Environmental Disclosure Practices and Share Price Volatility in the Nigerian Stock Market

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Abstract: *The growing awareness of the impact of corporate activities on the environment and seeming failure of the existing regulations to mandate the disclosure of such information impair investment decision and confidence of market participants. Many studies have been carried out to address environmental disclosure and the Nigerian stock market but few considered the effect of environmental disclosure on share price volatility This study investigated the combined effects of environmental disclosure on share price volatility of the Nigerian stock market. The study adopted ex post facto research design. The target population for the study comprised 48 companies quoted on the Nigerian Stock Exchange, under the consumer goods and industrial goods sectors, as at December 31, 2016. A sample size of 17 companies was determined using Cochran's formula. The results revealed that environmental disclosure jointly had significant effect on Share Price Volatility (SPV), (Adjusted-R^2 = 0.187, $F_{(8, 253)}$ = 8.86, p< 0.05). The individual effect of the explanatory variable on the SPV showed that ENP had significant positive effect on SPV (β = .764, $t_{(253)}$ = 2.66. p < .05) while FSZ had significant negative effect on SPV (β = -.339, $t_{(253)}$ = -4.07, p < .05). The study concluded that environmental disclosure practices were important factors in determining the stability of share prices in the Nigerian stock market. The study recommended that financial reporting council of Nigeria and other regulatory agencies should establish and implement environmental disclosure standards to mandate consistent disclosure of environmental information.*

Keywords: Environmental disclosure, Share price volatility, Investors, Consumer goods sector, Industrial goods sector, Stock market

1. Introduction

The stability of the stock market is of importance to investors to ensure near accurate prediction of return on their investment in the market (Chaudhry, 2014). Where share price is volatile, prediction becomes difficult and could be risky to investors (Bayo, Ifayemi, Ajibade, &Oluwatosin, 2016). Noori, Jalili, and Nia, (2014), perceived volatility as a measure of risk faced by investors. Investors in the stock market consider volatility in the prices of shares as either a measure of uncertainty (Mgbame&Ikhatua, 2013). Volatility of share prices makes it near impossible to predict future share prices (Khaled, Chijoke, &Aruoriwo, 2010). Where share prices are excessively volatile it could have negative affect the capital market function of effectively allocating scares resources (Tease, 1993). Investors, especially those that are risk averse, may shy away from investing in companies with highly volatile shares thus depriving companies' access to sufficient fund to finance capital development or take up new opportunities for business growth.

According to Chaudhry (2014), of all the factors that influence stock price volatility, information plays a major role. Information is critical in the inner working of the stock market as it helps investor to make informed decision. According to Zhang, Zhang, and Seiler, (2011) the efficiency of a stock market is influenced by a number of factors some of which include information disclosure, information asymmetry, trading environment, and transaction cost. Baumann, and Nier, (2004) stated that information disclosure mitigates uncertainty and as such reduces the magnitude of impact of news on the performance of a company thereby reducing stock price volatility. The provision of adequate information, especially information on the impact of corporate activities on the environment, is perceived to be important in the survival of companies in an era of increase in ethical investors and green customers.

The need to account for the impact of corporate activities on the environment started in the early 1970's, and gained momentum in the 1980's. Krivacic and Jankovic (2017), asserted that the world began to be interested in how the activities of companies are negatively affecting the environment in the late 1980's. This was the aftermath of the Bhopal gas leak in India in 1984, the Chernobyl failure of nuclear reactor in Ukraine in 1986 and Exxon Valdez oil spills in Alaska in 1989. These events led to the loss of human lives, destruction of biodiversity and aquatic lives. Beyond the impact of corporate activities on the environment and health of the immediate communities, it could also impact negatively on the economy of the affected areas. Makori and Jagongo (2013) pointed out that the negative impacts of environmental problems on human lives have become a source of concern globally. This concern about the impact of businesses on the environment led to enactment and establishment of various environmental laws, regulations and agencies to ensure environmental responsibility by companies.

