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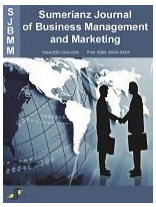

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The Nexus of Green Accounting and Standard of Living in Nigeria

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Abstract

The objective of the study was to determine the long run effect of green accounting on standard of living in Nigeria using data obtained from manufacturing firms' financial statement for Green accounting and CBN and World Bank publication for Standard of living for the period 2003 to 2022. The Pooled Mean Group (PMG) estimation technique was used in the empirical analysis to estimate the long-run and short-run relationship amongst the variables for the panel data. The study found only economic cost has significant effect on inflation. Social costs had significant impact on unemployment alone indicating social sustainability practices such as CSR only targets the labour market segment of the economy. The study also found that a rise in environmental and economic expenditures lead to significant reductions in misery index with highly elastic effects that relates a one-to-one effect. We recommend, firms should re-visit social commitments strategy and focus through either a change in CSR strategies or re-evaluation to ensure their sustainability delivers long-term effects in the economy. The study shows only social costs outlay had significant effect on unemployment, especially in improving welfare. Policy makers within the companies need to consider the sustainability policies as a long term planning strategy while also improving linkages of economic expenditures to GDP growth. Policy action by the firms and Government on sustainability and green economic planning must consider long run implications and applicability in all economic segments.

Keywords: Green Accounting, Unemployment, Inflation, Misery Index.

1. Introduction

Nigeria is a country blessed with abundant natural resources such as petroleum, nickel, diamonds vegetation, natural gas, coal, limestone, other solid minerals deposit. Nigeria is presently facing environmental consequences resulting from poor implementation of policies, negligence, poor waste management, oil spills, gas flaring, water and air pollution, deforestation and degradations and these issues create serious problems and threatening the ecosystem and survival of citizens. The quality of the environment in Nigeria continues to decline thereby creating serious health challenges in some cases apart from the economic implications. Associated with poor planning and environmental challenges such as erosion and flooding is the issue of delibating poverty that is rravaging the citizens. Resource depletion, galloping inflation, unemployment and environmental pollution have become serious problems which require urgent attention. Despite the aforementioned, deforestation and other unethical practices have created weather conditions and climate change requiring urget solution to ensure survival of the citizens. Nigeria a signatory to the United Nations mandate on sustainable development goals is amongst the number of countries performing poorly in meeting the mandate of vision 3030 on sustainable development goals. Amongst the goals Nigeria is expected to meet are poverty alleviation, full employment, and improved standard of living. The implication is that adequate efforts have not been channeled to strike balance between sustainable development objectives and the need to maintain desirable environmental quality. Due to this laxity, the host communities where corporate entities carry out their business wallow in abject poverty, unemployment and underdevelopment leading to youth restiveness, kidnapping and militancy. Sometimes the activities of firms impact the ecosystem negatively destroy farm lands and aquatic life, pollute drinking water and make life unbearable for the communities as their source of livelihood are destroyed. This in turn create health hazards, lead to high infant mortality and declining life expectancy. According to Akinbami and Adegbulugbe (1998) the use of natural resources including energy is indispensable to sustainable development. However, these resources are finite, limited and exhaustible thereby

requiring remediation of the environment for sustainability. It will therefore be wickedness to future generation to exhaust what is meant for the living and future generation due to laxity, improper attention and profligacy of the present generation.

Green accounting is one of the perspectives believed to hold the key and ameliorate some of the hazards created by environmental degration, deforestation and climate change, pollution etc.

Many theoretical predictions on the issue of Green accounting has been made. This study however anchors on legitimacy theory which suggest that firms embark on social and environmental activities to gain legitimacy and work in harmony with the communities, to send the signal that they are good corporate citizens. However the level of compliance to environmental and corporate social responsibility is low in Nigeria largely due to lack of enforcement of laws necessitating call for laws to be made for mandatory compliance to environment and social inititiatives aimed at preservation of the earth and natural resources. The extent to which firms environmental, social and economic initiatives transcends into economic development and impact the standard of living has been a subject of debate. Prior studies focused on short term analysis of Green accounting and performance at firm level. This study however deviates and look at the long term implications of Green accounting on poverty and standard of living in Nigeria.

2. Literature

Andania and Yadnya (2020), aims to investigate the effect of sustainability report disclosure on the financial performance of banks listed in Indonesia Stock Exchange (IDX) during the period of 2013-2016. The study results revealed that the disclosure of the economic and social dimensions had a statistically significant effect on ROA while the environmental dimensions did not affect the ROA. This means that the banks listed in Indonesia Stock Exchange (IDX) give more priority to the economic and social dimension disclosure, than to the environmental dimensions. (Ofuogbu and Asogwa, 2020). The effect of both (i) social disclosures, (ii) environmental disclosures, (iii) economic disclosures on the profitability of listed consumer goods manufacturing companies in Nigeria. The sample of this study comprises of 15 out of 23 consumer goods manufacturing companies in Nigeria based on secondary data from 2009 to 2018. The results suggest that economic and social performance disclosures have an insignificant positive impact on both earnings per share and return on equity, whereas, environmental disclosures have a strong positive and significant effects only on earnings per share. Furthermore, sustainability reporting had a positive and significant impact on the profitability of selected companies. It was recommended that companies publish useful sustainability reports as this would improve their profitability.

