Income Inequality and Economic Growth In Nigeria: Implication For Economic Development*

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Abstract: This study examined the relationship between income inequality and economic growth in Nigeria and its implication for economic development. The study covered the period 1981 to 2017 and employed the autoregressive distributed lag estimation technique. The results of the study showed that economic growth had positive but insignificant impact on income inequality in Nigeria. Thus, the study recommends the need for the government to ensure equitable distribution of economic gains among the poor citizens. The budgetary preparation and allocation should also be pro-poor based and tailored towards improving the welfare of the larger population and not at further enriching the few rich ones. The implementation of the above and other welfare enhancing policies would contribute to increasing the level of economic development in Nigeria.

Keywords: Income inequality; economic growth; ARDL; Nigeria

JEL Classification: E64

1. Introduction

The discourse on the link between income inequality and economic growth has been polarized into two distinct stands. On the one hand, scholars stressed that economic growth is inimical to reduction in income inequality while on the other hand, others emphasized that economic growth leads to more income inequalities due to the lopsided distribution in the gains of economic growth among members of the society at which few individuals get large share of economic growth at the expenses of the larger proportion of the society. Empirical studies on income inequality and economic growth have equally produced mixed results. While studies[2] have showed a positive relationship between income inequality and economic growth; other studies[3] showed a negative relationship between income

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[2] See (Penalosa & Turnovsky, 2006; Forbes, 2000; Li & Zou, 1998; Partridge, 1997).

[3] See (Grundler & Scheuermeyer, 2015; Zouhier & Imen, 2012; Deininger & Squire, 1998; Persson & Tabellini, 1994).

inequality and economic growth. In addition, Delbianco, Dabus and Caraballo (2014) noted that the relationship between income inequality and economic growth depends on income level of the country. Available data on Nigeria suggests that the growth rate of the country has not been stable overtime as shown on fig 1 below; however, the extent of the influence of economic growth on the level of income inequality remained uncertain owing to the lack of empirical studies on the issue. Existing studies have largely focused on the link between poverty and economic growth. It is no doubt that widening income inequality increasing poverty level and declined economic development, thus examining this issue provides a better understanding on the relationship between poverty and economic growth in Nigeria.

In addition, examining the link between income inequality and economic growth is vital because, widening income inequalities have prompted incessant labour unions agitation for increased minimum wage; widening income inequalities have increased social and political unrest; and rising poverty level which is accompanied by decline in standard of living among others. All of these have contributed to worsening the economic development in the country. In the light of the above issues concerning the consequences of rising income inequalities on the socio-economic development, this study therefore examines the relationship between income inequality and economic growth in Nigeria.

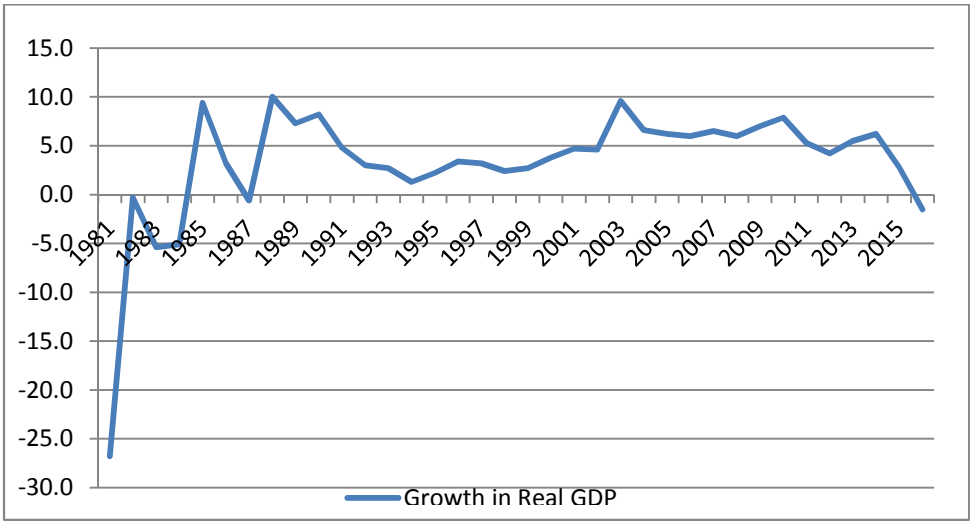

Figure 1. Economic Growth in Nigeria 1981 to 2016

Source: Authors' Computation 2018 using E-views 9, 2018

2. Literature Review

From the theoretical perspectives, the developmentalist emphasized that income inequality results from absence of economic growth while "class-based" or Marxist theory posited that inequality in income results from uneven development and exploitation, resulting in skewed asset and income distribution (Angelsen & Wunder, 2006). In explaining the link between income inequality and economic growth, the classical economists emphasize a positive relationship between the variables. According to the classical, increase in income inequality results in increase in economic growth given that it is the rich that undertakes saving and investment which are pivotal to economic growth. In contrast to the classical position, proponents of the "political economy" theory argued that income inequality is detrimental to economic growth via different channels such as credit market imperfections, social instability or rent-seeking activities (Delbianco, Dabus & Caraballo, 2014). The Kuznet (1955) hypothesis explained the link between income inequality and economic growth as inverted U shaped. The Kuznet hypothesis noted that at the earlier stages of economic growth, inequality in income increases, as the economy grows further; inequality reaches its peak and then finally declines with continuous economic growth. Thus, the Kuznet hypothesis noted that in the short run there exist a positive relationship between income inequality and economic growth while in the long the relationship between income inequality and economic growth is negative.

From empirical literatures, Grundler and Scheuermeyer (2015) examined the relationship between income inequality, economic growth and the effect of redistribution for a group of 154 countries. Employing system GMM methods, the study observed that income inequality had negative effect on economic growth. Holding net inequality as constant, the study observed that public redistribution negatively affects economic growth. Combining the negative direct growth effect and the indirect positive effect operating through lower net inequality, the study observed that the overall impact of redistribution on economic growth is insignificant. In Tunisia, Mnif (2015) observed a negative relationship between income inequality and economic growth. Delbianco et al. (2014) examine the relationship between the income inequality and the economic growth for a group of 20 Latin American and Caribbean countries over the period 1980-2010. The results of the study showed that the relationship between income inequality and economic growth depends on the income level. In general, the study observed that income inequality is harmful to economic growth. However, when it comes to the upper tail of the richer countries' income distribution, higher inequality encourages economic growth and the relation becomes positive. Nasfi and Malek (2014) examine the link between economic growth and income inequality in Tunisia over the period 1984 – 2011. The study observed that income inequality had negative effect on economic growth after the acceleration of the process of opening

exchange. Banya (1995) found evidence for the Kuznet inverted U curve using data from a group of developing countries. Empirical evidence from the reviewed literature showed that there still exist controversy on the relationship between income inequality and economic growth. Also, most studies on this issue have focused on panel studies while the few country specific studies focused on developed and other developing countries excluding Nigeria. Consequently, this study intends to bridge the gap in knowledge by carrying a country specific study on the relationship between income inequality and economic growth in Nigeria over the period 1981 to 2017.

3. Methodology

3.1. Model Specification

To examine the impact of economic growth on income inequality, this study employs the classical theory which emphasize a positive link between the variables, thus a simple model is specified as:

$$INQ_t = f(GRT_t) \quad (1)$$

Introducing other control variables used in Delbianco et al. (2014) and Levine and Renelt (1992), equation (1) becomes:

$$INQ_t = f(GRT_t, PCI_t, GXP_t, OPN_t POP_t) \quad (2)$$

Linearing equation (2) becomes

$$INQ_t = \delta_0 + \delta_1 GRT_t + \delta_2 PCI_t + \delta_3 GXP_t + \delta_4 OPN_t + \delta_5 POP_t + \varepsilon_t \quad (3)$$

From equation (3), INQ is income inequality measured by the Gini coefficient, GRT is economic growth measured by the annual growth rate of the real gross domestic product, PCI is per capita income measured by the ratio of real GDP to total population, GXP is aggregate government expenditure measured by the sum of capital and recurrent expenditure, OPN is trade openness measured by the ratio of total trade to real GDP, POP is population growth measured by the annual growth rate of the population and ε is the stochastic error term.

4. Regression Estimate and Discussion

The study commenced its regression estimate by conducting the unit root test using the Augmented Dickey Fuller test and the result presented on table 1. The unit root test showed that all the variables were integrated of order one, indicating that the

variables were I(1) variables except economic growth rate and population growth rate. Both the growth rates of the economy and population were integrated of order zero, indicating that the variables are I(0) series. The mix in the order of co-integration indicates the need for the testing of the co-integration through the use of Johansen-Juselius bound co-integration technique.

Table 1. Unit Root Test

Augmented Dickey-Fuller (ADF) Test			
Variables	Level	After Differencing	Status
INQ	-2.7583	-5.0142*	I(1)
GRT	-8.4744*	-	I(0)
PCI	-0.5609	-3.0702**	I(1)
LGXP	-1.1531	-7.2053*	I(1)
OPN	-0.4828	-5.5637*	I(1)
POP	-8.7959*	-	I(0)

Source: Authors' Computation 2018 using E-views 9, 2018

Note: * and ** denote 1% and 5% critical values respectively.

Sequel to the mix in the result of the unit root tests presented in table 1 above, this study carried out the co-integration test using the Auto-Regressive Distributed Lag Bound Co-integration test. Pesaran, Shin and Smith (2001) provide two asymptotic critical values (lower and upper) bounds for testing the existence of co-integration when the regressors are purely I(0) or I(1). A lower value assumes the regressors are purely I(0) while an upper value assumes the regressors are purely I(1). If the F-statistic falls outside the critical values, then a conclusive statement can be made regarding the nature of co-integration among the variables in the ARDL model, without a priori information on the order of integration of the independent variables. For instance, if the F-statistic is higher than the upper critical value, then the null hypothesis of no co-integration is rejected, suggesting the existence of co-integration among the variables. Conversely, if the F-statistic is lower than the lower critical value, then the null hypothesis of no co-integration cannot be rejected, suggesting the absence of co-integration among the variables. However, if the F-statistic falls between the upper and lower critical values, then the result is inconclusive.

Table 2. ARDL Bound Co-integration Test

Estimated Model	F-Statistics	
	27.4695	
Critical Values	**Lower Bound**	**Upper Bound**
1%	3.41	4.68
5%	2.62	3.79

Source: Authors' computation using e-views 9, 2018

Note: ** implies five percent significance level

From the co-integration result presented in table 2 above, it was observed that the value of the F-statistics for the estimating model which is approximately 27.47 is higher than the upper bound critical value at 5%, suggesting the presence of co-integration among the variables in the model, thus the study presented both the long run and short run ARDL regression estimates. From the long run estimate presented on table 3 below, the study observed that economic growth (GRT) had positive but insignificant impact on income inequality in Nigeria, indicating that increase in economic growth has the tendency to increase the level of income inequality in Nigeria but such impact is insignificant. The study also observed that government expenditure (LGXP) and population growth (POP) had positive and significant impact on income inequality. Statistically, a unit increase in government expenditure and population growth is expected to increase income inequality by 7.78 and 24.01 units in the long run. The significant impact of government expenditure and population growth on inequality can be attributed to the fact that the yearly increase in budgetary expenditures of the government have not impacted on the poor in terms of jobs creations and improvement in the standard of living. With respect to population growth, increases in population without a corresponding increase in income level and welfare packages will definitely increase poverty level and the level inequality in the country. Furthermore, the result of the study showed that openness had negative and significant impact on inequality, indicating that a unit increase in openness is expected to reduce income inequality by 112.8 units. Since the mid 1980s, the Nigerian government had liberalized the economy for greater access to international trade; this may have contributed to reducing income inequality in Nigeria. Finally, the study observed that per capital income has an insignificant impact on income inequality in Nigeria. This outcome can also be attributed to the insignificant contribution of economic growth in reducing income inequality in the country. The results from the short run estimate showed that the error correction term (*ECM term(-1)*) had the expected negative signed and is statistically significant. The coefficient estimate of the error correction term of -0.76 implied that the regression estimate corrects its short-run disequilibrium by about 76 percent speed of adjustment in order to return to the long-run equilibrium.