The UK Companies Act 2006 (as amended in 2013) requires all companies, except small companies, to include in their strategic report information relating to environmental matters such that show the impact of companies' businesses on the environment. According to Swain, Kanungo, and Dash (2017) the Indian Companies Act, 2013 requires the disclosure of information regarding energy conservation measures and investments made in energy conservation efforts by companies doing business in India. In Nigeria, there are many laws that are intended to enforce environmental responsibility by companies doing business in

the country. Some of these laws include Section 20 of the 1999 Constitution of the Federal Republic of Nigeria 1999 which mandates every state to improve and protect the air, land, water, forest and wildlife; National Environmental Standards and Regulation Enforcement Agency (NESREA) Act 2007; Environmental Impact Assessment (EIA) Act, Cap E12, LFN, 2004; Harmful Waste (Special Criminal Provision) Act, Cap H1, LFN, 2004; Hydrocarbon Oil Refineries Act, Cap H5, LFN, 2004; Oil in Navigable Water Act, Cap 06, LFN, 2004; Associated Gas Re-Injection Act Cap 20 LFN 2004; Oil Pipeline Act, Cap O7, LFN, 2004.Despite the various laws enacted to enforce environmental responsibility, environmental disclosure among Nigerian listed companies are still in it embryonic state Nosakhare, Ahman and Adam, 2016; Onyali, Okafor &Egolum; 2014, Uwuigbe & Olayinka, 2011).

Many studies have been carried out to address environmental disclosure and share price in the Nigerian stock market but few considered the effect of environmental disclosure on the volatility share price in the Nigerian Stock Market. This study investigated the combined effects of environmental pollution and control policy (EPC), energy policy (ENP), impact of biodiversity (IB), waste management cost (WMC), environmental research and development cost (ERD), cost of compliance to environmental laws (CCEL), firm size (FSZ), and firm age (FA) on share price volatility of the Nigerian stock market.

2. Literature Review

Empirical Review

Share price volatility and some of the factors that influenced share prices have been reviewed by various researchers. Plumlee, Brown, Hayes, and Marshall (2015) studied voluntary environmental disclosure quality and firm value of US companies. The study sought to examine the relationship between the quality of environmental disclosure and firm value by exploring how environmental disclosure influenced cash flow and cost of equity. The study used the disclosure index proposed by the Global Reporting Initiative (GRI) in 2006. The study concluded that environmental disclosure had influence on firm's value measured in terms of cash flow and cost of equity.

Another study by Aerts, Cormier, and Magnan (2008) studied Corporate Environmental Disclosure, Financial Markets and the Media: An International Perspective published in Ecological Economics. The study was quantitative in nature and collected environmental information from both Published annual reports and Websites of a sample of 267 firms from Belgium, France, Netherlands, United State of America and Canada. The authors put forward a view that the nature of information content of corporate environmental disclosure by management is influenced by both the stock market and consideration for public interest. The study found out that the extent of environmental disclosure by firm in the countries under review influenced financial analyst perception of the companies. The study however only considered the disclosure practices of the companies. It did not consider how such disclosure could affect corporate

performance either in the form profitability or fluctuation in share prices and trade volumes.

Ravlic and Yarnold (2015) investigated the effect of corporate social responsibility (CSR) disclosure on the volatility of the stock market in Sweden and Denmark stock market. The focus of the study was to examine if Swedish companies and Swedish stock market could benefit from mandatory disclosure and how such disclosure could reduce volatility of a company's stock price. The author submitted that volatility in stock price is associated with the risk connected with company. An increase in share price movement is associated with increase in investment risk. The Ravlic*et al* (2015) further stated that the availability of information will influence investors' investment activities which will in turn have effect on the volatility of a company's stock prices. Reduction in share price volatility will create a stable environment for investor. The study found that corporate social responsibility disclosure will be beneficial to Swedish companies and will reduce the volatility of share prices which would also be beneficial for the company's various stakeholders.