Othman and Mo'taz (2019), examined the effect of sustainability accounting disclosure on the financial performance of banks operating in Jordan during the period of 2013-2017. The study results revealed that there is a statistically significant effect of sustainability accounting disclosure on the financial performance. In addition, the study results revealed that the disclosure of the economic and social dimensions had a positive effect on return on equity (ROE). While the environmental dimension did not affect the return on equity (ROE). In addition, the results of the study revealed that the disclosure of sustainability dimensions (economic, social and environment) had a combined effect on the return on assets (ROA). Erhirhie and Ekwueme (2019), examined corporate social sustainability reporting and financial performance of Oil and Gas Industry in Nigeria. The findings showed that social sustainability reporting exerts negative effect on all three performance proxies, howbeit only its effect on return on equity was statistically significant. Najul and Maji (2018), analyzed the impact of corporate sustainability reporting on firm performance in four Asian countries - Japan, South Korea, Indonesia and India. The study is based on 36 listed non-financial companies from Japan, 28 from India, 26 from South Korea and21 from Indonesia respectively, from 2009 to 2014. The study finds that the average level of disclosure is more in the case of Japanese companies (90 per cent), followed by India (88 per cent) and South Korea (85 per cent). On the other hand, the average level of disclosure is only 72 per cent for Indonesian firms. Regression results.

3. Methodology

3.1. Research Design

The design for the study is longitudinal ex-pos facto design because the data derived is based on past data published by the World Bank, Central Bank of Nigeria Bulletin, Federal Office of Statistics and financial statements of manufacturing firms under study.However, the study used purposive sampling method does not requiresample size determination as only firms with complete data were considered in the study. Lastly, most researchers in this field deploy longitudinal research design because of the number of years of study such as Fanani (2010) Fuensanta *et al.* (2014) and Houcine (2017). Variables of The study and Measurement.

The variables of the study and measurement criteria are summarized on the table below:

Table-3.1. Measurement of Variables summarized

Independent Variable: Green Accounting	**Measurement**	**Expected Sign**
Environmental cost (ENC)	Natural log of total expenditure on environmental cost	Positive
Social cost (SOC)	Natural log of total expenditure on corporate social responsibility	Positive
Economic cost (ECC)	As recommended by UNCTAD (2003). GRI (2001). Value Added (Net Sales -Costs of Goods Purchased)	Positive
Dependent Variable: Sustainabe Development		
Inflation (INF)	Changes in prices of goods and services over a certain base year	Negative
Unemployment rate (UNE)	Defined as total number of Nigerians unable to find job as a percentage of Nigerians of workable age	Negative
Miserly index	As published by world bank	Negative
control Variables:		
Money supply (MOS)	Total amount of money in circulation in a fiscal year as published in CBN annual bulletin	Negative/positive
Exchange Rate	Amount of naira that will be exchanged for a unit of united states dollar as quoted by Central Bank of Nigeria	Negative/positive

3.2. Model specification

The model specification for this study is as shown below:

INF = $=\beta_0 + \beta_1 Log$ENC + $\beta_2 Log$SOC + $\beta_3 Log$ECC + β_4P$LogMOS$+ β_4P$LogEXC$+ U_1, t…….. (viii)

UNE=$\beta_0 + \beta_1 Log$ENC + $\beta_2 Log$SOC + $\beta_3 Log$ECC + β_4P$LogMOS$+ β_4P$LogEXC$+ U_2, t…..…. (ix)

HDI ==$\beta_0 + \beta_1 Log$ENC + $\beta_2 Log$SOC + $\beta_3 Log$ECC + β_4P$LogMOS$+ β_4P$LogEXC$+ U_3, t…..……

Where β_0 are the regression intercepts and U_1t, U_2t, U_3t, U_4t are the autoregressive coefficients or persistence terms.

4. Results

4.1.1. Trend Analysis

The initial trends considered in the study are the sustainable development indicators in Nigeria. Figure 4.1 shows the trend in human development index in the country over the study period. It is seen that HDI has been on the increase over the years, moving from below the median level of 0.5 to 0.53 in 2022. This shows that the human development component in the economy has experienced some level of improvement over the years. However, the current score for HDI is still low given that South Africa had a score of 0.71 in 2022, while Egypt had a score of 0.73 in the same year. Hence, Nigeria still needs to strive to improve the human development ranking. The trend for real GDP growth over the period is also shown in Figure 4.2. The trend in the GDP growth rate is a downward spiral since 2004, although there were periods of improvements like in 2008 and in 2014. The general downward trend in the real GDP growth sets the pace for poor outcomes for other sustainable indicators in Nigeria.

Another important component of Standard of living is the rate of changes in the price level which has direct effects on purchasing power and the welfare of citizens. The trends in inflation over the study period is shown in Figure 4.1, and it indicates that there is a general increase in the price level over the period. Inflation rate was lower in 2006 and 2014, but it has risen sharply since 2016 and has remained very high over the last few years. This indicates that the growth in the Nigerian economy is largely non-sustainable given that the inflation rate has remained above the double digits for almost a decade in the country. The trend in unemployment (reported in Figure 4.2) also shows that growth has not influenced job provision over the years. Unemployment rate has also remained above the double-digit level since 2016. Thus, the Nigerian economy is characterised by high and rising prices combined with low employment in the labour force.

Fig-4.1. Trend in Inflation

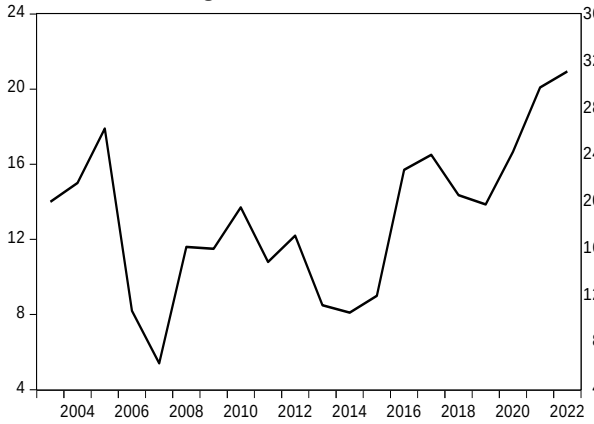
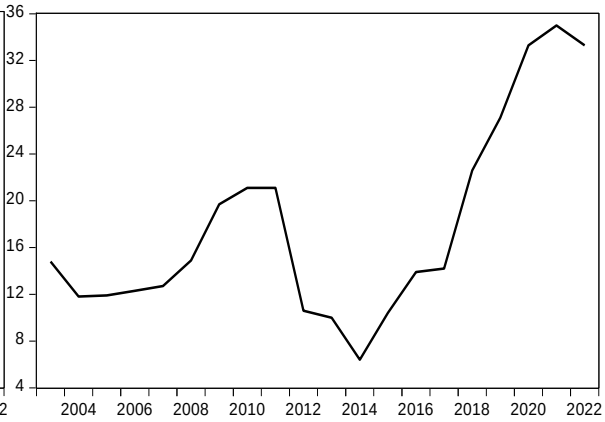


