical value at the 5% level of significance.

Table 3. Unit Root Tests

Variable	Number Of Differencing	ADF	Critical Level (5%)	PP	Critical Level (5%)	Order Of Integration
GDPPC	At a Level	-1.539 (0.496)	-2.99	-1.176 (0.667)	-2.99	1(0)
	First Diff.	-5.404 (0.000)	-3.004	-5.459 (0.000)	-3.004	1(2)
CPI	At a Level	-2.034 (0.271)	-2.99	-2.196 (0.212)	-2.99	1(0)
	First Diff.	-6.125 (0.000)	-3.040	-5.055 (0.000)	-2.99	1(1)
GCF	At a Level	-0.318 (0.908)	-2.99	-0.193 (0.926)	-2.99	1(0)
	First Diff.	-4.717 (0.001)	-3.004	-4.559 (0.001)	-2.99	1(1)
HDI	At a Level	-1.575 (0.479)	-2.99	-1.633 (0.450)	-2.99	1(0)
	First Diff.	-6.698 (0.001)	-2.99	-4.771 (0.000)	-2.99	1(1)
TROP	At a Level	-2.745 (0.081)	-2.99	-2.745 (0.081)	-2.99	1(0)
	First Diff.	-6.333 (0.000)	-2.99	-6.784 (0.000)	-2.99	1(1)

Source. Researchers' Computations, 2023 using E-views 10.

Table 3 reveals that GDPPC is stationary at second difference. It is integrated of order 1(2) at 5% critical levels. More so, the result reveals that variables CPI, HDI, GCF and TROP are stationary at first difference. In other words, the variables are integrated of order 1(1) at 5% critical levels. Since the statistical values from the ADF and PP tests are smaller than the critical values at the 5% significance level.

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Johansen Cointegration Test Result

The co-integration test applied a multivariate test to co-integration to determine the long run relationship among the model variables. The Johansen (1991) co-integration test was employed where the trace and maximum eigen value test statistics are used for testing the null hypothesis that there is no co-integration among the variables namely: economic growth (GDPPC), corruption perception (CPI), gross capital formation (GCF), human capital development (HDI) and trade openness (TROP). The justification for the use of the Johansen co-integration method is when the variables are either of order one that is 1(1) or 1(2). The result of the test is presented in table 4.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.910035	177.3869	95.75366	0.0000
At most 1 *	0.859772	121.9953	69.81889	0.0000
At most 2 *	0.771009	76.81207	47.85613	0.0000
At most 3 *	0.635261	42.90838	29.79707	0.0009
At most 4 *	0.506833	19.71120	15.49471	0.0109
At most 5	0.139378	3.452305	3.841466	0.0632
Trace test indicates 5 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.910035	55.39162	40.07757	0.0005
At most 1 *	0.859772	45.18318	33.87687	0.0015
At most 2 *	0.771009	33.90369	27.58434	0.0067
At most 3 *	0.635261	23.19718	21.13162	0.0252
At most 4 *	0.506833	16.25889	14.26460	0.0239
At most 5	0.139378	3.452305	3.841466	0.0632
Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source. Researchers' Computations, 2023 using E-views 10.

Table 4 illustrates the results after carrying out the Johansen co-integration test based on Trace statistic and Max-Eigen statistic. From the results of co-integration equations baesd on the two statistics, there is a long run relationship among the variables. The Johansen co-integration test results indicate that the trace and maximum Eigen statistic revealed rejection of the null hypothesis of no co-integration among the variables at a 5% significant level. The result shows that the trace statistic values of 177.38, 121.99, 76.81, 42.91 and 19.71 were greater than the critical values of 95.75, 69.81, 47.86 29.79 and 15.49 in five instances. In addition, the Max Eigen value of 55.39, 45.18, 33.90, 23.19 and 16.25 were greater than the critical value of 40.07, 33.87, 27.58, 21.13 and 14.26 also in five instances

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Error Correction Model (ECM)

In order to account for the short-run impact of the explanatory variables CPI, HDI, GCF and TROP on the behaviour of real gross domestic product per capita within the sample period under investigation, the long-run model was specified with the residuals from the co-integration regression as error correction mechanism (ECM). The results are presented in Table 5

Table 5. Error Correction Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.377411	1.101265	5.790985	0.0000
LNGDPPC(-1)	0.747254	0.081026	9.222343	0.0000
CPI	4.330534	0.680147	6.367059	0.0000
HDI	-11.90990	1.763907	-6.751997	0.0000
LNGCF	0.046257	0.023636	1.957089	0.0692
POP	2.02E-09	6.32E-10	3.197634	0.0060
TROP	-0.180232	0.077410	-2.328263	0.0343
CPIHDI	-8.931830	1.355147	-6.591041	0.0000
ECM(-1)	-0.042080	0.076925	-2.547020	0.0163
R-squared	0.857007			
Adjusted R-squared	0.835410			
F-statistic	624.5298			
Prob(F-statistic)	0.000000			