Zhang and Nam (2016) investigated the effect of information disclosure quality on stock price crash. The study focused on how information disclosure influenced crash in stock price among Chinese firms. Secondary data from large number of Chinese firms for a period of 2001 to 2012 were used. The authors submitted that the link between lack of transparency in the disclosure of information and the risk of stock market crash may not be linear. Internal bias may affect information transparency since management can determine which information to disclose. Too much disclosure of information may contain noise that could trigger volatile share price movement. Research has shown that lack of transparency in the disclosure of information increases the crash risk of stock prices. Professionals have also linked stock price change to new information about the companies' prospects. Inadequate regulation to enforce information disclosure and weak punishment for lack of transparency in information disclosure makes it easier for managers to hide bad news. The study found that both lack of transparency in the disclosure of information and over disclosure of information poses risk for crashing stock prices.

Babajide, Lawal and Somoye (2017) investigated whether market fundamentals influenced stock market volatility in Nigeria. The study examined the effect of macroeconomics variables on stock market price volatility in Nigeria. Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH) was adopted to estimate the impact of macroeconomic variable on stock market pricing. The result of the study showed that macroeconomic variables like inflation, interest rate, exchange rate among other variables influenced share price volatility. The study only reviewed the global impact of macroeconomics information of stock prices. These variables were financial in nature.

Ojong, Anthony and Udoka (2015) investigated the impact of stock price volatility on performance of Nigerian stock market. The focus of the study was to investigate how share

price volatility will affect the viability of the Nigerian stock market. Secondary data on macroeconomic variable such as stock price volatility, market capitalization, exchange rate, interest rate were collated and various statistical tools were used. The authors submitted that increase or decrease in share price volatility connotes change in the behavior of investor in the market. Relevant information makes the market react. Stock market volatility has negative implication on investors' expenditure and may starve companies using the market to raise funds to finance business expansion or to take advantage of new business opportunity. Extreme share price fluctuation reduces the importance of stock price as an indicator of firms' value. Price instability affects stock market competence to effectively redistribute funds from the surplus part of the economy to the deficit sector of the economy.

3. Theoretical Framework

3.1 Signaling Theory

Signaling theory was propounded by Spence in 1973 in his work "job market signaling". The work indicated that hiring employee could be linked to investment under uncertainty. The information needed by employers about the capabilities of a potential employee might not be fully available at the time of hiring. Signaling theory is adopted in explaining the behavior of individuals or organizations with access to different information (Connelly, Certo, Ireland, &Reutzel, 2011). They further stated that the sender of the information will determine the quantum and medium of communicating information (signal) and the receiver of the information on the other hand could choose how to interpret the signal. Fundamentally, signaling theory is concerned with minimizing information asymmetry between parties (Bae, Masud, & Kim, 2018; Su, Peng, Tan, &cheung, 2014; Spence, 2002).

3.2 Methodology

The study adopted e*x post facto* research design. The target population for the study comprised 48 companies quoted on the Nigerian Stock Exchange, under the consumer goods and industrial goods sectors, as at December 31, 2016. A sample size of 17 companies was determined using Cochran's formula. Stratified proportionate sampling was adopted to select the number of companies studied from each stratum and samples from each stratum were purposively selected based on companies with higher total asset as at December 31, 2016. Validated data were extracted from the financial reports of the 17 companies and other published documents for the period of 15 years (2002-2016) which constituted the 255 firm-year observations used for this study. The data for stock market were converted to their volatility using Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model. Hausman test was used to determine the appropriate model for the hypothesis. Breusch-Pagan Langragian multiplier (LM) and testparm (rho) test where conducted to confirmed the result of the Hausman's test. To determine the robustness of the models, diagnostics test for cross sectional dependence, heteroscedasticity, and auto correlation was carried out. The Adjusted R^2, was used as a measure of explanatory power of the environmental

disclosure variables. F-statistics and P-values were used to measure and level of significance respectively. All analyses were done using Stata software.