Fig. 4.2. Trend in Unemployment



The trends in misery index for Nigeria is presented in Figure 4.3. It is seen that the index has risen significantly over the years even though the upward trend has not been smooth. This means that Nigerians have been plunged further into misery of rising prices with less ability to finance economic welfare over the years. Although the index declined in 2006 and 2010, it experienced a sharp increase in 2016 and has remained high and on the rise since that period, reaching almost 80 percent in 2022.

Fig-4.3. Trend in MSI

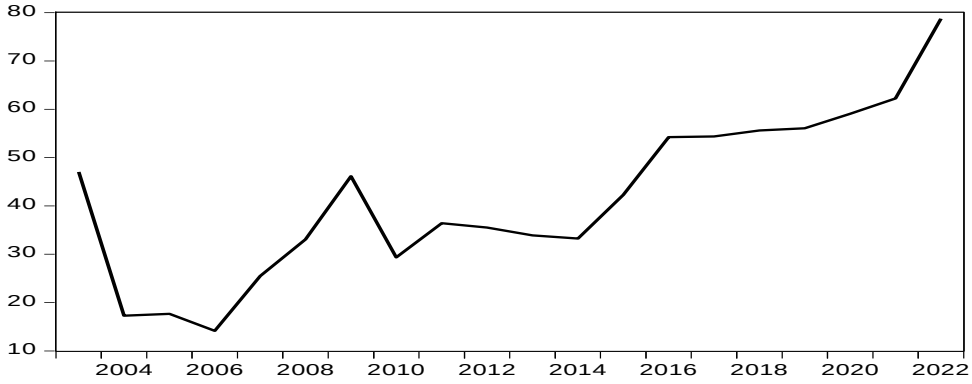


Figure 4.6 shows the trend in total economic costs by the individual firms used in the empirical analysis. For most of the companies, the economic cost has increased over the years, especially for Nigerian Breweries, Dangote Sugar, Nestle, and Nigerian Flour Mills. Apart from Pharma Deco and UAC, none of the companies reported a declining economic costs over the years, This suggests that the firms have pursued higher economic endeavours which may have been reflected in output growth and expansion of plants across the country, with remarkable carbon footprint.

4.1.2. Descriptive Stastictics

The descriptive statistics for the panel data used in the empirical analysis is presented in Table 4.1. Inflation rate is also 13.15 percent on average, with a maximum of 20.94 percent and a minimum of 5.4 percent. This shows that inflation rate has been quite high in Nigeria over the years and has remained at double digits for most of the years.

Table-4.1. Descriptive Statistics for Panel Data

Variable	Mean	Max.	Min.	Std. Dev.	Skewn.	Kurt.	J-B	Prob.
INFL	13.15	20.94	5.40	4.16	0.08	2.23	10.32	0.01
UNE	18.01	35.00	6.40	8.49	0.78	2.37	46.39	0.00
MSI	41.34	78.75	14.16	16.95	0.25	2.37	10.88	0.00
SOC	14.55	20.86	-0.22	3.32	-2.20	10.32	1205.06	0.00
ECC	15.23	22.76	4.41	2.31	-0.46	3.95	28.71	0.00
ENC	14.84	21.95	1.06	3.61	-2.12	9.14	919.02	0.00
MOS_Growth	19.30	68.57	2.30	15.34	1.83	6.29	400.57	0.00
EXC_RATE	242.79	770.50	118.57	161.00	1.94	6.53	454.86	0.00

Average unemployment rate is also high at 18.01 percent over the study period. Ths standard deviation of 8.49 is low and shows that the recorded unemployment rates for most of the years is close to the mean value. Hence, unemployment has been generally high in Nigeria. The combination of high unemployment and inflation rates reflect in the high average misery index (MSI) for the country at 41.34 percent, with a maximum score of 78.75 percent. These also show that there are weak sustainability measures for the Nigerian economy over the years. For the firms' environmental, social and governance (ESG) factors, the averages are also reported in Table 4.1. Average social cost outlay for the firms is 14.55, while that for economic cost is 15.23, and environmental cost is 14.84. It is

therefore shown that economic cost outlay is larger for the firms in comparison with the social and environmental costs. The maximum economic cost is also higher, although the minimum cost is the lowest among the cost outlays. This suggests that the companies are consistent in accounting for social and environmental costs over the years, Average exchange rate is high, while average growth in money supply far surpasses average economic growth in the country.

4.2. Correlation Analysis

Table-4.3. Correlation Matrix

Variables	INFL	UNE	MSI	ECC	ENC	SOC	EXC_RATE	MOS
INFL	1 -----							
UNE	0.651 0.000	1 -----						
MSI	0.598 0.000	0.719 0.000	1 -----					
ECC	0.057 0.248	0.074 0.134	0.128 0.009	1 -----				
ENC	0.051 0.297	0.112 0.022	0.107 0.029	0.316 0.000	1 -----			
SOC	0.120 0.014	0.132 0.007	0.130 0.008	0.429 0.000	0.708 0.000	1 -----		
EXC_RATE	0.695 0.000	0.779 0.000	0.841 0.000	0.122 0.013	0.103 0.035	0.152 0.002	1 -----	
MOS	0.550 0.000	0.707 0.000	0.877 0.000	0.156 0.001	0.131 0.007	0.154 0.002	0.898 0.000	1 -----

Source: Author's computation

In terms of the green accounting variables for the firms, a positive and significant correlation is revealed among the variables. This shows that all green accounting components move together among the firms. The strongest correlation is between social cost and environmental cost outlay, indicating that companies that focus on social cost accounting also pay strong interest to environmental costs. This clearly shows that companies work with both green accounting components together over time. Positive correlation also exists between the three green accounting components of the firms with exchange rate and money supply in Nigeria. A further analysis of the relationships among the variables is conducted using scatterplots with focus on the financial development indicators. The plot in Figure 4.4 shows the relationship between economic costs and environmental cost. The scatterplot shows a positive relationship, indicating that as the economic cost outlays are increasing, the environmental cost outlays are also rising simultaneously. A positive relationship is also shown for the scatterplot between economic costs and social costs.