Table 3. ARDL Regression Estimates on Income Inequality and Economic Growth in Nigeria

Variables	Coefficients	Std. Error	t-Statistics	Prob.
C	-118.4550	22.7012	-5.2180	0.0012
GRT	1.5538	0.6886	2.2564	0.0586
PCI	0.5242	8.5064	1.0351	0.3350
LGXP	7.7801	1.1808	6.5886	0.0003
OPN	-112.8146	32.5375	-3.4672	0.0104
POP	24.0094	3.5935	6.6813	0.0003
ECM term(-1)	-0.7624	0.1281	-5.9509	0.0006

Source: Author's Computation using e-views 9, 2018.

To ensure the robustness of the regression estimate, some diagnostic tests (such as normality and heteroskedasticity ARCH tests) were conducted. The normality test results showed that the probability value of the Jarque-Bera statistics is greater than 5%, indicating that the residuals from the estimates are normally distributed while the heteroskedaticity (ARCH test) also showed the absence of serial correlation in the estimates. This is because the probability value is greater than 0.05. The results of the diagnostic tests showed the appropriateness of the regression estimates.

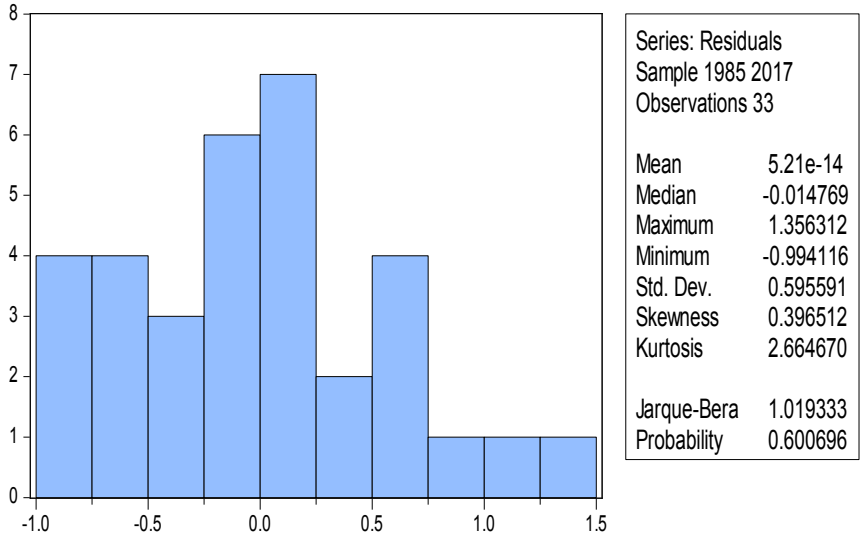

Figure 2. Normality Test

Source: Authors' Computation 2018 using E-views 9, 2018

Table 4. Heteroskedasticity Test: ARCH

F-Statistics	1.0712	Prob. F(1,30)	0.3090
Obs*R-squared	1.1032	Prob. Chi-Square(1)	0.2936

Source: Authors' Computation 2018 using E-views 9, 2018

5. Conclusion and Recommendations

This study examined the relationship between income inequality and economic growth in Nigeria and its implication for economic development. The study covered the period 1981 to 2017 and employed the autoregressive distributed lag estimation techniques.

The results of the study showed that economic growth contributed positively in increasing income inequality in Nigeria, however it impact was insignificant. The implication of this result is that the increase in growth achieved over the years has

the tendency of fuelling or widening the income inequality gap between the rich and poor which is detrimental to economic development. In view of the findings, it was recommended that there is the need for the government to ensure equitable distribution of economic gains among the poor citizens.

The budgetary preparation and allocation should also be pro-poor based and tailored at improving the welfare of the larger population and not at further enriching the few rich ones. Also, the provision of employment opportunities and the payment of unemployment benefits to the unemployed would also contribute to reducing income inequality. The implementation of the above and other welfare enhancing policies would contribute to increasing the level of economic development in Nigeria.

6. References

Angelsen, A. & Wunder, S. (2006). Poverty and Inequality: Economic Growth is better than Its Reputation, *Chapter in Dan Banik (ed.): Poverty, Politics and Development: Interdisciplinary Perspectives.* Fagbokforlaget, Bergen.

Banya, B. (1995). Income Inequality in Developing Countries. *Honors Projects.* Paper 53. http://digitalcommons.iwu.edu/econ_honproj/53.

Deininger, K. & Squire, L. (1998). New ways of looking at old issues: Inequality and growth. *Journal of Development Economics*, 57, pp. 259-287.

Delbianco, F.; Dabús, C. & Caraballo, M.A. (2014). Income Inequality and Economic Growth: New Evidence from Latin America. *Cuadernos de Economía,* 33(63), pp. 381-398.

Forbes, K.J. (2000). A Reassessment of the Relationship between Inequality and Growth. *American Economic Review*, 9(4), pp. 869-887.

Grundler, K. & Scheuermeyer, P. (2015). Income Inequality, Economic Growth, and the Effect of Redistribution, Würzburg Economic Papers, No. 95, Univ., Dep. of Economics, Chair VWL 1, Würzburg.

Kuznets, S. (1955). Economic Growth and Income Inequality. *American Economic Review*, 45, pp. 1-28.

Levine, R. & Renelt, D. (1992). A Sensitivity Analysis of Cross-Country Growth Regressions. *American Economic Review*, 82(4), pp. 942-963.

Li, H. & Zou, H. (1998). Income inequality is not harmful for growth: Theory and evidence. *Review of Development Economics*, 2, pp. 318-334.

Mnif, S. (2015). Impact of Inequalities on Economic Growth: Case of the Developing Countries, *Journal of Sustainable Development Studies*, 8(1), pp. 1-20.

Nasfi, F.W. & Malek. El-W. (2014). The Relationship between Economic Growth and Income Inequality. *International Journal of Economics and Financial Issues*, 4(1), pp. 135-143.

Pesaran, M.H.; Shin, Y. & Smith, R.J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships, *Journal of Applied Econometric*, 16, pp. 289 - 326.

Partridge, M. (1997). Is Inequality Harmful for Growth? Comment. *American Economic Review*, 87(5), pp. 1019-1032.

Penalosa, C.C. & Turnovsky S.J. (2006). Growth and Income Inequality: A Canonical Model, *Economics Theory*, 28, pp. 25-49.

Persson, T. & Tabellini, G. (1994). Is Inequality Harmful for Growth? *American Economic Review*, 84(3), pp. 600-621.

Zouheir, A. & Imen M.S. (2012). Economic Growth and Income Inequality, Empirical Evidence from North African Countries, *Asian Economic and Financial Review*, 2(1), pp. 142-154.

Is there any Missing Link in the Nexus between Human Capital Development and Economic Growth in Developing Economies? Evidence from Nigeria

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Abstract: Human capital and human capital development have been used interchangeable in the growth literature to achieve sustainable economic growth in the developing economies. While the expansion in educational enrolment rate has not guaranteed a long-run growth in developing economies, the question remains is there any missing link in the nexus between human capital development and economic growth in developing economies? Using the income measurement approach, the study examined the nexus and causality between human capital development and economic growth in the long run economic growth in Nigeria. This study found that human capital development, curriculum development, inflation rate and GINI index were the missing link variables in achieving long run economic growth within 1985-2016 in Nigeria. Also, the study found bidirectional causality between human capital development and economic growth using income measurement approach. Therefore, the identified missing link variables in the nexus between human capital development (HCD) and economic growth in Nigeria should guide policymakers and the academic to achieve sustainable economic growth in the developing economies.

Keywords: Human capital development; economic growth; income approach; long run OLS causality

JEL Classification: E24; I25; O15; O55

1. Introduction

Previous studies have acknowledged human capital as a major variable in achieving sustainable economic growth in both developed and developing economies. However, the traditional growth theories have been queried because expansion in educational enrolment rate has not significantly guaranteed a long run

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growth as this has spurred the need for human capital development as a major variable in the new growth theories.

Prior to the evolution of the new growth theories, both classical and neoclassical growth models recognized human capital as a factor-input in production function. Hence, Smith (1776) saw human capital as a labour and a factor of production.

The neoclassical growth models pioneered by Solow (1957), on the other hand incorporated human capital into production as an additional input with the introduction of constant technological progress as main determinant of economic growth. However, the inability to explain long-run growth and growth differences among nations led to the emergence of the new growth theory that placed emphasis on increasing technological progress and its effects on human capital. Becker (1964), Schultz (1961), Mincer (1970, 1974) also recognized the importance of investment in education and training through formal and informal education as well as the building of the stock of skills and abilities over time to affect output and labour productivity. In their studies, three measures of human capital – output, expenditure and income approach were used. The output measure of human capital used school enrollment rate, average years of schooling and others, while the expenditure approach used the individual or government cost incurred to provide the education and training, but the income approach used per capita income, earnings, normal wages, income policy and others (Mulligan & Sala-i-Martin, 1995).

With the endogenous growth theories of the 1980s and 1990s approached by Lucas (1988), Romer (1990), Rebelo (1991) and others, human capital was proxied by educational enrollment rate and health expenditure with emphasis on increasing technology progress as a major determinant of a long run economic growth for any nation.

Hence developing countries, including Nigeria, specifically incorporate human capital in the form of education and health policies to accelerate economic growth, as advocated by the endogenous growth theory. For instance, the education sector witnessed Free Universal Primary (UPE) education in 1976, expansionary education reform in terms of increase in education budget at all tiers of government, which accounted for 55 percent enrolment increase between 1980 and 1998 and further increase to 39.4 percent enrolment between 1999 and 2013 (CBN, 2015).

Also, the health sector initiated various national and state health policies to actualize Universal Health Coverage (UHC) such as the primary, secondary and comprehensive health care scheme, National Health Insurance Scheme (NHIS) launched in 1999 and fiscal health budget. Between 2002 and 2007, the government expenditure on health as a percentage of total government expenditure

increased from 3.3 percent to 9.4 percent but recently dropped from 6.7 percent to 4.7 percent between 2012 and 2017.

Despite the use of education and health sector reforms as proxy for human capital, the GDP growth rate increased from 3.1 percent between 1990 and 1994 to 6.5 percent between 2000 and 2004 but dropped from 6.3 percent between 2005-2009 to 5.7 percent between 2010 and 2014 in Nigeria (Ajakaiye, Jerome, Nabena & Alaba, 2016).