3.3 Description of Variables

The study consists of independent variables (environmental disclosure practices) proxy by environmental pollution and control policy (EPC), energy policy (ENP), impact of biodiversity (IB), waste management cost (WMC), environmental research and development cost (ERD), cost of compliance to environmental laws (CCEL); dependent variable of share prices volatility (SPV); moderating variable (company characteristics) proxy by firm age (FAG) and firm size (FSZ). Environmental disclosure variables were measured using Dichotomous rating system was used to assign 1 or 0 for disclosure and non-disclosure of environmental information while the share price volatility was extracted from GARCH model using average of daily stock prices for each year.

3.4 Hypothesis and Model

To test the influence of environmental disclosure on share price volatility, the following hypothesis was proposed
H_{01}: there is no significant effect of environmental disclosure on the volatility of share prices of companies quoted on the Nigerian stock exchange

This is functionally stated as follows:
$$SPV_{it} = \beta_0 + \beta_1 EPC_{it} + \beta_2 ENP_{it} + \beta_3 IB_{it} + \beta_4 WMC_{it} + \beta_5 ERD_{it} + \beta_6 CCEL_{it} + \mu_{it} \text{..........Model 1}$$
The moderating effects of firm size (FSZ) and firm age (FAG) is also considered and is functionally represented as follows:
$$SPV_{it} = \beta_0 + \beta_1 EPC_{it} + \beta_2 ENP_{it} + \beta_3 IB_{it} + \beta_4 WMC_{it} + \beta_5 ERD_{it} + \beta_6 CCEL_{it} + + \beta_7 FSZ_{it} + \beta_8 FAG_{it} \ \mu_{it} \text{--------------Model 2}$$
The a priori expectation was that all proxies of environmental disclosure should have negative effect on stock price volatility (SPV)

4. Data Analysis, Interpretation and Discussion

4.1 Data Analysis

The result of the data analysis is shown in Appendix 1

4.2 Interpretation of Result

In order to select the most appropriate model for hypothesis one without the effect of moderating variables, hausman test was conducted to determine whether the unique errors (error term) are correlated with the repressors. The null hypothesis for the test suggested the appropriateness of random effect while the alternative hypothesis suggested fixed effect. The result of the hausman test showed a *p-value* of 0.948, that is 94. % percent which is more that 5% level of significance adopted for this study. The resulted suggested random effect model as the most appropriate for hypothesis one. To confirm the result of the husman test, lagrangian multiplier (LM) tests was conducted. These test was conducted to determine the most appropriate model between the random

effect and the pooled ordinary least squares (OLS) regression. The null hypotheses of this test is that OLS is an appropriate model and the alternative hypothesis suggest random effect model as the appropriate model. The result of the LM tests showed a coeffient and p-value of 343.46 (0.000), which is less than the 5% level of significance adopted by this study. The result also suggested random effect model as the most appropriate model for hypothesis one without the effect of moderating variables.

To determine the robustness of the model, diagnostics test for cross sectional dependence, heteroscedasticity, and auto correlation was carried out. According to Hsiao, Pesaran, and Pick (2017) panel data are assumed to be independent across individual observation and where this assumption does not hold for panel data, the estimators that are based on the assumption of cross sectional independence could be inconsistent. The null hypothesis for cross sectional independence is that the residuals of the model are uncorrelated over time. The test was carried out using Pesaran's test of cross sectional independence and the result showed a *P-value* of 0.010, that is 1% which is less than 5% percent level of significance adopted for this study. The result rejected the null hypothesis of cross sectional independence and showed that the standard errors of the model are correlated over time, this suggested that model has cross-sectional dependence problem.

The test for heteroscedasticity is carried out to ensure that variation in standard error is constant across all observations. Where heteroscedasticity is present in a panel data, the efficient of the estimators is weakened. The null hypothesis states that the standard errors of the model are constant over time. The result of the heteroscedasticity test showed p-value of 0.000 which is less than the 5% adopted for this study. This indicates the presence of heteroscedasticity; that is the standard errors of the model are not constant over time.