Figure-4.4. ECC and ENC relationship

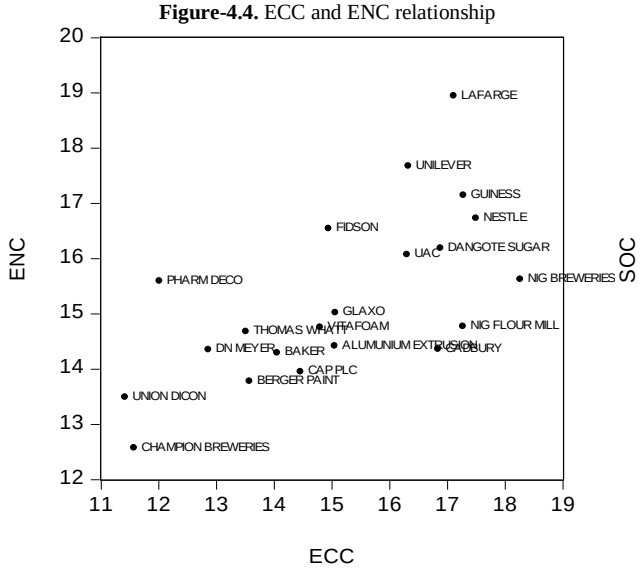
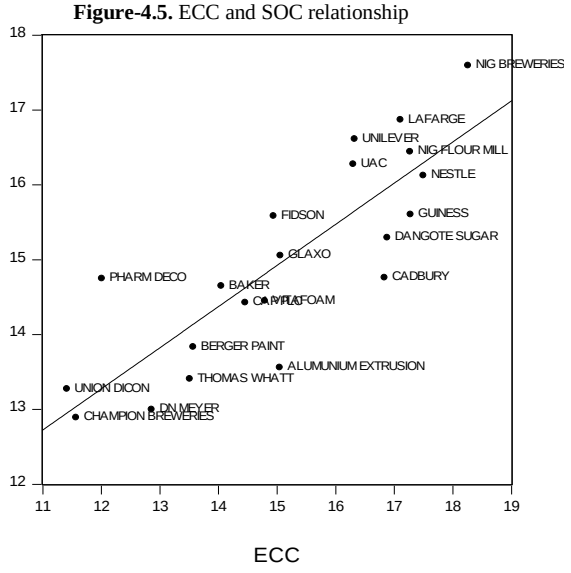
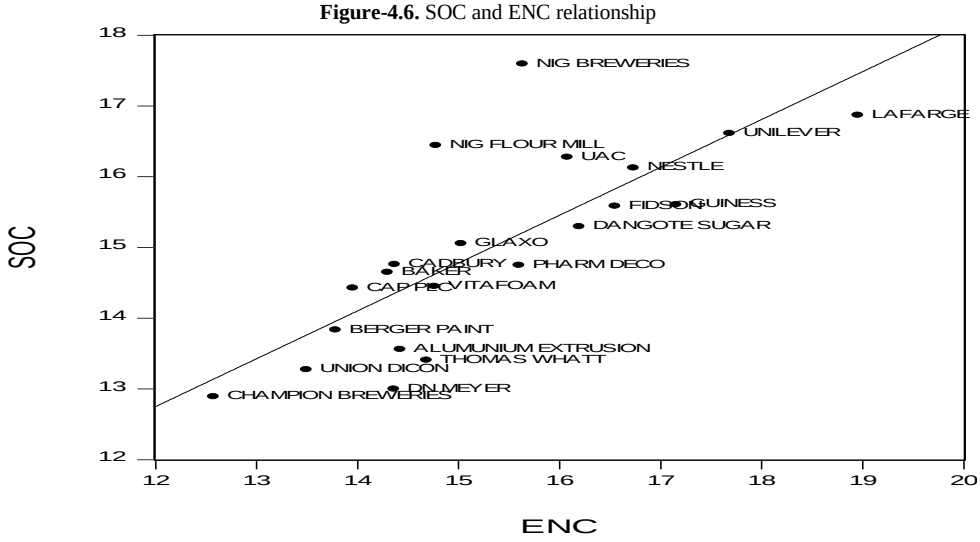


Figure-4.5. ECC and SOC relationship



The relationship between environmental cost and social cost outlays is also shown in the scatterplot in Figure 4.5. The positive relationship is also shown to be very strong and the regression line indicates that there is a more than 1 to 1 relationship. This implies that an increase in environmental cost outlay leads to a more than proportional increase in the social cost outlay of the firms.

Figure-4.6. SOC and ENC relationship



4.3. Tests of Time Series and Cross-sectional Properties of the Panel Data

4.3.2. Panel Unit Root Test

The panel units is conducted to identify the stationarity status. In this study, the test developed by Levin, Lin and Chu (LLC) is used to examine the stationarity properties of the homogenous panel.. In order to improve on the robustness, heterogenous-based tests (that assume individual unit roots) are also included by using the Im, Pesaran and Shin (IPS) as well as both the Augmented Dickey-Fuller (ADF) and Philip-Peron (PP) tests. The unit root tests for the variables are conducted in levels given the nature of the dataset in the study. The results of the unit root test in levels are presented in table 4.4 below.