Source. Researchers' Computations, 2023 using E-views 10.0

The result in table 5 indicates that the adjusted R^2 is 0.835410, therefore implying that 83.5% of the total variation in GDPPC is explained by CPI, HDI, GCF and TROP and the reminder of 6.5% is accounted for by factors not specified in the model or white noise residual. The F-statistic value of 624.5 shows that the model is statistically significant at 5% level of significance, hence we conclude that the model is adequate enough to empirically investigate the effect of human capital development and corruption on economic growth in Nigeria. The significance of the model is further justified by the probability value of F-statistic of 0.000. The coefficient of the lagged error correction term was correctly signed and significant at 1% level. Thus, the model is able to correct for any deviation in gross domestic product per capital from short-run equilibrium situation to long-run equilibrium. The coefficient of the ECM with a value of 0.04 means that the speed of adjustment is about 4% which indicates that the speed of adjustment to long-run when there is a temporary disequilibrium would be relatively slow. The Durbin-Watson statistic of approximately 2.00 indicates the absence of autocorrelation in the model.

The result in table 5 shows that the constant parameter is 6.387411 meaning that if all exogenous variables are held constant, economic growth is increased by 6.39 units. Previous year, economic growth GDPPC (-1) is positively related to current year economic growth (GDPPC). Its coefficient of 0.747254 imply that a percentage increase in previous year gross domestic product per capita causes an increase in GDPPC by 0.75 percent. The result also demonstrate that corruption (CPI) has a positive and significant effect on economic growth at 1% level of significance. It means therefore that a unit increase in corruption leads to 4.33 increase in GDPPC. This finding is in line with the ones reported by Bitterhout and Simo-Kengne (2020) and Gründler & Potrafke (2019).

The result in table 5 further revealed that human capital development (HDI) has a negative and significant effect on economic growth in Nigeria at 1% level of significance. Its coefficient of -11.90990 means that a unit increase in HDI will result in 11.91 units decrease in economic growth. Gross capital formation (GCF) and economic growth (GDPPC) are positively related at 10% level of significance. The coefficient of GCF is 0.048257. This shows that GCF exerts a positive effect on GDPPC. A unit increase in GCF leads to 0.05 units increase in GDPPC. Trade openness (TROP) and GDPPC are negatively related. TROP coefficient of -0.180232 implies that if TROP is increased by a unit, economic growth retards by 0.18 units at 5% level of significance. The result further demonstrated that the effect of human capital development on economic growth is depended on the level of

corruption in the country. As revealed in table 6, the coefficient of the interaction term indicates a negative relationship between human capital development, corruption and economic growth. This implies that if human capital development and corruption variables are jointly computed, a unit increase in them lead to 8.93 decrease in GDPP. This finding is contrary to previous study conducted by Hoinaru, Buda, Borlea, Vaidean, and Achim (2020).

CONCLUSION

The main objective of this study is to examine the effect of human capital development and corruption on economic growth in Nigeria. Augmented Dickey-Fuller (ADF) and Phillip Peron unit root tests, Johansen cointegration test and Error Correction Mechanism (ECM) were employed for the empirical analysis. The result of ADF and PP tests showed that the stationarity of all the variables at 1(1) and 1(2) which is the prerequisite for the cointegration test. The Johansen cointegration test indicates that there are five cointegration equations for the both Trace statistic and Max-Eigen statistic at 5% significance level, implying that a long-run relationship exist among the variables. The coefficient of multiple determination (adjusted $R^{2)}$ and that of the lagged error correction term suggest that the explanatory variables have a significant effect on economic growth in Nigeria. The ECM result revealed that all the explanatory variables have significant effect on economic growth. Based on this result, the study conclude that human capital development and corruption have a significant effect on economic growth in Nigeria. The study therefore recommends the following:

i. Although corruption has a positive effect on economic growth, government should strengthening institutions such as Economic and Financial Crime Commission (EFCC), Independent and Corrupt Practices Commission (ICPC) and Court of Conduct Bureau (CCB).
ii. Government should lay more emphasis on skills development rather than certification to improve the quality of human capital development
iii. Although gross capital formation has a positive effect on economic growth, government encourage entrepreneurs to source for capital for investment at a I digit interest rate

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