The model was also tested for the presence of autocorrelation, among the residuals and the coefficients of the model, using Wooldrige test for autocorrelation in panel data. The null hypothesis for the test states that there is no first order autocorrelation. The result of the test showed a P-value of 0.000 which is less than 5% level of significance adopted for this study. The result suggested the rejection of the null hypothesis and the acceptance of the alternate hypothesis that showed the presence of autocorrelation.

All the diagnostics test conducted for model one, without the effect of moderating variables, showed the presence of cross sectional dependence, heteroscedasticity, and autocorrelation therefore OLS, fixed effect model, and random effect model would not be appropriate estimators for the model. In order to correct this problem, the Linear Regression (PCSEs) was used to estimate the effect of environmental disclosure practice and volatility of share price of companies quoted on the Nigerian Stock Exchange.

The results of the model adopted to test hypothesis one, without the effect of moderating variables, is shown on table 4.1 and is interpreted as follows:

The results showed that environmental pollution and control policy (EPC) (with *coefficient* = 0.182 and *p-value* = 0.306), and cost of compliance with environmental laws (CCEL) (with coefficient 0.221 and p-value = 0.128) have positive and insignificant influence on the volatility of share prices on the Nigerian Stock Market. While energy policy (ENP) (with *coefficient* = 0.775 and *p-value* = 0.000) and west management cost (WMC), (with *coefficient* = 0.347 and p-value = 0.033) have positive and significant influence on the volatility of share prices, impact on biodiversity (IB) (with coefficient -0.690 and p-value = 0.000), and environmental research and development cost (ERD) (with *coefficient* = -0.371 and *p-value* = 0.060), have negative and significant influence on the volatility of share prices at 5% and 10% levels of significance respectively.

The coefficient of the regression result measures the magnitude and the direction of relationship between the dependent and the independent variables. Environmental pollution and control policy (EPC) with coefficient of 0.182 implies that a unit increase in EPC could result in 18.2% increase in the volatility of share prices in the Nigerian Stock Market; energy policy (ENP) with a coefficient of 0.775 also implies that a unit increase in ENP would result in 77.5% increase in the volatility of share prices. West management cost (WMC) with a coefficient of 0.347 is an indication that a unit increase in WMC could increase share price volatility by 34.7%. The coefficient of cost of compliance to environmental laws (CCEL) (0.211) indicated that an increase in CCEL could induce a 22.1% increase in the volatility of share prices in the Nigerian Stock Market. However, impact on biodiversity (IB) with a coefficient of -0.690 implies that an increase in disclosure of the impact of corporate activities on biodiversity could reduce the volatility of share price by 69%. A unit increase in the disclosure of environmental research and development cost could induce (ERD) 37.1% decrease in the volatility of share prices.

The explanatory power of environmental pollution and control policy (EPC), energy policy (ENP), impact on biodiversity (IB), waste management cost (WMC), environmental research and development cost (ERD), and cost of compliance to environmental laws (CCEL) combined on the volatility of share prices in the Nigerian Stock Market is 0.203 which implies that 20.3% of volatility in share prices is caused by the combined influence of the explanatory variables while the remaining 70.7% is caused by other variables not considered in this study. The wald-test with a coefficient and p-value of 193.54 (0.000) which is less than 5% level of significance adopted for this study is an indication that all explanatory variables (EPC, ENP, IB, WMC, ERD, AND CCEL) jointly and significantly influence the dependent variable (SPV).