Table-4.4. Panel Data Unit Root Tests Results in Levels

Variables	*Common unit process*	*individual unit root process*		
	LLC	**IPS**	**ADF**	**PP-Fisher**
INFL†	-0.695	-1.377	42.156	34.71
UNE†	2.717*	1.927	15.471*	7.913*
MSI	8.674**	6.968**	2.419	5.306*
SOC	-2.247*	-3.194*	77.54*	118.30**
ECC	-3.980*	-3.125*	75.328**	95.093**
ENC	-5.372**	-5.186*	106.32**	138.70**
MOS	1.839	-1.779*	46.81	123.22**
EXC_RATE†	0.668	1.336	0.010	0.000

Source: Estimated by the Author.

Note: *** and * indicate significant at 1% and 5 % levels respectively; IPS = Im, Pesaran & Shin; LLC = Levin, Lin & Chu;* † indicates *that variable is stationary at first difference or I(1).*

The unit root test is based on the significance of the coefficients of the test statistics at the 5 percent level. It is seen that the test statistics for the variables (except for INFL, UNE, and EXC_RATE) pass the significance test at the 5 percent level, which shows that these variables are stationary in levels. Thus, most of the variables are shown to be integrated of the order zero or I(0). For the other three variables, the test statistics are not significant, and it shows that the variables are only stationary after the first difference. The unit root test for these variables show that they are integrated of the first order of or I(1).

4.3.2. Cross-sectional Dependence Test

This test is implemented using the Pesaran (2004) cross-sectional dependence (CD) test.. The Pesaran cross-section dependence test results are presented in Table 4.5.

Table-4.5. Cross-section Dependence Test Results

Equation series tested	**Pesaran CD**	**P-value**
INFL	-1.730	0.152
UNE	0.982	0.569
MSI	1.101	0.251

Source: Author's computations

From the results reported in Table 4.5, it is seen that the Peseran CD test statistics for each of the equations fails the significance tests at the 5 percent level (p value > 0.05). This shows that for these equations, there is absence of cross-sectional dependence in the estimates. The absence of cross-sectional dependence indicates that the estimated equations are free of heteroskedastic influences.

4.3.4. Test for Cointegration

The final pre-analysis test is to evaluate the variables to check the presence of long run relationships. This is because, the absence of long run relationship among the data may lead to the estimation of

spurious regression that have no meaningful empirical value. The test for long run relationship is based on the cointegration tests for each of the equations in the study. The result of the panel cointegration test for the variables is resented in Table 4.6. Two tests for panel cointegration are reported: the Pedroni test (which uses both the PP and ADF test procedures) and the Kao test which is more direct in measuring cointegration.. The PP and ADF tests are conducted for the data using within-dimension and between-dimension. The test results show that the INFL, and MSI equations are all cointegrated, since either the panel PP or ADF statistics are significant at the 5 percent level. The Kao test however shows that there is cointegration in all the equations given that the test statistic is significant for each of the equations. Based on this result, it is demonstrated that there is long run relationship among the variables in the study.

Table-4.6. Panel Cointegration Test Result

	Within dimension				*between-dimension*		*Kao Test*
	Unweighted		*Weighted*				
	Statistic	**Prob.**	**Statistic**	**Prob.**	**Statistic**	**Prob.**	
INFL							
PP-Statistic	-5.410	0.000	-6.373	0.000	-8.427	0.00	
ADF-Statistic	-4.901	0.000	-6.079	0.000	-5.133	0.00	
UNE							
PP-Statistic	2.499	0.994	2.276	0.989	3.601	0.99	
ADF-Statistic	2.897	0.998	2.834	0.998	4.141	0.99	
MSI							
PP-Statistic	-9.762	0.000	-9.019	0.000	-10.941	0.00	
ADF-Statistic	-0.470	0.319	-0.911	0.181	0.413	0.66	

The unit root test in the study however shows that the variables in the analysis have mixed orders of integration, with some integrated at order zero and others integrated at order one. This means that although the panel cointegration test captures the panel structure of the dataset, it may not fully embody the integration patterns of the data. the Bounds test for cointegration, which is suited for autoregressive distributed lags (ARDL) based analysis is used for testing the cointegration status for the three combination of variables that make up the model specified. Moreover, the application of error correction processes (based on the ARDL approach to cointegration) further indicates the relevance of the cointegration tests.

4.4. Regression Analysis

The PMG regression analysis is performed for the panel data on manufacturing companies in Nigeria, which implies that both the short-run and the long run relationships are determined. Note that the optimal lag length for estimating the PMG analysis was selected using both the Akaike Information criterion (AIC) and the Schwarz Information criterion (SIC). Both of the criteria indicated that the lag length of two is optimal for estimating the panel data relationship.

4.3.3. Green Accounting and Inflation

The results for the effects of the green accounting factors on inflation rate is presented in Table 4.10. The results also have an impressive overall good of fit based on the standard error of estimates. The main effects of green accounting factors on inflation is determined by focusing on the individual coefficients of the variables in the results. From the upper panel of the Table the results for short run effects are observed. The coefficient of lagged inflation is significant and positive, which indicates persistence of inflationary pressure in Nigeria. Current inflation in the country is likely to generate further inflation in future. None of the three green accounting variables passed the significance test at the 5 percent level. This shows that short run changes in inflation are not influenced by green accounting costing components among the companies.