Several empirical studies have assessed the contribution of human capital to economic growth in Nigeria, however, their outcomes had been divergent. For example Ojo and Oshikoya (1995), Imoughele and Ismailia (2013), Obi and Obi (2014), Garba (2002), Ishola and Alani (2012) and Dauda (2010) employed outcome approach as a measure of human capital while Adelakun (2011), Ogujiuba (2013), Eighiremolen and Anaduaka (2014), Babasanya, Ogunleye and Ogunyomi (2017) and Osoba and Tella (2017) used expenditure approach as a proxy for human capital. However, recent studies of Adams (2003), Mba, Mba, Ogbuabor and Ikpegbu (2013), Olalekan (2014), Lawanson (2015) and Oluwatobi and Ogunrinola (2016), employed both output and expenditure approaches as measure of human capital. Dauda (2010), Eighiremolen and Anaduaka (2014), Babasanya, Ogunleye and Ogunyomi (2017) adapted the Solow neoclassical growth model. In addition, simple regression, time series ordinary least regression and panel OLS were their methodology employed. While Maitra (2018), Osoba and Tella (2017) and Olalekan (2014) recently measured human capital as the product of education and health expenditure or the interactive effect, unlike previous studies that measured human capital from individual effect.

Unfortunately, none of these reviewed studies measured human capital or human capital development from the perspective of developing economies that lack adequate physical capital which should enhance the potential of ideal human capital resources. Based on the gap identified from existing studies, this study explored the missing link in the nexus and direction of causality between human capital development and economic growth using the income measurement approach.

2. Literature Review

Conceptual Review

Theoretically, the term human capital development has been widely mis-conceptualized as human capital. The term human capital simply refers to the stock of competencies, skills, knowledge and other attributes embodied in individuals or groups of individuals acquired to influence productive capacity of a nation in an idea society (OECD, 2011).

On the other hand, human capital development also refers to the stock of competencies, skills, knowledge and other attributes embodied in individuals or groups of individuals acquired to influence productive capacity of a nation with adequate physical infrastructural such as transportation, communication, availability of internet and others. Most developing economies lack their basic infrastructure which affects the productive capacity of their human capital. Conclusively, human capital development is the problem of developing economies as against the perception of human capital as education and health expenditure or educational enrollment rate (Pettinger, 2017; Ritter, 2018).

Theoretical Review

The classical economic growth theories pioneered by Smith (1776) first acknowledged the role of labour size as a determinant of economic growth. However, in the early nineteen century, Harrod-Domar (1940) emphasized on savings and physical capital investment accumulation as main determinants of economic growth. Todaro and Smith (2011) on the other hand argued that savings and investment are necessary conditions for accelerated rates of economic growth but not sufficient for sustainable development. The sufficient conditions include well-integrated financial and capital markets, highly developed transport facilities, a well-trained and educated workforce, good and efficient governance capable of converting new capital effectively into higher sustained output level.

The neoclassical growth theory developed by Solow-Swan (1956) introduced technological progress, often known as exogenous factor to consolidate the Harrod-Domar growth weaknesses. In the same vein, they accepted that labour and physical capital are main determinants of economic growth but with more emphasis on constant technological progress which is expressed in the Cobb-Douglas production function as: $Y= At K^{\alpha} L^{1-\alpha}$. Also, Solow-Swan (1956) assumed a steady-state economy, implying that both labour size and technology level remains constant.

Unfortunately, the diminishing returns to capital investment failed to provide a long-run economic growth for any nation as had been argued that physical capital alone cannot achieve economic growth and thus led to the emergence of endogenous growth theories.

Following the weaknesses of Harrod-Domar and Solow-Swan growth theories to explain the long run economic growth determinants in their models and the assumption of physical investment only as a determinant of economic growth, Romer (1990) pioneered the endogenous growth theories with the introduction of technological progress. In addition, he assumed an increasing technological progress to explain the long-run economic growth. More importantly, Lucas (1988) also introduced human capital into this existing endogenous Cobb-Douglas production function expressed as:

$$Y=F(A,K,H,L)$$

Lucas (1988) on the other hand explained in his model how increasing technological progress will enhance human capital, physical capital and labour productivity and eventually result in a long-run economic growth for any nation.

Empirical Review

There are several studies on the nexus between human capital and economic growth in developed and developing countries but very few studies examined the relationship between human capital development and economic growth from the perspectives of deficiencies in physical infrastructure (capital) in most developing economies.

Adelakun (2011) conducted a study on human capital development and economic growth using classical regression technique. In this study, economic growth is proxied by GDP while the human capital is proxied by total government expenditure on education and health, and the enrollment pattern of tertiary, secondary and primary schools. The study concluded that there is a positive relationship between human capital development and economic growth.

Ishola and Alani (2012) on the other hand examined the relationship between human capital development and economic growth employing time series econometric technique and a Solow Augmented model. In the study, the dependent variables is measured by GDP per growth while the independent variables include growth rate of labour, growth rate of capital, Structural Adjustment Programme and the human capital output method – Life literacy rate and Adult literacy rate. The study also concluded that human capital has a positive relationship with economic growth in Nigeria.

Oluwatobi and Ogunrinola (2011) also investigated the implication of government expenditure on human capital development for economic growth in Nigeria adopting the Solow Augmented model in their OLS estimation. Unlike previous studies, they considered the product of human capital and labour size (hL), physical capital, recurrent and capital government expenditure on education as independent variables while the dependent variable is measured by real GDP. Their result concluded that a long-run relationship exist between human capital development and economic growth.

Ogujiuba (2013) examined the impact of human capital formation on economic growth in Nigeria using Error Correction Model. Unlike previous studies, this study considered only expenditure on education as human capital as well as the three tiers enrollment rates and the real gross capital formation as the independent variables while real GDP growth is proxied as the economic growth. He concluded that recurrent expenditure on education has a positive significant impact on

economic growth as against capital expenditure. However, the result confirmed that human capital formation did not guarantee a long run economic growth.

In the study by Mba, Mba, Ogbuabor and Ikpegbu (2013) on human capital development and economic growth in Nigeria, the study employed OLS technique and exogenous growth model. The economic growth is proxied as real GDP per capita while primary school enrollment, life expectancy, public expenditure on education and health are proxied as the human capital and the stock of physical capital is proxied as capital formation. The study found that the human capital variables were significantly related to economic growth within the period 1977-2011 in Nigeria.

Similarly, Eighiremolen & Anaduaka (2014) investigated the impact of human capital development on national output, using quarterly time series data from 1999 to 2012 in Nigeria. Also, they employed Solow Augmented growth model and OLS technique. The human capital development was measured by the combination of capital and recurrent expenditure government expenditure, without considering health expenditure. They found a positive relationship among all the independent variables on economic growth in Nigeria.

A recent study by Olalekan (2014) examined the impact of human capital on economic growth in Nigeria using a Generalized Method of Moment (GMM) for an annual data from 1980 to 2011. He pioneered the use of human capital measure as health adjusted education which is obtained by the product of primary enrollment rate and ratio of health expenditure as percentage of GDP. His results found that health adjusted education proxied as human capital has a higher input on economic growth. Thus, his study confirmed the simultaneous role of education and health expenditure on economic growth in Nigeria.

Also, Osoba and Tella (2017) in their study, human capital variables and economic growth in Nigeria also considered the importance of interaction between education and health expenditure. The theoretical framework adopted was Solow Augmented production function. Also, the study used annual time series for the period 1986-2014. In addition, the study employed Fully Modified OLS (FMOLS) technique for the annual period of 1986-2014. The human capital is proxied by government expenditure on education and health separately, interaction between government expenditure on education and health while government capital formation as the physical capital. Also, the dependent variable, economic growth is proxied by real GDP. Their results found that the interaction effect of human capital caused a long-run economic growth.

In Contrast, Ekperiwase, Olutayo & Egbetokun (2017) examined human capital and sustainable development in Nigeria using an endogenous growth model. They employed a descriptive statistics and vector autoregression (VAR) econometric technique for an annual data series spanning the period 1981-2014. Their outcomes

found that human capital reduces environment degradation but increases economic growth in Nigeria for the covered period. Similarly, the study of Babasanya, Ogunleye and Ogunyomi (2017) also examined the role of human capital development as a catalyst for environmental sustainable development in Nigeria using VECM approach. Unlike previous studies, the theoretical framework employed Lucas production function to capture long run effect using the increasing technology progress as endogenity variable. In their study, human capital development is proxied as summation ratio of government expenditure on education, health and telecommunication to total public expenditure while human capital is proxied as the ratio of public expenditure on education to total public expenditure, the physical expenditure is proxied as economic infrastructure, measured ratio sum of public housing and road construction to public expenditure and the endogenous technology progress (A) as the control variables include GDP growth rate, HCD and institutional quantity. Their outcomes found that HCD has the strongest exogenous effect to enhanced environmental sustainable development in the short run while in the long run, HCD is weak and contributed insignificant impact on environment sustainable development.

In summary, the empirical studies reviewed above have shown that human capital development had not been measured for the developing countries that lack basic infrastructure investment that enhances human capital investment effectiveness and efficiency, in terms of long run economic growth. Therefore, this study would put emphasis on human capital development rather than human capital.

3. Methodology

The theoretical framework of Lucas Cobb-Douglas production function rooted from the endogenous growth theory was adapted to account for the missing link between human capital development and a long-run economic growth in developing economies in this study. Specifically the Lucas Cobb-Douglas production function is expressed as:

$$Y = f(K, H, L, A) \quad (1)$$

where Y, K, H, L, A are the aggregate production of the economy proxied as real GDP growth rate, human capital, physical capital, labour size and the total factor productivity (TFP) respectively.

This specification takes into account the determinants of economic growth in the developing economies, like Nigeria which is not a steady state but largely depends on the increasing technological progress effect on the main variable, human capital development in this study. Also, following similar works of Joshua (2016) and Essardi & Razzouk (2017), the increasing technological progress (A) proxied in

this study represents the missing link and justification for the included variables as specified in equation (2):

$$A = f(GI, FDI, TOS, INFL, GINI, GDP) \quad (2)$$

where *GI* is proxied by governance Indicator. In this study, the governance indicator is decomposed into institutional quality index, educational curriculum development and intellectual property & rights. While foreign direct investment (FDI), trade openness (TOS), inflation rate (INFL) and gross domestic product (GDP) are the composition of economic indicator and finally, income inequality represent the social indicator.

In order to determine the nexus between human capital development and economic growth, a simple OLS technique is employed. The econometric equation derived from equations (1) and (2) are stated as:

$$\begin{aligned} RGDP = {} & \alpha_0 + \alpha_1 K_t + \alpha_2 H_t + \alpha_3 L + \alpha_4 H_t K_t + \alpha_5 GI_t \\ & + \alpha_6 FDI_t + \alpha_7 TOS + \alpha_8 INFL_t + \alpha_9 GINI_t + \alpha_{10} GDP + U \end{aligned} \quad (3)$$

where the H_t K_t, GI_t, FDI_t, TOS_t, $INFL_t$, $GINI_t$ and GDP_t are regressors of the real gross domestic product. In addition, this study used the income approach in measuring human capital represented by GDP per capita as average standard of living of the human capital in the economy.