The parameter estimates obtained from the Linear Regression (PCSEs) for the model without the effect of moderating variables is shown as follows:

$$SPV_{it} = 1.329 + 0.182EPC_{it} + 0.775ENP_{it} - 0.690IB_{it} + 0.347WMC_{it} - 0.371ERD_{it} + 0.221CCEL_{it} + \mu_{it}$$ --------------- Model 1

In order to select the most appropriate model for hypothesis with the effect of moderating variables, hausman test was conducted to determine whether the unique errors (error term) are correlated with the repressors. The null hypothesis for the test suggested the appropriateness of random effect model (REM) while the alternative hypothesis suggested fixed effect model (FEM). The result of the hausman test showed a *p-value* of 0.000, that is 0 % percent which is less than 5% level of significance adopted for this study. The result suggested fixed effect model as the most appropriate for hypothesis one. To confirm the result of the husman test, testparm and rho tests were conducted. These tests were conducted to determine the most appropriate model between the fixed effect and the pooled ordinary least squares (OLS) regression. The null the hypotheses of these tests are that fixed effects is not an appropriate model. The result of the testparn and rho tests showed a coeffient and p-value of 7.67 (0.000), which is less than the 5% level of significance adopted by this study. The result also suggested fixed effect model as the most appropriate model for hypothesis one.

To determine the robustness of the model, diagnostics test for cross sectional dependence, heteroscedasticity, and auto correlation was carried out as in the case of the model without the effects of moderating variables.

All the diagnostics test conducted for model one, with the effect of moderating variables, showed the presence of heteroscedasticity, and autocorrelation; as such OLS, fixed effect model, and random effect model would not be appropriate estimators for the model. In order to correct this problem, the fixed effect model with cluster was used to estimate the effect of environmental disclosure practices on the volatility of share price of companies quoted on the Nigerian stock market taking into consideration the effect of moderating variables. The result is also shown on table 4.1 and interpreted as follows:

The results showed that environmental pollution and control policy (EPC) (with *coefficient* = 0.225 and *p-value* = 0.226), west management cost (WMC), (with *coefficient* = 0.385 and p-value = 0.158), environmental research and development cost (ERD) (with *coefficient* = 0.053 and *p-value* = 0.835), and Firm age (FAG) (with *coefficient* = 0.013 and *p-value* = 0.401) have positive but insignificant influence on the volatility of share prices on the Nigerian stock market. However, impact on biodiversity (IB) (with coefficient -0.278 and p-value = 0.121), and cost of compliance with environmental laws (CCEL) (with coefficient -0.06 and p-value = 0.719) have negative but insignificant influence on the volatility of share prices. While energy policy (ENP) (with *coefficient* = 0.764 and *p-value* = 0.008) has positive and significant influence on the volatility of share prices, firm size (FSZ) (with *coefficient* = -0.339 and *p-value* = 0.000) has negative and significant influence on the volatility of share prices in the Nigerian Stock Exchange (NSE).

The explanatory power of environmental pollution and control policy (EPC), energy policy (ENP), impact on biodiversity (IB), waste management cost (WMC), environmental research and development cost (ERD), cost of compliance to environmental laws (CCEL), firm size (FSZ),

and firm age (FAG) combined on share prices volatility in the Nigerian Stock Market is 0.187 which implies that 18.7% of volatility in share prices is caused by the combined influence of the explanatory variables while the remaining 72.3% is caused by other variables not considered in this study. The *F-statistics* with *p-value* = 0.005 which is less than 5% level of significance adopted for this study is an indication that all explanatory variables (EPC, ENP, IB, WMC, ERD, CCEL, FSZ, and FAG) jointly and significantly influence the dependent variable (SPV).

The parameter estimates obtained from the fixed effect model with cluster are given in the equation for model one with the effect of moderating variables is shown as follows:

$$SPV_{it} = 6.215 + 0.225EPC_{it} + 0.764ENP_{it} - 0.278IB_{it} + 0.385WMC_{it} + 0.053ERD_{it} - 0.063CCEL_{it} - 0.339FSZ_{it} + 0.013FAG_{it} + \mu_{it}$$

Comparing the models of hypothesis one, with and without the influence of moderating variables, it is shown by the result that the model without the influence of moderating variable explained more appropriately the relationship between environmental disclosure practices and share price volatility in the Nigerian stock market. The explanatory power of the independent variables in the model without moderating variables is 20.3 % which is greater than that of the model with moderating variables (18.7%). The *wald-test* (193.54(0.000)) and *F-statistics* (8.86(0.005)) of the models, without and with moderating variables respectively, confirmed the superiority of the model without the moderating variables.