Table-4.7. PMG Results for INFL

Variable	**Coefficient**	**t-Statistic**	**Prob.**
Short Run Equation			
$INFL_{t-1}$	0.667	19.07	0.00
ΔSOC_t	0.428	1.68	0.09
ΔENC_t	0.078	0.65	0.52
ΔECC_t	0.889	1.09	0.28
ΔMOS_t	-3.638	-4.00	0.00
ΔEXC_RATE_t	-0.072	-17.06	0.00
Constant	50.61	22.73	0.00
ECM_{t-1}	-1.646	-23.28	0.00
Long Run Equation			

SOC	-0.018	-0.27	0.79
ENC	-0.078	-1.11	0.27
ECC	-0.150	-2.04	0.04
MOS	-2.298	-14.63	0.00
EXC_RATE	0.039	30.37	0.00
Mean dependent var	0.348		
S.E. of regression	2.262		

Source: Author's computation

The coefficient of the ECM term is negative and significant at the 1 percent level. This suggests that any short run deviation from equilibrium will be fully restored in the long run. The long run adjustment mechanism is however not asymptotic of smooth but follows a dwindling time path. This is because the coefficient of the ECM is greater than one in absolute values. The initial processes of adjustments tend to overshoot the equilibrium level, and full equilibrium is only attained after a long period. This further demonstrates the high level of inflationary persistence in the country.

How does inflationary pressure respond to changes in the green accounting factors after all adjustments have been completed (in the long run). The lower panel of Table 4.10 reveals these impacts. In the result, all the green accounting variables have negative coefficients which reveal that there is the tendency for these firm expenditures to lead to lower inflation in the long run. However, only the coefficient of ECC passes the significance test at the 5 percent level; the other two coefficients fail the test. This shows that in the long run economic expenditures by firms significantly lowers inflationary pressure in Nigeria. This is an interesting outcome that shows that when firms spend in a sustainable manner, the price level in the economy does not shoot up to generate pressure on inflation. This outcome can be explained perhaps by the manner of economic cost outlays by these firms that are focused on sustainability, especially in the long run.

4.3.4. Green Accounting and Unemployment

The results for the effects of green accounting measures by firms on unemployment rate is presented in Table 4.8. The results also have high overall fit for the model, which indicates that the estimates are reliable. In the short run estimates, the coefficient of current SOC variable passes the significance test at the 5 percent level. The coefficient is negative which indicates that social cost and expenditure by the companies tends to lead to an immediate reduction in unemployment in Nigeria in the short run. The delayed effect is not significant since the coefficient of the lagged variable fails the significance test. The coefficients of both the current and lagged variables for ENC and ECC fail the significance test even at the 5 percent level, indicating that environmental and economic expenditure by firms do not influence short run changes in unemployment rate in Nigeria. The ECM term in the result has the expected negative sign and it also passes the significance test at the 1 percent level. This shows that long run equilibrium can be fully attained following any short-term shocks in unemployment. The coefficient of the ECM is however quite low at -2.96. This suggests that adjustment to equilibrium is slow. In particular, only about 29 percent of adjustment to long run equilibrium is achieved in the first period after a shock.

Table-4.8. PMG Results for UNE

Variable	**Coefficient**	**t-Statistic**	**Prob.**
Short Run Equation			
ΔSOC_t	-0.899	-2.07	0.04
ΔSOC_{t-1}	-1.373	-1.59	0.11
ΔENC_t	0.630	1.33	0.18
ΔENC_{t-1}	0.414	1.17	0.24
ΔECC_t	-1.861	-1.00	0.32
ΔECC_{t-1}	-0.466	-0.39	0.70
ΔMOS_t	-7.139	-2.94	0.00
ΔMOS_{t-1}	8.843	4.54	0.00
ΔEXC_RATE_t	-0.025	-2.97	0.00
ΔEXC_RATE_{t-1}	0.016	0.76	0.45
ECM_{t-1}	-0.296	-2.84	0.01
Long Run Equation			
SOC	-2.076	-18.02	0.00
ENC	-0.451	-3.22	0.00
ECC	0.137	0.43	0.67
MOS	-2.164	-3.42	0.00
EXC_RATE	0.080	21.14	0.00
Mean dep. var	1.205		
S.E. of reg.	3.650		

Source: Author's computation

The long run effects of the variables on unemployment can be observed by considering the coefficients of the long run estimates in the lower panel of Table 4.8. In the result. The coefficients of SOC and ENV pass the

significance test at the 1 percent level, while that of ECC fails the test even at the 5 percent level. This shows that social cost expenditures by firms have a significant negative impact on unemployment in Nigeria. In the same vein, environmental expenditures by the firms also significantly reduces unemployment in Nigeria. Both of these results clearly shows that unemployment in Nigeria responds strongly to firms' sustainability expenditures and policies given that the two main sustainability expenditures of social costs and environmental costs both exert significant negative impacts on unemployment in the country. The coefficients of money supply and exchange rate are also significant in the long run model at the 1 percent level. This shows that rising money supply significantly reduces unemployment, while exchange rate depreciation significantly increases unemployment in Nigeria.

4.3.5. Green Accounting and Misery Index

Finally, the result of the estimates of green accounting variables and misery index in Nigeria is presented in Table 4.9. The short run results show that the current coefficient of ECC is significant. This shows that economic cost outlay of firms has an immediate negative effect on the misery index in the short run. Thus, economic cost outlay is the factor that may inhibit short-term changes in the misery index in Nigeria in terms of firm sustainability accounting procedure. The other green accounting variables do not appear to have significant short run effects on misery index in Nigeria. The coefficient of the ECM term also has the expected negative sign and is significant at the 1 percent level. Thus, the result shows that long run equilibrium will be restored given any short run shock that causes disequilibrium in the system. The adjustment to long run equilibrium is very high at -0.811 which shows that up to 81 percent of the long run adjustment will be completed in the first period.