To ascertain the long-run movement of the included variables irrespective of their stationarity order level, the cointegration test is conducted to justify the long-run effect of these included variables and confirm the presence of long-run economic growth estimation. Therefore, the use of unit root and cointegration tests confirmed the properties of time series econometric technique and thus makes OLS estimations free from spurious results and also make the inference reliable for policymakers. Finally, the annual dataset used in this study are sourced from the World Development Index (WDI) (2017), CBN Statistical Bulletin (2016) and Worldwide Governance Indicator (WGI) (2016) for the period 1985-2016. In summary, table 1 shows data description and sources:

Table 1. Data description and sources of variables

S/N	Variable	Description	Variable Notation	Source
1.	Economic growth	This is measured by the real gross domestic product (GDP) at constant price.	RGDP	CBN Statistical Bulletin
2.	Physical capiatl	Physical capital is measured as a percentage of gross fixed capital formation over GDP.	K	CBN Statistical Bulletin 2016
3.	Labour siz	Labour size is represented by number of working population in the country.	L	WDI 2017
4.	Human Capital Development	Human capital development is measured as the human capital in developing countries. In this study, HCD is proxied as the interactive variable. In income measurement approach, HCD is the interaction between gross domestic product per capita and the physical capital.	HCD	WDI 2017, CBN Statistical Bulletin
5.	Institutional Quality	Institution quality is one of the government indicators. To measures the qualitative score derived from worldwide government indicators (WGI).	IQ	World Bank Governance Indicators (WGI) 2016
6.	Intellectual Property and Right	Intellectual property and right is another governance index that measures the regulatory quality which ranges from 0 to 100. The lower the value, the lesser the regulatory quality and vice-versa in the country.	IPR	World Bank Governance Indicators (WGI) 2016
7.	Curriculum Development	Curriculum development is another governance indicator that measures government effectiveness in terms of quality of Civil service. Also, it ranges from lowest value (0) and the highest value (100).	CD	World Bank Governance Indicators (WGI) 2016
8.	Foreign Direct Investment	Foreign direct investment is the monetary value of direct investment in the country. This is one of the economic indicators in this study.	FDI	CBN Statistical Bulletin 2016
9.	Trade Openness	Trade openness is measured as sum of import and export over GDP. This is an economic indicator.	TOP	CBN Statistical Bulletin
10.	Inflation rate	Inflation rate is measured as elasticity of consumer price index, expressed in percentage.	INFL	CBN Statistical Bulletin
11.	Gross Domestic Product	Gross domestic product is the monetary value of economic activities in an economy	GDP	CBN Statistical Bulletin
12.	Gini index	Gini index (GINI) used to proxy income inequality. It is one of the socio-economic indicators. The Gini index of 0 represents perfect equality while an index of 100 implies perfect inequality.	GINI	World Income Inequality database 2017

13.	Gross Domestic Product Income	Gross domestic product per income is computed by the ratio of gross domestic product over the population size.	GDPI	CBN Statistical Bulletin & UNCTAD 2017

Source: Author compilations

* Note: The missing observations in the any of the time series was generated

4. Empirical Results and Analysis

Result of HCD-Economic Growth: Income Approach

Table 2. Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum	Jarque Bera	Observation
LNRGDP	3.39	0.514	2.7	4.23	3.00 (0.22)	32
GDPI	0.138	0.178	0.002	0.52	8.19 (0.010)	32
LNK	5.925	2.445	1.72	9.55	1.58 (0.45)	32
LNL	10.58	0.22	10.31	10.93	2.41 (0.30)	32
HCD	1.19	1.71	0.003	4.97	9.50 (0.00)	32
IQ	19.02	4.53	7.88	27.01	0.13 (0.94)	32
IPR	10.76	2.69	5.45	15.87	0.97 (0.62)	32
CD	15.73	3.04	8.61	21.08	3.39 (0.18)	32
LNFDI	4.56	2.36	-0.84	7.22	3.46 (0.18)	32
TOP	399.25	151.87	114.62	687.71	0.97 (0.61)	32
INFL	19.56	18.97	4.7	72.9	14.23 (0.00)	32
LNGDP	1.67	2.10	-2.04	4.56	1.93 (0.38)	32
GINI	47.01	3.72	40.06	50.60	6.53 (0.04)	32

Source: Author compilation from Eviews output

Table 2 also shows the descriptive statistics of each included variable in this study. The result revealed that gross domestic product per capita (GDPI) has the lowest variability (0.178) while the highest variability is in trade openness. In addition, the Jarque-bera test found that among these variables, gross domestic product per capital (GDPI), human capital development (HCD), inflation rate (INFL), and GINI were normally distributed in this study

Table 3. Correlation matrix

	LNRGDP	GDPI	LNK	LNL	HCD	IQ	IPR	CD	LNFDI	TOP	INFL	LNGDP	GINI
LNRGDP	1.0000												
GDPI	0.9090	1.0000											
LNK	0.9791	0.8778	1.0000										
LNL	0.9842	0.8896	0.9833	1.0000									
HCD	0.8846	0.9981	0.8505	0.8621	1.0000								
IQ	0.5493	0.6082	0.5588	0.5261	0.6067	1.0000							
IPR	0.5064	0.5303	0.5190	0.5191	0.5278	0.6473	1.0000						
CD	-0.4419	-0.3485	-0.4848	-0.5030	-0.3350	-0.1494	-0.2187	1.0000					
LNFDI	0.8876	0.6831	0.9400	0.9094	0.6426	0.4210	0.4035	-0.4712	1.0000				
TOP	0.1779	-0.1921	0.2416	0.1895	-0.2433	-0.0489	-0.0512	-0.0438	0.4970	1.0000			
INFL	-0.4125	-0.3587	-0.3676	-0.4458	-0.3430	-0.1800	-0.2626	0.3754	-0.2805	-0.0515	1.0000		
LNGDP	0.9525	0.8235	0.9880	0.9759	0.7909	0.4831	0.4774	-0.4934	0.9669	0.3169	-0.3571	1.0000	
GINI	-0.2551	0.0573	-0.1894	-0.2097	0.0979	0.1513	0.0785	-0.1969	-0.3350	-0.6347	0.0014	-0.2235	1.0000

Source: Author compilation from Eviews output

In table 3, it is evident that there is a high positive degree of correlation between the dependent variable, real GDP and the included independent variables. Also, curriculum development, inflation rate and GINI index exhibited a negative association with the dependent variable over the period 1985-2016 in Nigeria. Specifically, the labour size variable is excluded from the included independent variables to reduce the multicollinearity problem and achieve a non-spurious OLS result in this study.

Table 4. Unit root test using Phillips-Perron method

Variables	Trends & Intercept		Integrate Order
	1st Diff.	2nd Diff.	
LNRGDP	-9.71***(0.00)	—	I(2)
GDPI	-4.83***(0.00)	—	I(1)
LNK	-4.71***(0.00)	—	I(1)
HCD	-4.70***(0.00)	—	I(1)
IQ	-10.40***(0.00)	—	I(1)
IPR	-10.42***(0.00)	—	I(1)
CD	-12.06***(0.00)	—	I(1)
LNFDI	-10.77***(0.00)	—	I(1)
TOP	-12.54***(0.00)	—	I(1)
INFL	-6.61***(0.00)	—	I(1)
LNGDP	-6.62***(0.00)	—	I(1)
GINI	-4.68***(0.00)	—	I(1)

Source: Author compilation from Eviews

Note (a): ***, ** and * significant at the 1%, 5% and 10% level.

Table 4 also revealed that all the included variables were stationary at first difference leve, I(1) except real gross domestic product (rgdp) which becomes stationary at 2nd difference level, I(2). Also, the integrate order of two, I(2) becomes the integrate order of one, I(1) since it has the lowest AIC statistics (Pearson et al. 2001). Therefore, it is evident that all the included variables have same integrate order of one, I(1).

Table 5. Residual cointegration test

Variable	Trend & Intercept	Integrate Order
Resid 01	-4.80***(0.003)	I(0)

Source: Author compilation from Eviews

Note (a): ***, ** and * significant at the 1%, 5% and 10% level.

Table 5 shows that the residual variable is stationary at integrate order of zero, I(0) and thus it established a long-run relationship among the non-stationary variables in this study.

Table 6. Estimated long-run OLS

OLS					
Variable	**1**	**2**	**3**	**4**	**5**
GDPI	0.623 ***(0.004)	11.11 ***(0.002)			
LNK	0.166 ***(0.000)	0.088 ***(0.003)			
HCD		-0.993 ***(0.000)	0.24 ***(0.000)	0.112 ***(0.000)	0.186 ***(0.00)
IQ			0.002 (0.91)	-0.003 (0.67)	0.0051 (0.20)
IPR			0.007 (0.73)	0.002 (0.87)	-0.0004 (0.94)
CD			-0.028 *(0.08)	-0.004 (0.64)	-0.0161 ***(0.005)
LNFDI				0.073 (0.23)	0.046 (0.19)
TOP				0.0006 *(0.07)	0.0002 (0.41)
INFL				-0.002 (0.16)	-0.0015 **(0.04)
LNGDP				-0.003 (0.97)	0.026 (0.58)
GINI					-0.030 ***(0.000)
C	2.32 ***(0.00)	2.52 ***(0.00)	3.43 ***(0.00)	2.70 ***(0.00)	4.45 ***(0.00)
R-Squared	0.969	0.978	0.808	0.968	0.99
DW	0.37	0.67	0.201	0.875	1.81
N	32	32	32	32	32
F-Statistics	460.68 ***(0.00)	408.91 ***(0.000)	28.40 ***(0.00)	87.75 ***(0.00)	245.09 ***(0.00)

Source: Author compilation from Eviews

Note (a): ***, ** and * significant at the 1%, 5% and 10% level.

Table 6 presented the long run OLS estimates of human capital development from income approach and economic growth in the five (5) OLS models. In OLS 1 model, the result found a high positive significant impact of human capital proxied as gross domestic product per capita on economic growth in Nigeria. This means that one percent increase in gross domestic product per capita leads to 62.3 percent increase in economic growth in Nigeria. This result confirmed the existing microeconomic studies of (Becker, 1964; Mincer, 1970; 1974) that attributed the significant of per capita income or earnings or other income policy as a major determinant of economic growth, unlike previous output and expenditure human capital approaches impact on economic growth. Furthermore, the OLS 2 model that included human capital development, proxied as interaction of gross domestic product per capita and physical capital, found that all included regressors have positive significant impact on economic growth over the study period in Nigeria. Although, the gross domestic product per capita that is proxied as human capital found a higher multiplier impact of 1111 percent than the human capital development coefficient of 99.3 percent on economic growth, implying that lack of combination of physical capital and human capital hinder economic growth in Nigeria.

More importantly, the OLS 3-5 models considered the variables not captured in human capital development of the nexus between human capital development and economic growth in Nigeria. In both OLS 3 and 4 models, it was found that among these regressors only human capital development was statistically significant determinant of economic growth in the long run in Nigeria. Also, the OLS 5 model found that human capital development, curriculum development, inflation rate and GINI index were statistically significant determinants of economic growth over the period 1980-2016 in Nigeria. This result confirmed the existing findings of (Jin, 2009; Maitra, 2018; Schultz, 2010; Verdia-Jerez & Chasco, 2016) that economic research, investment in health human capital are determinants of long run growth.

In addition, the overall models were statistically significant at 1 percent and only OLS 5 model is free from serial autocorrelation problem in this study. It is evident therefore that human capital development using income approach relatively depend on governance, economic and social indicators as the missing link variables in achieving a long run economic growth .