5. Discussion of Findings

Based on the regression result in Table 4.1, environmental Disclosure Indices (EDI) jointly have significant effect on the volatility of share prices in the Nigerian stock market as shown by *wald-test* = 193.54, *Ajd. R^2* = 0.203 and *P-value* = 0.005. The wald-test indicates that the total effect of environmental disclosure variables have positive influence on the volatility of share prices in Nigerian stock market. This conclusion is in contrast with the *A priori* expectation of this study. It was expected that environmental disclosure could provide adequate information to market participants; that could enhance their confidence in the shares of companies quoted on the floor of the Nigerian stock market. Where investors' confidence is enhanced as a result of environmental information, it is expected that the relationship and share prices volatility should be negative. As environmental disclosure increases, share price volatility should reduce in line with the *A priori expectation*. The result of the study deviated from a similar study by Ravlic & Yarnold (2015) in Sweden and Denmark and Zhang and Nam (2016) in China respectively which showed a negative relationship between corporate social responsibility disclosure and the volatility of share prices.

Considering the effect of the individual independent variables and the moderating variables on the dependent variable (SPV), the result showed that environmental pollution and control policy (EPC), waste management cost (WMC), environmental research and development cost

(ERD, and Firm age (FAG) had positive but insignificant influence on the SPV. This falls short of the *A priori* expectation of this study which expected share price volatility to react negatively to environmental information. The level of impact that disclosure of environmental information could have on share prices depends on the importance the investing public placed on such information. If market participants are concern about environmental information, firms would have a business case to invest in environmental protection. Energy policy (ENP) had positive and significant influence on share price volatility (SPV). This implies that as disclosure on energy policy of the companies' increases, SPV could also increase. This also falls short of the *A priori* expectation. Firm size (FSG) and impact on biodiversity (IB) had negative and significant influence on share price volatility and falls in line with the A priori expectations.

In general terms, the study concluded that environmental disclosure practice influenced volatility in share prices. This conclusion was in line with the submission of Freedman and Patten (2004) and Lorraine, Collison, and Power (2004) who conducted a similar study in USA and UK respectively. Freedman *et al* (2004) found out companies with poor environmental performance suffered more negative market reaction than companies with better performance. Collison *et al* (2004) also found that information on environmental performance influenced stock market reaction.

6. Conclusion and Recommendation

6.1 Conclusion

The main objective of this study was to determine the impact of environmental disclosure on the share price volatility of the Nigerian stock market and the results show that environmental disclosure jointly and significantly affects share price volatility in Nigeria.

6.2 Recommendation

It is recommended that the financial reporting council of Nigeria and other regulatory agencies should establish and implement environmental disclosure standards to mandate consistent disclosure of environmental information. It is also recommended that investors must understand the dynamics of corporate activities on the environment and how it affects stability of the stock market. Investors should hold companies accountable for the externalities they generate in the process of their business activities.

6.3 Suggestion for further study

This study focused on the impact of environmental disclosure on share price volatility of the Nigerian stock market using data from the consumer and industrial sector of the Nigerian economy for a period of 15 years covering 2002 to 2016. It is suggested that future studies should extend the research to include quoted firms in other sectors of the economy whose operations have significant impact on the environment using a larger time frame. Further studies could also be carried out to test for investors' sentiments to

the disclosure of environmental information by Nigerian companies.