Table 4.9. Short Run PMG for MSI

Variable	Coefficient	t-Statistic	Prob.
Short Run Equation			
ΔSOC_t	0.607	0.93	0.35
ΔSOC_{t-1}	-1.061	-0.55	0.58
ΔENC_t	0.970	1.04	0.30
ΔENC_{t-1}	0.860	1.16	0.25
ΔECC_t	-3.172	-2.22	0.03
ΔECC_{t-1}	-0.849	-0.81	0.42
ΔMOS_t	-3.822	-1.22	0.23
ΔMOS_{t-1}	22.549	7.27	0.00
ΔEXC_RATE	0.051	4.90	0.00
ΔEXC_RATE_{t-1}	0.018	1.64	0.10
ECM_{t-1}	-0.811	-10.57	0.00
Constant	-76.744	-10.88	0.00
Long Run Equation			
SOC	0.119	0.65	0.52
ENC	-0.988	-3.72	0.00
ECC	-0.934	-3.96	0.00
MOS	12.684	23.98	0.00
EXC_RATE	0.031	5.97	0.00
Mean dependent var	3.395		
S.E. of regression	4.505		

Source: Author's computation

The long run estimates for the MSI results are shown in the lower panel of Table 4.9. In the result, the coefficients of ENC and ECC both pass the significance test at the 1 percent level while the coefficient of SOC failed the test even at the 5 percent level. This result shows that after all adjustments have been made, a rise in the environmental and economic expenditures of companies in Nigeria lead to significant reductions in the misery index. The effects are very large and almost indicates a one-to-one effect. Thus, firms' sustainability practices in the areas of the economy and environment are shown to effectively lead directly to improvement in sustainable development in the long for Nigeria, especially in the area of falling misery index in the country. The coefficients of money supply and exchange rate are both significant and positive in the long run estimates. This shows that increase in money supply or the exchange rate tend to increase misery index. This outcome is fixable since both increases are likely to cause inflationary pressure in the economy.

4.4. Robustness Test for Results

In order to check for the robustness of the estimates in the study, the multicollinearity and normality tests are conducted, and the results are presented.

A. Multicollinearity Tests

The test for multicollinearity in the estimates is conducted. In Table 4.10, the results of the multicollinearity test for the three models for the PMG estimation are presented. The results show the estimates of the centred variance inflation factors (CVIF) variables. The CVIF value must be less than 5.0 for the variable in an equation to be free from collinearity. In the report on Table 4.10, the CVIF values for all the variables are less than 5.0. This shows that

the estimated coefficients for the equations do not integrate excessively among themselves and the estimates are therefore reliable. The absence of multicollinearity implies that the coefficient estimates in the regression results are well defined for each of the explanatory variables.

Table-4.10. Post Estimation Test Results – Multicollinearity test

Variable	RGDP	HDI	INFL	UNE	MSI
SOC	0.968	1.012	0.746	2.859	2.988
ENC	0.435	0.455	0.785	4.824	4.041
ECC	0.341	0.356	0.615	2.038	2.130
MOS	0.444	0.464	0.801	0.157	0.676
EXC_RATE	0.609	0.636	1.098	1.701	0.395

Source: Author's computations

The robustness checks provided for the ARDL-based PMG estimates also involves evaluating the stability of the estimated results over time. This test is performed by considering that normality of the residual distribution. The normality test is conducted using the J-B procedure, and the result indicates that the J-B statistic failed the significance test even at the 5 percent level. Note that the null hypothesis is the absence of non-normality. This implies that the null hypothesis of normality in the residual distribution is accepted for the estimated panel relationships. Thus, the tests indicate that the residuals are normally distributed. With this outcome, each of the estimated equations can be adjudged to be stable and effective for long term prediction and analysis.

4.5. Test of Hypotheses

H01: Social, environmental and economic cost of listed manufacturing companies does not have significant effect on Unemployment in Nigeria

The long run results in Table 4.8 show that the coefficient of SOC is -2.076 ($p < 0.01$), and the coefficient of ENC is -0.457 ($p < 0.01$). These two coefficients are shown to pass the significance test at the 1 percent level. The null hypotheses for these two variables are rejected. The coefficient of ECC is however 0.137 ($p > 0.05$) indicating that is failed the significance test at the 5 percent level. Thus, the null hypothesis cannot be rejected in this case. This implies that social and environmental costs of listed manufacturing companies have significant negative effects on unemployment in Nigeria. On the other hand, economic cost of listed manufacturing companies does not have a significant effect on unemployment in Nigeria.

H02: Social, environmental and economic cost of listed manufacturing companies does not have significant effect on inflation in Nigeria

This hypothesis seeks to evaluate the roles of the three green accounting variables on inflation in Nigeria. The results in Table 4.10 are used for testing the hypothesis. In the long run result, the coefficient of SOC is -0.018 ($p > 0.05$), that of ENC is -0.078 ($p > 0.05$), while that of ECC is -0.150 ($p < 0.05$). This means that the coefficients of SOC and ENC fail the significance test at the 5 percent level, while that of ECC passed the test at the 5 percent level. Based on this result, the null hypothesis is partially rejected for ECC but accepted for SOC and ENC. Thus, while economic cost of listed manufacturing companies has a significant negative effect on inflation, social and environmental costs of the companies do not have significant effects on inflation in Nigeria.

H03: Social, environmental and economic cost of listed manufacturing companies does not have significant effect on Misery in Nigeria

To test this hypothesis, the long run results in Table 4.9 is considered. In the result, the coefficient of SOC is 0.119 ($p > 0.05$), that of ENC is -0.988 ($p < 0.01$), and that of ECC is -0.934 ($p < 0.01$). These results show that the null hypothesis relating to SOC cannot be rejected in this case, while the hypotheses relating to ENC and ECC are both rejected. Thus, while environmental and economic costs of listed manufacturing companies have significant negative effects on the misery index of Nigerians, the social cost of these companies have no significant impact on the misery index.

4.6. Discussion of Findings

The goal of the research is to determine the effect of Green Accounting and standard of living in Nigeria. First, the study found that in general, the effects of green accounting initiatives by the companies on standard of living are more long-term than short-term. It was shown that while the short-run effects are more negative and mostly insignificant, the long run stable effects give indication that these initiatives could help to address welfare problems in Nigeria. This outcome is understandable and demonstrates that our study extends previous literature like Andania and Yadnya (2020), Ofuogbu and Asogwa (2020), Chukwuka and Eboh (2018) and Caesaria and Basuki (2017). These studies found that green accounting and sustainability disclosures by firms have direct significant positive impacts on firms' performance in form of productivity and profitability. Our study shows that the impacts found by previous studies that focus on firm-level effects are the short run impacts when the economy is taken into consideration. It is after these effects on the companies have fully internalized that the positive effects on standard of living can be felt in Nigeria over the long run. This implies that the focus of companies in addressing development in the country needs to be more intentional and focus on a longer horizon of sustainability reporting, instead of using short term outcomes on the firms to gauge how the effects will play out in the economy.