Test of Causality between Human Capital Development and Economic Growth

This study empirically tested the causal relationship between human capital development and economic growth to ascertain the direction of causality between human capital development and economic growth using the Granger causality test. The following results were obtained as in table 7 below:

Table 7. Results of pairwise granger causality tests

Sample: 1985-2016				
Lags: 2				
Human Capital Measurement	**Causal Direction**	**Nature of Causal Direction**	**F-statistics**	**Pvalue**
Income Approach	HCD ⇄ RGDP	Bidirectional causality	3.548 (1, 30) 2.797 (1, 30)	0.03** 0.04**

Source: Author compilation from Eviews

Note (a): ***, ** and * significant at the 1%, 5% and 10% level.

The Granger causality estimation technique using the income approach between human capital development and economic growth revealed bidirectional causality between human capital development and economic growth at 5 percent significant level in Nigeria, implying that economic growth could also lead to human capital development (HCD) and vice-versa.

5. Conclusion

The nexus between human capital development and economic growth has been much debated over the years. Using the income measurement approach, the study examined the nexus and causality between human capital development and economic growth in the long run economic growth. The results of the long run OLS estimates concluded that human capital development, curriculum development, inflation rate and GINI index were consistent variables that were missing in previous studies in achieving a long run economic growth within the study period in Nigeria. This implies that governance, economic and social indicators are prerequisites for a positive and significant relationship between human capital development and economic growth. The study also established a bidirectional causality between human capital development and economic growth using income approach as against unidirectional relationship found previous studies using output and expenditure approaches. These provide the missing link in the nexus between human capital development and economic growth in Nigeria.

References

Adamu, P.A. (2002). *The impact of human capital formations on economic development in Nigeria: An error correction approach.* The Nigerian economic society 2003, Ibadan: Polygraphics ventures limited.

Adejumo, O.O. & Adejumo, A.V. (2017). An analysis of human capital development and productivity growth-case study Nigeria. *Review of innovation and competitiveness*, 3(3), pp. 61-84.

Adelakun, O.J. (2011). Human capital development and economic growth in Nigeria. *Canadian Social Science Journal,* 7(2), pp. 207-218.

Adeyemi, P.A. & Ogunsola, A.J. (2016). The impact of human capital development on economic growth in Nigeria. ARDL approach. *IOSR Journal of Humanities and Social Science,* 21(3), pp. 1-7.

Ajakaiye, O.; Jerome, A.T.; Nabena, D. & Alaba, O.F. (2016). Understanding the relationship between growth and employment in Nigeria. A paper prepared at the University of Cape Town on "understanding the African lions: Growth fraps and opportunities in six dominant African economies. UNAI-WIDER Project, pp. 1-30.

Babasanya, A.O.; Ogunleye, A.G. & Ogunyomi, O.O. (2017). Human capital development as a catalyst for environment and sustainable development in Nigeria: A VECM approach. *Journal of Economics and Policy Analysis,* 2(2), pp. 200-219.

Becker, G.S. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. National Bureau of Economic Research, NBER, New York.

Becker, G.S. (1964). *Human capital*. Chicago: University of Chicago Press.

Central Bank of Nigeria (CBN) (2015). Statistical Bulletin Abuja: Central Bank of Nigeria Press.

Dauda, R.O.S. (2010). *Role of human capital in economic development: An empirical study of Nigeria case*. A paper presented at Oxford Boomers & Economic conference programme, June 28-29, UK.

Domar, E. (1947). Expansion and employment . American Economic Review, 37(1), 34-55.

Eigbiremolen, G.O. & Anaduaka, U.S. (2014). Human capital development and economic growth: The Nigerian experience. *International Journal of Academic Research in Business and Social Sciences*, 4(4).

Engle, R.F. & Granger, C.W.J. (1987). Cointegration and error correlation: Representation, estimation and testing. *Econometrica*, 55(2), pp. 251-276.

Essardi, O. & Razzouk, R. (2017). Human capital and economic growth in Morocco: Evidence from bayesian model averaging. *International Business Research,* 10(12), pp. 167-182.

Garba, P.K. (2002). *Human capital formulation, utilization and the development of Nigeria: A system analysis.* The Nigerian economic society 2003, Ibadan: Polygraphics ventures limited.

Ghalwash, T. (2015). Human capital and economic growth in Egypt: Evidence from Error-Correction Models. *Journal of Empirical Economics,* 4(1), pp. 1-10.

Harrod, R. (1939). An essay in dynamic theory. *Economic Journal*, 49(193), pp. 14-33.

Imoughele, L.E. & Ismailia, M. (2013). Effect of public educational experience on economic growth in Nigeria (1980-2010). *Interdisciplinary Journal of Contemporary Research in Business,* 4(11), pp. 237-250.

Ishola, W.A. & Alani, R.A. (2012). Human capital development and economic growth: empirical evidence from Nigeria. *Asian Economic and financial Review,* 2(7), pp. 813-827.

Jin, J.C. (2009). Economic research and economic growth: Evidence from East Asian Economies. *Journal of Asia Economics*, 20, pp. 150-155.

Joshua, O.O. (2016). The impact of physical and human capital development on economic growth in developing and developed countries. *A comparative panel data approach, economy*, 3(1), pp. 1-18. Available at 10.20448/journal.502/2016.3.1/502.1.1.18.

Lawanson, A.O. (2015). Economic growth experience of West African region: Does human capital matter? *International Journal of Business and Social Sciences,* 6(12), pp. 127-137.

Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22.

Maitra, B. (2018). Investment in physical, human capital, economic growth and life expectancy in Bangladesh: An empirical investigation. *Asia-Pacific Development Journal*, 19(2), pp. 19-48.

Mankiw, N.G.; Romer, D. & Weil, D.N. (1992). A contribution to the empirics of economic growth. *The Quarterly Journal of Economics,* 107, pp. 407-437. http://dx.doi.org/10.2307/2118477.

Mba, I.C.; Mba, E.I.; Ogbuabor, J.E. & Ikpegbu, C.H. (2013). Human capital development and economic.

Mincer, J. (1974). Schooling, experience and earnings. National Bureau of Economic Research (NBER). New York: Columbia University Press.

Mincer, J. (1990). The distribution of labour incomes: A survey with special references to the human capital approach. *Journal of Economic Literature,* 8, pp. 1-27.

Mulligan, C. & Sala-i-Martin, X. (1995). Measuring aggregate human capital. NBER Working Paper No. 5016. Cambridge, MA: National Bureau of Economic Research. National Bureau of Statistics (NBS) (2015). Nigeria.

Obi, Z.C. & Obi, C.O. (2014). Impact of government expenditure on education: The Nigerian experience. *International Journal of Business and Finance Management Research,* 2(2104), pp. 42-48.

Ogujiuba, K. (2013). The impact of human capital formation on economic growth in Nigeria. *J. Economics,* 4(2), pp. 121-132.

Ojo, O. & Oshikoya, T. (1995). Determinants of long-term growth: Some African results. *Journal of African economies,* 4(2).

Olalekan, O. (2014). Human capital and economic growth in Nigeria. *International Journal of Innovation and Scientific Research,* 11(2), pp. 291-294.

Oluwatobi, S.O. & Ogunrinola, O.I. (2011). Government expenditure on human capital development: Implications for economic growth in Nigeria. *Journal of Sustainable Development,* 4(3), pp. 72-80.

Organization for Economic Co-operation and Development (OECD), (2011). Measuring the stock of human capital for comparative analysis: an application of the lifetime income approach to selected countries. OECD Working Paper No. 41.

Osoba, A.M. & Tella, S.A. (2017). Human capital variables and economic growth in Nigeria: An interactive effect. *EuroEconomic*, 1(36), pp. 131-146.

Pesaran, M.H.; Shin, Y. & Smith, R.J. (2001). Bounds testing approaches to the analysis of level relationships. *Journals of Applied Econometrics,* 16(3), pp. 289-326.

Pettinger, T. (2017). Human capital definition and importance. Economics Help. Available at http://www.economicshelp.org/blog.

Phillips, P.C.B. & Perron, P. (1988). Testing for a unit root in Time series Regression. *Bio Metrica*, 75, pp. 335-46.

Rebelo, S. (1991). Long-run policy analysis and long-run growth. *The Journal of Political Economy,* 99(31), pp. 500-521.

Ritter, B. (2018). Human capital development in developing countries. International center for global leadership. Available at www.icg/conferences.com/articles/.

Romer, P. (1990). Endogenous Technological Change. *The Journal of Political Economy*, 98(5), S71-S102.

Schultz, T.P. (2010). Health human capital and economic development. Journal of African Economies, 19(2), pp. 12-80. https://doi.org/10.1093/jae/ejq015.

Schultz, T.W. (1961). Investment in human capital. *American economic review*, 5(1), pp. 1-17.

Smith, A. (1776). *An inquiry into the nature and causes of the wealth of nations*. London: W. Strahan and T. Cadell.

Solow, R.M. (1956). A contribution to the theory of economic growth. Quarterly *Journal of Economics*, 65-94.

Todaro, M. & Smith, S. (2011). *Economic Development*. 11th Edition. Essex: Pearson Education Limited.

Vedia-Jerez, H.D. & Chasco, C. (2016). Long-run determinants of economic growth in South America. *Journal of Applied Economics*, XIX(1), pp. 169-192.

World Bank (2017). World Development Indicators Online Database, www.worldbank.org/data/.

World Bank Governance Indicator (2015). Online Database. Available at www.worldbank.org/data/.

World Income Inequality Data (2015). Income Data. Available at www.wider.unu.edu.

Internal Control System and Financial Accountability: An Investigation of Nigerian South-Western Public Sector

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Abstract: This study examines the effect of internal control system on financial accountability, in terms of effective and efficient financial operation, compliance with applicable laws and regulations. Reliable financial reporting, transparency and flow of information were obtained primarily from a random sample of 354 Heads of Units in the Account and Audit Departments, in 65 Ministries of the Southwestern Nigeria. These participants were directly involved in the management, financial planning and controls. The 222 fully completed and returned questionnaires were coded and analysed using descriptive analysis and regression technique. The results of the study revealed that internal control system had a positive effect on financial accountability, in terms of effective and efficient financial operation, compliance with applicable laws and regulations, reliable financial reporting, transparency and flow of information with the mean scores of 4.22, 3.91, 3.86, 3.81 and 3.47 respectively. The regression results also showed that control environment, control activities, risk assessment, information and communication and monitoring and evaluation significantly impact on financial accountability in public sector. The ANOVA with the $F = 16.995$, $p < 0.05$ showed that all the components of internal control system had significant effect on financial accountability in public sector. Therefore, the study concluded that internal control system put in place in the public sector is well established and adequate for effective and efficient financial accountability with adequate use of all channels of communication and information flow for proper financial accountability. This study recommends that the internal control unit should be encouraged to maintain their independent role, such that the internal auditor should be adequately independent from those responsible for the financial operation, as well as to be able to provide additional assurance on cost efficiency and effectiveness of the internal control system.

Keywords: Internal control; Public sector; Financial accountability; South Western Nigeria

JEL Classification: H83; L1; L22

1. Introduction

The level of financial impropriety among office holders and political class across the globe has called for the attention of various scholars. The rate of corruption and decadence that pervades many countries, especially in the African region, has

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rekindled interest on the need for financial accountability and account for stewardship. In view of this, emphasis is placed on financial accountability and efficient use of public funds across the globe. The act of reporting to the public on operation performance is referred to as financial accountability. The aspect of financial accountability that requires the government to handle finances and other resources prudently is public financial accountability. It incorporates financial and non-financial reporting, control budgeting and performance; report on expenditure incurred in respect of public utilities in detail; and moral behaviour. Financial accountability requires the public or private establishment to manage and prepare financial reports and ensure openness in financial and non-financial reporting (analysis), monitor the sustainability of benefit that accrue from its investments and fulfils its performances reporting and fiduciary obligation to all stakeholders. It is beyond the technical competence of managers in charge of finances and complete accountability encompasses the thorough actions, attitudes and reporting correlation among all stakeholders.