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Appendix I
Empirical Analysis
Table 4.1: Analysis of Hypothesis

SPV	Without Control Variables				With Control Variables			
	Pooled OLS	Fixed Effect	Random Effect	Linear Reg. (PCSEs)	Pooled OLS	Fixed Effects	Random Effects	Fixed Effect (Cluster)
EPC	0.182	0.109	0.114	0.182	0.635	0.225	0.560	0.225
	(0.92)	(0.55)	(0.59)	(1.02)	(3.65)	(1.21)	(3.18)	(1.21)
	{0.359}	{0.582}	{0.553}	{0.306}	{0.000}	{0.226}	{0.001}	{0.226}
ENP	0.775	0.828	0.831	0.775	0.785	0.764	0.784	0.764
	(2.39)	(2.68)	(2.76)	(4.76)	(2.94)	(2.66)	(2.86)	(2.66)
	{0.018}	{0.008}	{0.006}	{0.000}	{0.004}	{0.008}	{0.004}	{0.008}
IB	-0.690	-0.414	-0.451	-0.690	-0.852	-0.278	-0.713	-0.278
	(-3.57)	(-2.22)	(-2.49)	(-5.389)	(-5.31)	(-1.56)	(-4.34)	(-1.56)
	{0.000}	{0.027}	{0.013}	{0.000}	{0.000}	{0.121}	{0.000}	{0.121}
WMC	0.347	0.172	0.216	0.347	0.985	0.385	0.852	0.385
	(1.00)	(0.59)	(0.76)	(2.13)	(3.39)	(1.42)	(3.00)	(1.42)
	{0.317}	{0.553}	{0.448}	{0.033}	{0.001}	{0.158}	{0.003}	{0.158}
ERD	-0.371	0.038	-0.042	-0.371	-0.618	0.053	-0.555	0.053
	(-1.51)	(0.14)	(-0.16)	(-1.88)	(-3.04)	(0.21)	(-2.63)	(0.21)
	{0.133}	{0.888}	{0.872}	{0.060}	{0.003}	{0.835}	{0.008}	{0.835}
CCEL	0.221	0.045	0.052	0.221	0.186	-0.063	0.118	-0.063
	(0.91)	(0.24)	(0.28)	(1.52)	(0.93)	(-0.36)	(0.61)	(-0.36)
	{0.365}	{0.811}	{0.778}	{0.128}	{0.353}	{0.719}	{0.539}	{0.719}
FSZ	-	-	-	-	-0.167	-0.339	-0.169	-0.339
	-	-	-	-	(-5.13)	(-4.07)	(-4.72)	(-4.07)
	-	-	-	-	{0.000}	{0.000}	{0.000}	{0.000}
FAG	-	-	-	-	-0.023	0.013	-0.021	0.013
	-	-	-	-	(-6.61)	(0.84)	(-5.17)	(0.84)
	-	-	-	-	{0.000}	{0.401}	{0.000}	{0.401}
Constant	1.329	1.260	1.273	1.329	5.136	6.215	5.06	6.215
	(24.30)	(24.67)	(8.53)	(21.01)	(10.64)	(7.27)	(9.61)	(7.27)
	{0.000}	{0.000}	{0.000}	{0.000}	{0.000}	{0.000}	{0.000}	{0.000}
Adj. R^2/ Overall R	0.184	0.167	0.182	0.203	0.448	0.187	0.464	0.187
F-stat (Prob)	10.54 {0.000}	4.58 (0.000)			26.78 (0.000)	8.86(0.00)	-	8.86(0.005)
Wald-test (Prob)			31.46 (0.000)	193.54 (0.00)		-	163.08 (0.00)	-
Hausman Test			0.948			138.97 (0.000)		
Testparm (rho)/LM test			343.56 (0.000)			7.67 (0.000)		
Heteroscedasticity Test				15.39 (0.000)				182.69 (0.000)
Cross-Sect. Dependence				2.566 (0.01)				-0.938 (0.349)
Auto-correlation Test				55.80 (0.000)				52.102 (0.000)

Source: Authors Computation, 2019 using STATA 15.