The capability of economic costs of firms to reduce inflation however demonstrates the efficiency of spending by firms in Nigeria. It shows that when firms spend in a sustainable manner, the price level in the economy does not

shoot up to generate pressure on inflation. This outcome can be explained perhaps by the manner of economic cost outlays by these firms that are focused on sustainability, especially in the long run.Moreover, there is evidence from the study that the social aspects of green accounting among the manufacturing firms only had a significant impact on unemployment alone. Although this outcome aligns with previous studies like Olayinka and Oluwamayowa (2014a) and Ajayi and Ovwarhe (2016), it however shows that social sustainability practices by these firms (such as CSR, etc) only targets the labour market section of the economy. Specifically, the result shows that social expenditures by manufacturing companies in Nigeria is limited to the social aspects of development in Nigeria. Thus, there is evidence that unemployment in Nigeria responds strongly to firms' sustainability expenditures and policies given that the two main sustainability expenditures of social costs and environmental costs both exert significant negative impacts on unemployment in the country.

Finally, the result from the study has demonstrated that a rise in the environmental and economic expenditures of companies in Nigeria lead to significant reductions in the misery index with highly elastic effects that relates a one-to-one effect. Thus, firms' sustainability practices in the areas of the economy and environment are shown to effectively lead directly to improvement in sustainable development in the long run for Nigeria, especially in the area of falling misery index in the country (Andania and Yadnya, 2020; Erhirhie and Ekwueme, 2019; Nugroho and Arjowo, 2014; Ofuogbu and Asogwa, 2020; Olayinka and Oluwamayowa, 2014b; Sunday *et al.*, 2019) however found negative effects on green accounting on firm outcomes.

5.2. Recommendations

The following recommendations are made based on the empirical findings of the study.

The result from the study showed that social costs outlay by the companies only had significant effect on unemployment among the five sustainable development factors. This shows that social responsibility of firms in Nigeria does not appear to be having desired long-term effects, especially in directly improving welfare. Thus, firms need to re-visit their social commitments in terms of strategy and focus. The firms need to either change their CSR strategies or they may have to re-evaluate them in order to ensure that this important aspect of sustainability of the firms deliver long-term effects in improving standard of living in Nigeria. Current areas of focus of social responsibilities may need to be changed to involve those that can deliver long term effect

1. Furthermore, the study found that the short run effects of green accounting measures by the firms' sustainable development is different from the long run effects. This has strong implication for the firms given that the short run effects are minimal and sporadic, while the long run impacts are deep and effective. Thus, policy makers within the companies need to consider the sustainability issues as part of a long term planning strategy. This consideration will ensure that the unique capacity of the green accounting within the strategy of firms be leveraged on in terms of managing sustainable development plans in the long run in Nigeria. Moreover, the focus of companies in addressing sustainable development in the country needs to be more intentional and focus on a longer horizon of sustainability reporting, instead of using short term outcomes on the firms to gauge how the effects will play out in the economy.
2. Finally, the estimations from the study show that the addressing sustainable development issues is a long-term affair that requires strong and persistent actions. Thus, every policy action taken both by the firms and the public policy makers regarding sustainability and green economic planning must consider the long run implications and applicability in every segment of the economies.
3. It will be inefficient to adopt short term policies in addressing sustainable development in Nigeria since such policies may not produce the desired long-term effect that is necessary to ensure intertemporal sustainable development in the country

5.4. Conclusion

The effects of social conditions as well as the attendant degradation of the environment have become entrenched in both policy and research agenda across the globe. In this study the effect of green accounting by manufacturing firms in Nigeria on sustainable development in the country was examined. In particular, the study considered the roles of different green accounting components of the companies, including social, environmental and economic aspects. The focus is on examining how responsible accounting and strategy in each of this component infleunces standard of living in Nigeria. Standard of living was measured in the study using unemployment rate, inflation rates, and the misery index. The Pooled Mean Group (PMG) estimation technique was used in the empirical analysis to estimate the long-run and short-run relationship amongst the variables for the panel analysis. The main finding of the study reveals that green accounting strategies by companies matter for standard of living in Nieria. Specifically, the following Conclusions were made:

a) That social and environmental aspects of sustainable and green accounting of listed manufacturing companies significantly lead to reduction in the unemployment rate in Nigeria.

b) That only the economic cost consideration of listed manufacturing companies has significant mitigating effect on inflation in Nigeria

c) That environmental and economic cost of listed manufacturing firms significantly reduce the misery in Nigeria.

d) Essentially, the manufacturing sector appears to be holding a more and more critical key for entrenching sustainability in the economic system in Nigeria. A focus on sustainability in this sector will be the most efficient and effective means of rapidly and profoundly addressing sustainable development drive in Nigeria

5.6. Contribution to Knowledge

The millennium development goals to which Nigeria is a signatory emphasizes restoration of the earth environment, economic development, poverty alleviation and full employment. This study contributes to knowledge by identifying the key drivers of poverty alleviation and improved standard of living and the role of Green accounting factors that drive macro-economic indices.The scontributes to knowledge by showing that green accounting initiatives by companies in achieving poverty alleviation in Nigeria are more long-term than short-term.

Social costs had significant impact on unemployment alone indicating social sustainability practices such as CSR only targets the labour market segment of the economy. Specifically, result contributes to knowledge by showing firms' social expenditures is limited to social aspects of sustainable development in Nigeria.

3. Social and environmental costs exert significant negative impacts on unemployment in Nigeria. The study therefore contributes significantly towards policy formulation.

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