Public accountability is stressed in the Nigerian Constitution, as it is a requirement of the law and the establishment of internal control system (unit) is part of the efforts to make sure that there is control in place. The Constitution of the Federal Republic of Nigeria, 1999 through Section 47, established the National Assembly for the Federation which consists of the Senate and House of Representatives, while Section 90 of the 1999 Constitution established the House of Assembly for each of the 36 states of the federation. The public service in Nigeria can be grouped into three categories which are the core ministries, parastatals and the government agencies. A number of the parastatals are semi-autonomous, while the majority of the agencies are autonomous under the supervision of the government. The law sets up these bodies to meet the ever-increasing wants and desires of the public. They are authorised by the statue to be in charge of all moneys and control all incomes for the advantage of the totality of the populace. Now, the big question is, are the public office holders in Nigeria abiding by the standard of public accountability and freely rendering stewardship of their deeds, while occupying government office? This question becomes relevant because the citizens have the right to request for the activities of their elected public officers and these elected public officers should be willing to render explanation pertaining to their stewardship to the general public. For accountability to be improved in the public sector, there is a need for internal control system to make sure that correct procedures are put in place, maintained and followed to ensure that the financial and management data are disclosed through quality and timely reports, safeguard the assets of the organisation against obsolescence and deterioration, improve the efficiency of the organization, in line with stated objectives. It must ensure that each person in the organisation complies with the relevant laws, regulations, policies and stated directives, and finally, ensure the completeness, accuracy and reliability of all the

records. However, despite the efforts put in place in Nigeria, to ensure accountability through internal control system, there is still evidence of financial unfaithfulness and lack of proper accountability for public funds. It is against this background that this study examines the effect of the existing internal control system on financial accountability in Nigeria's public sector.

2. Literature Review

2.1. Conceptual Review

Concept of Internal Control

Committee of Sponsoring Organizations (COSO) of the Treadway Commission report (1992) defined internal control as a practice which guides the credibility of financial affairs of an organisation. The report defines internal control and describes a framework for internal control. What makes the report different is that it also serves as a guide for the management. Aldridge and Colbert (1994) opined that internal control is a multi-dimensional tool for controlling the orderliness of an organisation, detecting the increase in the worth of the organisation and achieving the level of effectiveness and performance of the organisation.

Fundamentals of Internal Control

Treba (2003) opined that internal control is put in place to ensure the adequate management of resources and proper accountability. Internal control systems also assist in ensuring that public expenditure is reliable, decent and gives guarantee that all expenditure incurred and programmes of the organisation have been in accordance with the stipulated regulations. Wales (2005) also posited that controls consist of financial reporting and operational controls within a process. Treba (2003) observed that the entity's internal audit function should recognise three types of control; these are preventive, authorisation and detective controls. It was further stated that preventive controls guide against the occurrence of risks, and these controls include segregation of duties, recruiting and training qualified staff; that authorisation controls prevent fraudulent or erroneous transactions from occurring and detective controls discover errors or fraud that has not been prevented; and these will assist to prevent unwanted acts in the organisation.

In the same way, Lawrence (2000) noted that controls can either be preventive or detective; that preventive controls are proactive controls and this attempts to prevent undesirable events from taking place. The examples of this include segregation of duties, proper authorisation, adequate documentation and physical control over assets; while detective controls are the ones that attempt to detect undesirable acts. Bazzoli (2000) opined that detective control gives evidence that a loss has actually taken place, but do not prevent a loss from occurring. In the study

reviews, analyses, reconciliations, physical inventories and audits, were given as examples of detective controls. Chen (2004) argued that the two types of controls are important for an effective internal control system, but from a quality point of view, preventive controls are vital because they are proactive and emphasise quality. Meanwhile, Wales (2005) emphasised that for an organisation to provide evidence that preventive controls are functioning and preventing losses, detective controls are important. Hayes (2005) submitted that internal auditing is a means of improving an organisation's governance, risk management and management controls by providing insights and recommendations, based on analyses and assessments of data and business processes. With commitment to integrity and accountability, internal auditing provides value to governing bodies and senior management as an objective source of independent advice. Wee (2009) argued that the scope of internal auditing within an organisation is wide and may involve topics such as efficacy of operations, risk management and management controls over: efficiency and effectiveness of operations include safeguard of assets, the reliability of financial and management reporting and compliance with laws and regulations. Internal auditing may also involve conducting proactive fraud audits to identify potentially fraudulent acts; participating in fraud investigation under the direction of fraud investigation professionals and conducting post investigation fraud audits to identify breakdowns of control and establish financial loss.

Accountability in Nigeria's Public Sector

Adegbite (2010) opined that the term public sector can be referred to as the art of the economy that the government is controlling, so as to be able to provide the basic infrastructures and services to the public. These infrastructures and services that are to be provided by the government are so numerous, as a result of persistence increase in population. Okoh and Ohwoyibo (2010) pointed out that the factors hindering accountability in Nigeria include poor record keeping system in the various public establishments, fraudulent practices owing to the existing poverty syndrome in the country, coupled with the poor value systems, poor mode of releasing funds to the public establishments, shortage of personnel and facilities in the monitoring units of the public establishments. The advantages of tighter scrutiny of decision-making and more transparent regimes of accountability are difficult to challenge; that all government managers as trustees of public resources owe the responsibility to make sure that they carry out their responsibilities with probity, prudence and concern for effectiveness, efficiency and economy. Appah and Coleman (2009) stated that cases of fraud are rampant in the Nigerian public sector, to the extent that every segment of the public service is virtually involved in this act of financial misconduct.

Internal Controls and Financial Accountability

Lawrence (2000) posits that internal control is the circulatory system of any organisation and argued that strong internal control function helps firms to operate strongly and profitably. Kayongo (2004) submitted that by implementing an effective corporate internal control system, a lot of advantages can be to the benefit of the organisation; that among others, it detects and prevents errors and irregularities in time and thereafter promote reliable and accurate accounting information which can easily resolve issues arising as a result of errors from reporting; that it also protects the interests of employees by specifically stating their duties and responsibilities, as well as safeguarding them against accusation of irregularities or misappropriations. Kakuru (2001) enunciated that in a business involving a number of transactions that affect financial performance of the firm, if internal control is not well implemented, it will negatively affect the performance and productivity of the firm and hence, retard its capacity; that Internal control assists managers to get the best measures of the impact of different transactions geared towards generating a diversified portfolio of investments, thus enhancing proper accountability. ACCA (2004) stipulated that control activities are policies and procedures that are formulated by management so as to ensure that the organisational activities are carried out effectively, with the aim of achieving goals. Van Horne (2002) argued that financial accountability is to measure performance and it is related to ensure that money released to people is spent in line with the budgetary provisions in accordance with the set rules.

2.2. Empirical Reviews

Fadzil, Haron and Jantan (2008) studied internal auditing practices and internal control system. A correlation analysis was used to examine the extent of effective relationship between internal control system and the organisation's success in meeting its revenue target. The findings of the study affirmed positive and strong correlation between the two variables. Miller (2007) examined the documentation of internal controls from theory to implementation reported and concluded, through the findings that poor internal control leads to asset misappropriation, corruption and fraud in financial statements. Emmanuel, Ajanya and Audu (2013) examined an assessment of internal audit control on the efficiency of public sector in Kogi State, Nigeria, using structured questionnaire which were analysed through cross tabulation and chi-square test. They found that internal audit can effectively check fraud and fraudulent activities in the public sector, while the public sector in Kogi State has significant numbers of internal audit and department to function effectively. These led to the recommendation that there is need for effective internal control system which is free from interference.

Osezua and Julius (2013) examined the imperativeness of transparency and probity in the Nigerian public sector, using econometric estimation model and two-way

estimation. In their findings, they discovered that the Nigerian public sector is characterised by mismanagement, resulting in low growth of the economy, lack of transparency and probity thereby promoting corruption, serving the personal interest of managers of the resources and that mechanisms for control to ensure compliance are ineffective, thereby recommending that the principles and regulations for enthronement of transparency and probity in public service should be upheld, as they remain the vital checks against abuse of position. Muazu and Siti (2014) investigated empirical evidence of antecedents of internal audit effectiveness from a Nigerian perspective, by collecting primary data through questionnaire and analysing them using SPSS version 21. The findings of the study indicated that for internal audit to achieve the established objectives within various local government or organisations, there should be well established risk management in place by such organisations. It was also stated that internal audit effectiveness can equally be attained where there is effective internal control in place.

Owizy (2011) assessed the effectiveness of internal control in government ministries. Owizy established that the Benue State Ministry of Finance prepared the annual budget promptly and it also has adequate expenditure tracking to prevent financial recklessness. The recommendation in this regard was that the Ministry of Finance should strictly abide by the principles and procedures, in order to ensure that slacks are built into the budget. El-Nafabi (2009) investigated the role of the public sector audit and financial control systems in Sudan. The study revealed that audit and control systems are vital in ensuring accountability, for the use of public funds, safeguarding public resources against corruption and other misappropriation and unlawful practices. The study established that weak and ineffective financial control systems and deficiencies in accounting systems are some of the facilitating factors of financial corruption in Sudan. Thus, this study also contributed to the existing knowledge by examining the effect of internal control system on financial public sector accountability in Nigeria's public sector

3. Research Method, Sample and Data Collection Techniques

The study adopted the survey and explanatory research design. Primary data used were collected in Southwestern Nigeria, which comprises six states with the three clusters namely Lagos/Ogun, Oyo/Osun and Ondo/Ekiti. Lagos and Ogun are dominated by both public and private organisations, Oyo and Osun are characterized by public organisations and few private organisations, while Ondo and Ekiti are mainly dominated by public organisations. From these clusters, Lagos, Oyo and Ondo were selected and a well-structured five-point Likert scale questionnaire was administered to a sample of 354 participants who were drawn from the population of 4431.The purposeful sampling technique was employed in

this study. The sampled particpiants mainly comprised of Heads of Units in the Account and Audit Departments in the three states, with 23, 19 and 23 respective ministries which were directly involved in the management, financial planning and controls in the organisations. The questionnaire was made up of six (6) sections such as demographic information, effective and efficient financial operations, compliance with applicable laws and regulations, reliable financial reporting, flow of information and transparency.

3.1. Model Specification and Definition of Variables

The model used for this study was stated as follows, to establish the relationship between internal control system and accountability in Nigeria's public sector.

$$PSA = f(ICS) \quad \text{..... (i)}$$

Thus, internal control system (ICS) was captured by control environment (CEN), control activities (CAC), risk assessment (RAS) info and communication (ICO) and monitoring and evaluation (MEV). However, the accountability of the public sector was measured by efficient and effective and efficient financial operation.

Therefore, the model stated in (i) above was expressed in functional and mathematical form as given in (ii) and (iii)

$$EEF = f(CEN, CAC, RAS, ICO, MEV) \quad \text{..... (ii)}$$

$$EEF = \alpha_0 + \alpha_1 CEN + \alpha_2 CAC + \alpha_3 RAS + \alpha_4 ICO + \alpha_5 MEV + \varepsilon \quad \text{.....} \quad \text{(iii)}$$

Where: EEF = effective and efficient financial operation, a measure of accountability in public sector
CEN = environmental control
CAC = control activities
RAS = risk assessment
ICO = info & communication
MEV = monitoring and evaluation
α_i = the parameters to be estimated
ε = error term

The estimation techniques used were descriptive statistics such as frequency counts, percentages, mean scores and standard deviation; and inferential statistics, involving multiple linear regression analysis to determine the effect of internal control system on financial accountability in the Nigerian public sector. All analyses were conducted using the Statistical Package for Social Sciences (SPSS) software.

4. Analysis and Discussion of Results

This section deals with the presentation of the data collected from the survey, analysis of the data in accordance with the study objectives, and a discussion of the results to show the effect of internal control system on financial accountability in the public sector of Southwestern Nigeria. Thus, from the 354 questionnaires administered, 260 questionnaires were retrieved and 222 copies were completely filled. Therefore, the 222 fully completed questionnaires returned were coded and use for the analysis done in this study. The response rate of the survey was 62.71%, which was satisfactory for the study. The analysis of data was based on these usable questionnaires. Despite all efforts to recover the remaining 94 copies of the questionnaires, the researcher could not recover any, as a result of the economic situation in the country on the part of the respondents.

Table 1. Distribution of Respondents by Socio-Demographic Characteristics

Characteristics	Items	Frequency	Percentage
Gender	Male	82	36.9
	Female	140	63.1
	Total	222	100.0
Age (years)	18-25	2	0.9
	26-33	28	12.6
	34-41	179	80.6
	42-49	12	5.4
	50 & above	1	0.5
	Total	222	100.0
Educational Qualification	School Certificate	0	0.0
	ND/NCE	8	3.6
	First degree/HND	208	93.7
	Masters	6	2.7
	Doctorate	0	0.0
	Total	222	100.0
Department	Administration	10	4.5
	Accounts & Finance	137	61.7
	Internal audit	71	32.0
	Others	4	1.8
	Total	222	100.0
Number of Years in the Department	1-5	102	45.9
	6-10	62	27.9
	11-15	48	21.6
	16-20	8	3.6
	Over 20	2	0.9
	Total	222	100.0
Level of Management	Top management	38	17.1
	Middle management	177	79.7
	Lower management	7	3.2
	Total	222	100.0

Source: Researchers' Computation from Field Survey, 2018

The analysis in Table 1 shows the distribution of respondents based on their socio-demographic characteristics such as sex/gender, age, educational qualification, departments, length of service and the level of management in the organisation. The gender distribution showed that 63.1% were females and 36.9% were males. Thus, the views of both sexes were captured in the research. The age distribution revealed that 12.6% was between 26 and 33 years, 80.6% was between 33 and 41 years, 5.4% was between 42 and 49 and 0.5% of the respondents was 50 years and above. The results also indicated that the majority of the respondents were adults who were capable of providing reliable information without fear and intimidation. The educational qualification showed that 3.6% of the respondents held ND/NCE certificates, 93.7% held first degree/ HND and 2.7% held Master's degree. This implies that all of the respondents possessed the necessary qualification that could make them to be knowledgeable in giving reliable and relevant information. The distribution of the respondents according to departments revealed that 4.5% of the respondents was in administration, 61.7% was in accounts and finance, 32% was in internal audit unit and 1.8% was in other departments. This strongly showed that the majority of the questionnaires were completed by appropriate, experienced and knowledgeable respondents.

The analysis also showed that 45.9% of the respondents had spent 1 to 5 years in service, 27.9% had spent 6 to 10 years, 21.6% had spent 11 to 15 years, 3.6% had spent 16 to 20 and 0.9% of them had spent over 20 years. This revealed that high numbers of the respondents had spent more than 5 years, and so were experienced in the operations of the organisations. The distribution of the respondents according to cadre showed that 17.1% of the respondents was at top level of management, 79.7% of the respondents was at middle level of management and 3.2% was at the lower level of management. This indicated that most of the respondents were occupying positions that showed that they were having adequate knowledge of the study. Thus, the data collected from these calibers of respondents could be adjudged relevant and highly reliable.

Table 2. Distribution of Respondents on Effect of Internal Control System on Financial Accountability in Public Sector

S/N	FINANCIAL ACCOUNTABILITY	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Standard deviation
	Effective and efficient financial operation							
i.	The office prepares financial statements on budget versus actual and comparative basis to achieve a	3 (1.4)	1 (0.5)	3 (1.4)	100 (45.0)	115 (51.8)	4.45	0.68

	better understanding of our finances							
ii.	Adequate verification of vouchers and other financial documents are usually made	0 (0.0)	0 (0.0)	5 (2.3)	119 (53.6)	98 (44.1)	4.39	0.61
iii.	There is always approval and confirmation of financial transaction	3 (1.4)	3 (1.4)	1 (0.5)	76 (34.2)	139 (62.6)	4.55	0.70
iv.	Staff are trained to implement the accounting and financial management system	36 (16.2)	45 (20.3)	5 (2.3)	59 (26.6)	77 (34.7)	3.43	1.52
v.	There is always adequate control over cash and bank balances	1 (0.5)	5 (2.3)	4 (1.8)	130 (58.6)	82 (36.9)	4.29	0.65
vi.	There is always severe punishment for erring officers	2 (0.9)	2 (0.9)	39 (17.6)	86 (38.7)	93 (41.9)	4.19	0.82
vii.	We prepare cash flow projections	0 (0.0)	3 (1.4)	40 (18.0)	169 (76.1)	10 (4.5)	3.83	0.50
viii.	The office reconciles all cash accounts monthly	0 (0.0)	3 (1.4)	7 (3.2)	75 (33.8)	137 (61.7)	4.55	0.62
ix.	Departments have budget reviews where actual expenditure is compared with budgeted expenditure and explanations for the variances given	1 (0.5)	1 (0.5)	20 (9.0)	86 (38.7)	114 (51.4)	4.40	0.70
x.	The office reviews process to monitor whether appropriate and accurate financial information is implemented	0 (0.0)	2 (0.9)	6 (2.7)	181 (81.5)	33 (14.9)	4.10	0.44
	Compliance with applicable laws and regulations							
i.	There is adequate compliance with accounting policies and procedures	3 (1.4)	1 (0.5)	3 (1.4)	199 (89.6)	16 (7.2)	4.00	0.47
ii.	Our accounting practices conform to accepted standards	0 (0.0)	4 (1.8)	4 (1.8)	179 (80.6)	35 (15.8)	4.10	0.48
iii.	Controls are in place to exclude incurring expenditure in excess allocated funds	17 (7.7)	0 (0.0)	7 (3.2)	151 (68.0)	47 (21.2)	3.95	0.96
iv.	Guidelines and policies of the organization are working and being implemented	0 (0.0)	3 (1.4)	42 (18.9)	147 (66.2)	30 (13.5)	3.91	0.61
v.	Quality assurance is adhered to for all department's projects	0 (0.0)	37 (16.7)	28 (12.6)	143 (64.4)	14 (6.3)	3.60	0.83
	Reliable financial reporting							
i.	There is proper, prudent and timely documentations and progress reports	0 (0.0)	49 (22.1)	2 (0.9)	82 (36.9)	89 (40.1)	3.95	1.13
ii.	Responsible officials submit all statutory financial returns to the office when and where they are required in time.	0 (0.0)	1 (0.5)	2 (0.9)	159 (71.6)	60 (27.0)	4.25	0.48
iii.	The office reviews process to monitor whether appropriate and accurate financial information is received	0 (0.0)	18 (8.1)	5 (2.3)	186 (83.8)	13 (5.9)	3.87	0.62
iv.	The reporting system on	0	2	45	117	58	4.04	0.70

	organizational structures spells out all the responsibilities of each section/unit in the organization	(0.0)	(0.9)	(20.3)	(52.7)	(26.1)		
v.	Management has assigned responsibilities for the timely review of audit reports and resolution of any non-compliance items noted in audit reports	0 (0.0)	91 (41.0)	8 (3.6)	107 (48.2)	16 (7.2)	3.21	1.06
	Flow of information							
i.	There is adequate knowledge of expected role	17 (7.7)	5 (2.3)	48 (21.6)	142 (64.0)	10 (4.5)	3.55	0.91
ii.	There is timely release of reliable information.	18 (8.1)	44 (19.8)	3 (1.4)	144 (64.9)	13 (5.9)	3.40	1.11
iii.	Our organization has a well-developed Chart of Accounts	50 (22.5)	2 (0.9)	6 (2.7)	105 (47.3)	59 (26.6)	3.54	1.46
iv.	Management provides feedback to the junior officers about the operation of the system	0 (0.0)	68 (30.6)	11 (5.0)	127 (57.2)	16 (7.2)	3.40	1.00
	Transparency							
i.	The office has procedures in place to manage its financial responsibilities.	1 (0.5)	2 (0.9)	6 (2.7)	185 (83.3)	28 (12.6)	4.06	0.47
ii.	Management acts with a great degree of integrity in execution of their roles	1 (0.5)	2 (0,9)	3 (1.4)	185 (83.3)	31 (14.0)	4.09	0.47
iii.	Ethical values are upheld in all management decisions	1 (0.5)	4 (1.8)	24 (10.8)	176 (79.3)	17 (7.7)	3.91	0.54
iv.	Internal reviews of implementation of internal controls in units are conducted periodically	1 (0.5)	3 (1.4)	79 (35.6)	121 (54.5)	18 (8.1)	3.68	0.65
v.	Our organization has an objective, independent and active audit committee	2 (0.9)	2 (0.9)	7 (3.2)	199 (89.6)	12 (5.4)	3.97	0.45
vi.	Segregation of duties or mitigating controls exist within transaction processing, authorization custody, and recording functions	1 (0.5)	32 (14.4)	74 (33.3)	100 (45.0)	15 (6.8)	3.43	0.83
vii.	Separation of duties exists between procurement, account payables and disbursements.	0 (0.0)	43 (19.4)	48 (21.6)	116 (52.3)	15 (6.8)	3.46	0.88
viii.	Internal audit is independent of management influence	0 (0.0)	41 (18.5)	5 (2.3)	117 (52.7)	59 (26.6)	3.87	1.00

Source: Field Survey, 2018

Note: Percentages are in Parenthesis

Table 3. Summary Statistics on Effect of Internal Control System on Financial Accountability in Public Sector

Financial Accountability	Mean	Standard deviation	Ranking
Effective and Efficient Financial Operations	4.22	0.72	1st
Compliance with Applicable laws and Regulations	3.91	0.67	2nd
Reliable Financial Reporting	3.86	0.80	3rd
Transparency	3.81	0.66	4th
Flow of information	3.47	1.12	5th

Source: Field Survey, 2018

The analysis in Table 2 shows the distribution of respondents on the effect of internal control system on financial accountability in the public sector in Southwestern Nigeria. Based on COSO's framework, financial accountability is divided into five components which are effective and efficient financial operations, compliance with applicable laws and regulations, reliable financial reporting, reliable flow of information, as well as transparency.

Considering the effect of internal control on effective and efficient financial operations, 96.8% of the respondents agreed that the office prepared financial statements on budget, versus the actual and comparative basis to achieve a better understanding of finances, 97.7% agreed that adequate verification of vouchers and other financial documents were usually made, 96.8% agreed that there was always approval and confirmation of financial transaction, 61.3% agreed that staff members were trained to implement the accounting and financial management, 95.5% agreed that there was always adequate control over cash and bank balances, 80.6% agreed that there was always severe punishment for erring officers, 80.6% agreed that cash flow projections were being prepared, 95.5% agreed that the office reconciled all cash accounts monthly, 90.1% agreed that the departments had budgeted reviews, where the actual expenditure is compared with budgeted expenditure and explanations for the variances are given, and 96.4% of them agreed that the office reviewed process to monitor whether appropriate and accurate financial information is implemented. This showed that the majority of the respondents agreed that internal control aided effective and efficient financial operations in the public sector. This was confirmed by a high mean score of 4.22 on a 5-point Likert scale (see Table 3).

Considering the effect of internal control system on compliance with applicable laws and regulations, 96.8% of the respondents agreed that there was adequate compliance within the accounting policies and procedures, 96.4% agreed that accounting practices conformed to accepted standards, 89.2% agreed that controls were in place to exclude incurring expenditure in excess of allocated funds, 79.7% agreed that guidelines and policies of the organisation were working and being implemented, and 70.7% agreed that quality assurance was adhered to, for all of the department's projects. Therefore, a high percentage of the respondents agreed

that internal control system promotes compliance with applicable laws and regulations in public sector. A high mean score of 3.91 on a 5-point scale confirmed this position (see Table 3).

Concerning reliable financial reporting as a result of effective internal control system, 77% of the respondents agreed that there was proper, prudent and timely documentations and progress reports, 98.6% agreed that responsible officials submitted all statutory financial returns to the office when and where they were required in time, 89.7% agreed that the office reviewed process to monitor whether appropriate and accurate financial information was received, 78.8% agreed that the reporting system on organisational structures spelled out all the responsibilities of each section/ unit in the organisation, and 55.4% agreed that the management assigned responsibilities for the timely review of audit reports and resolution of any non-compliance items noted in audit reports. Thus, the majority of the respondents agreed that internal control enhanced reliable financial reporting in public sector in Southwestern Nigeria. This was confirmed by a mean score of 3.86 on a 5-point Likert scale (see Table 3).

Pertaining to the flow of information in public sector, 68.5% of the respondents agreed that there is adequate knowledge of expected role, 70.8% agreed that there is timely release of reliable information, 73.9% agreed that organization has a well-developed chart of accounts, and 64.4% agreed that management provides feedback to the junior officers about the operation of the system. Thus, majority of the respondents agreed that internal control enhanced flow of information in public sector. This was confirmed by a mean score of 3.47 on a 5-point Likert scale (see Table 3).

Pertaining to the effect of internal control on transparency, 95.9% of the respondents agreed that the office had procedures in place to manage its financial responsibilities, 97.3% agreed that management acted with a commendable degree of integrity in the execution of their roles, 87% agreed that ethical values were upheld in all management decisions, 62.9% agreed that internal reviews of implementation of internal controls in units were conducted periodically, 95% agreed that organisation had an objective, independent and active audit committee, 51.8% agreed that segregation of duties or mitigating controls existed within transaction processing, authorisation custody and recording functions, 59.1% agreed that the separation of duties existed between procurement, account payables and disbursements and 79.3% agreed that internal audit was independent of management influence. Thus, a mean of 3.81 showed that internal control system positively influenced transparency in the sector (see Table 3).

In summary, effective and efficient financial operation ranked top most and was closely followed by compliance with applicable laws and regulations, reliable

financial reporting, transparency, while flow of information ranked the least (see Table 3).

Table 4. Multiple Regression Analysis showing Effect of Internal Control System on Financial Accountability in Public Sector

Analysis of variance					
	Sum of Squares	Df	Mean Square	F	Sig.
Regression	24.489	5	4.898	16.995	0.000
Residual	62.249	216	0.288		
Total	86.739	221			
Coefficients					
Independence Variable	Unstandardized Coef.		Standardized Coef	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.740	0.452		3.850	0.000
Control environment	0.489	0.088	0.405	5.547	0.000
Control activities	0.519	0.074	0.497	7.026	0.000
Risk assessment	0.032	0.074	0.032	0.431	0.047
Info & communication	0.182	0.058	0.215	3.154	0.002
Monitoring & evaluation	0.197	0.066	0.185	2.997	0.003
Correlational Statistics					
Dependent Variable	Multiple *R*	[illegible]	Adjusted R^2	S.E of Estimate	Durbin Watson
Financial Accountability	0.531	0.282	0.266	0.537	1.821

Source: Researchers' Computation, 2018

A multiple regression model appropriate for this study was presented in Table 4. The results of the study revealed that each of the components of internal control system on financial accountability which was measured by effective and efficient financial operations, the results showed that control environment ($t = 5.547$, $p < 0.05$), control activities ($t = 7.026$, $p < 0.05$), risk assessment ($t = 0.431$, $p < 0.05$), information and communication ($t = 3.154$, $p < 0.05$) and monitoring and evaluation ($t = 2.997$, $p < 0.05$) had significant effect on financial accountability in the public sector of the Southwestern Nigeria.

Considering the overall effect of internal control system on financial accountability, the ANOVA in the regression analysis showed that all the components of internal control system had combined significant effect on financial accountability in the sector ($F = 16.995$, $p < 0.05$). In addition, there was positive relationship between components of internal control system and the organisation's financial accountability, as the intensity of internal controls explained a significant

proportion (28.2%) of variation in financial accountability. Therefore, it implies the reliability and acceptability of internal control system in examining the financial accountability in the public sector of the Southwestern Nigeria.

5. Conclusion

This study examined the effect of internal control system on financial accountability in the public sector of the Southwestern Nigeria. Based on the analyses and the findings of the study, it was discovered that internal control system had positive effect on financial accountability, in terms of effective and efficient financial operation, compliance with applicable laws and regulations, reliable financial reporting, transparency and the flow of information, with the mean scores of 4.22, 3.91, 3.86, 3.81 and 3.47 respectively. The results of the multiple linear regression showed that control environment ($t = 5.547$, $p < 0.05$), control activities ($t = 7.026$, $p < 0.05$), risk assessment ($t = 0.431$, $p < 0.05$), information and communication ($t = 3.154$, $p < 0.05$) and monitoring and evaluation ($t = 2.997$, $p < 0.05$) had significant effect on financial accountability in the public sector. The ANOVA with the $F = 16.995$, $p < 0.05$ showed that all the components of internal control system had significant effect on financial accountability in the public sector. Therefore, the study concluded that internal control system put in place in the public sector of the Southwestern Nigeria was well established and adequate for effective and efficient financial accountability; there is a need for the internal control system in the public sector, to ensure adequate uses of all channels of communication and information flow for proper financial accountability. Based on the findings and the conclusion, the study thus recommends that the internal control unit should be encouraged to maintain their independent role, that is, the internal auditor should be adequately independent from those responsible for the financial operation of the organisation, so as to be able to provide additional assurance on cost efficiency and effectiveness of the internal control system; adequate and regular training should be given to those in the audit section by government, such as constant seminars and workshops to guide the auditors and accountant on issues relating to proper implementation of accounting policies and procedures, so as to enhance their skills and expertise in their practice as professionals.

References

ACCA. (2005). *Managing People.* London: Kaplan Publishing.

Adegbite, E.O. (2010). Accounting, Accountability and National Development. *Nigerian Accountant,* 43(1), pp. 56-64.

Aldridge, C.R. & Colbert, J.L. (1994). Management's Report on Internal Control and the Accountant's Response. *Managerial Auditing Journal,* 9(7), pp. 21-28.

Anthony, M. (2004). Internal Control: Governance Framework and Business Risk Assessment at Reed Elsevier in Auditing. *Journal of Practice and Theory,* 3(6), pp. 39-51.

Appah, E. & Coleman, A. (2009). New System of Public Sector Budgeting: A Technique and Strategy for the Development of Nigeria's Economy. *International Journal of Economic and Development Issues,* 8(1&2), pp. 118-129.

Bazzoil. (2000). Auditors Knowledge Organization: Observations from Audit Practice and Heir Implications. *Auditing, Journal of Practice and Theory,* 1(2), pp. 68-83.

Chen, L.Y. (2004). *Examining the Effect of Organizational Culture and Leadership Behavior On Organizational Commitment, Job Satisfaction And Job Performance At Small And Household.* University of Essex: Colchester.

Chioccola, F. & Muhlstein, C. (2005). *Internal Controls and the ISA Program*. New York: McGraw-Hill.

Committee of Sponsoring Organizations of the Treadway Commission COSO (1992). *Internal Control-integrated Framework.,* Coopers and Lybrand, 1-4.

Committee of Sponsoring Organizations of the Treadway Commission COSO (2004). Internal Control Integrated Framework of the American Institute of CPA.

El-Nafbi, H.M. (2008). The Role of Public Sector Audit and Financial Control Systems in Safeguarding Public Funds in Sudan. *Journal of Economics & Administration,* 2(1), pp. 1-11.

Fadzil, F.H; Haron, H. & Jantan, M. (2008): Internal Auditing practices and Internal Control System. *Managerial Auditing Journal*, 20(8), pp. 844-866.

Hayes, R. (2005). *Principles of Auditing.* California: Pearson Education Limited.

Jenny & Pamela. (2006). The use of Internal Audit. *American Companies*, 21(1), pp. 81-101.

Kakuru, J. (2001). *Basic Financial Management* , MUBS, Kamapla.

Kayongo, P. (2004). Financial and Entrepreneurial among selected enterprises in Kampala District, MU. *Unpublished MBA Dissertation*.

Khoove, R. (2010). Internal Audit and Risk Management Business Advisory Services; Measuring Effectiveness of Internal Audit. *Engineering Economics*, 5(55), pp. 70–76.

Lawrence, s. (2000). The usefulness of ERP systems for effective management" *Industrial Management and Data Systems*, 103(9), 34, p. 56.

Miller D.K (2007): Documenting Internal Controls from theory to implementation. Available online at http://cocubo.org/pdf/2007/chigo.

Okoh, L. & Ohwoyibo, O. (2010). Public Accountability: Vehicle for Socio-Economic Development of Nigeria. *International Journal of Investment and Finance,* 3(1&2), pp. 145-149.

Roth, J. (2004). Getting to the Heart of the Problem. The Internal Auditor, *British Accounting Review*, 32(4), pp. 397-414.

Schelker, M. (2008). Public auditors: Evidence from the US States. Center for Research in Economics. *Management and the Arts Working Paper*, 4, pp. 1-45.

Steeves, L. (2004). Centralization of Control over Educational Decision-Making in Saskat chewan: An Investigation of the Centralization for Control over Educational Decision Making in Saskatchewan School Divisions. http://www.ssta.sk.ca/order.htm.

Suzamnne, G. K. & Naidoo, J. (2005). *Whose Theory of Participation? School Governance Policy and Practice in South Africa.* Harvard Graduate School of Education.

Treba, L.M. (2003). Evaluating Internal Controls: Control Self-assessment in Government. *Journal of Finance and Accounting,* 4(3), pp. 55-67.

Van Horne, J.C. (2002). *Financial Management and Policy*. 12th Ed. Prentice-Hall: London.

Wales (2005). *Export control organizational performance reporting.*

Warren, S. (2005). *Internal Controls, Internal Auditor*. 62(4), pp. 69-73.

Wee, Goh, B. (2009). Audit Committees, Board of Directors, and Remediation of Material Weaknesses in Internal Control. *Contemporary Accounting Research*, 26(2), pp. 549-579.