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Article

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Original Research Article

Antecedents of Environmental Disclosure in Nigeria

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Abstract

Antecedents of environmental disclosure or environmental accounting information may vary substantially and depend on countries. This paper looked at the antecedents which are the constructs or factors that stimulate environmental disclosure. Since laws have taken care of mandatory aspects, this study looked at antecedents of voluntary environmental disclosure among quoted firms on the Nigerian Stock Exchange. The specific objectives were to examine the influence of firm size, profitability, leverage, managerial shareholding and industry type on environmental disclosure. It was an ex-post- facto type of research and longitudinal in nature covering time period of five years (2012-2016). A total of one hundred and sixty-seven (167) firms quoted on the Nigerian Stock Exchange constituted the population of this study. It was a content analysis and historical data were obtained from financial statements and accounts of 118 sampled firms. It employed descriptive statistics, Pearson correlations and diagnostic test was Hausman test and Random Effect Panel least square regression. Data collected was estimated with computer software known as E-views 8.0. This study revealed that: (i) firm size and profitability have significant and positive relationship with environmental disclosure; (ii) managerial shareholding has significant influence and negative relationship with environmental disclosure; (iii)leverage and industry type were statistically insignificant, but leverage was negatively related while industry type was positively related. In conclusion, disclosure of environmental information in annual reports can enhance stakeholders decision

Keywords**:** Antecedents, Environmental Disclosure, Firm Size, Managerial shareholding and Industry Type

JEL Classification Codes: *M41 M48*

1.0 INTRODUCTION

Antecedents of environmental disclosures have been issues of concern for decades. Antecedents of environmental disclosures became more rampant among nations of the world by the beginning of 1990s, but have been issues of concern among researchers since 1970s in form of corporate social reporting (Gray, Kouhy & Lavers, 1995). Specifically, antecedents of environmental disclosure gain consciousness after the United National Conference on Environmental and Development (UNCED) held in Rio de Janeiro in June, 1992. Since then, there have been significant rises in the number of developed and developing countries that have passed laws about environmental disclosure and as well number of firms that have made environmental disclosure important aspects in their annual reports and accounts for the interest of stakeholders (Freedman & Jaggy, 2005). According to Crowther (2002) the primary purpose of environmental disclosure is to examine and incorporate in the firm annual reports issues that bother on environmental hazard that are not taken cognisance of in traditional or conventional accounting function that stakeholders can use for decision making.

Disclosure of corporate environmental activities stressed the necessity for a close monitoring of natural resources and the corporation's harmful effect on the society it operate. Environmental effects caused by activities of firms especially those in the manufacturing, oil and gas and banking include pollutions like noise, waste, hazardous emission, spillages, degradation etc (Parmigiani, Klassen & Russo, 2011). Paul and Pal (2001) posit that environmental disclosure is with reference to making environmental related costs more transparent with company accounting systems and reports. Adeyemi and Ayanlola (2015) further noted that though self-induce vices, regulatory, laxity, inauspicious macroeconomic environment, and endemic corruption in the economy are major constraints to the discharge of social and environmental accounting information. Ezhilarasi and Kailash (2015) show that company size and environmental certification are important factors in explaining environmental disclosure practices of corporate organisation. Aghdam (2015) indicates that highly sensitive firms are more willing to disclose environmental information when compared to low sensitive environmental companies. Small firms are expected to disclose their environmental practices in their annual reports in order to enhance their competitiveness and performance (Emenike, Akamelu & Umeoduagu, 2017).

However, several studies have been carried out on environmental disclosure in development countries like Nigeria in different perspectives (eg. Ahmad, 2017; Ndukwe. & Onwucheka 2015: Ohidoa, Omokhudu, & Oserogho, 2016). Outcomes of their studies were mixed and inconclusive, hence, the need to validate these studies. This study specifically examine influence of firm size, profitability, industry type, leverage and managerial shareholding on environmental disclosure. Having examined the introduction, the remaining sections are structured as follow: Part 2 focuses on review of related literature; Part 3 looks at the methods and procedures used in this study; Part 4 particularly examines outcome of analysis and discussion of findings; and Part 3 was critically on conclusion and recommendations put forward.

2.0 LITERATURE REVIEW

Concept of Environmental Disclosure

Environment disclosure is viewed in different perspectives, but channeled towards the same direction. Zakimi and Hamid, (2004) posit that environmental disclosure is used by firms to express to the public cost implications of their activities which has impacts on the society. According to Lodhia (2006), corporate environmental disclosure is defined as a reporting process by which firms discloses environmental information in their annual financial statements and accounts in order to communicate their financial positions to the respective stakeholders for the purpose of providing evidence of stewardship report. Berthelot, Cormier and Magnan (2003) is of the view that environmental disclosure is the disclosures that is associated with firm's past, present and future environmental management decisions, activities and performance. Pahuja (2009) describes environmental disclosure as firms which are conscious to report more environmental information on the annual reports when compared to firms which do not. Thus, these firms may have more propensities for the disclosure of environmental information on the financial statements more than their environmental performance. These corporate entities also face greater pressure from stakeholders within and outside the corporation. It is along this line, Dixon, Mousa & Woodhead (2005) explain that the reasons for disclosing environmental information on the annual financial statements of quoted firms is to increase the rate of meeting the terms of environmental rules, regulations as well as pressure for clean water and clean air. Environmental disclosure by companies shapes external perceptions of the company, assist stakeholders assess whether the company is a good corporate citizen, and ultimately give reasons for the company continued existence to its stakeholder's satisfaction.

Dhaliwal, Li, Tsang & Yang, (2009) allege that environmental disclosure by company reduces or even remove information gap that exists between company and the stakeholders, thereby; lowering the company's cost of capital. According to Dutta and Bose, (2007) environmental disclosure is a way of passing information (both financial and non-financial) regarding the resources and social performance of the disclosing corporation. Shil and Igbal (2005) defined environmental disclosure as a holistic method of ensuring good corporate governance by a way of transparency or precision in its society's actions. According to Carrol, (2010) environmental disclosure is firm's commitment and loyalty to operate in an economically and environmentally sustainable way while taking into cognizance the interests of all the stakeholders of the firm. Zakimi and Hamid, (2004) define environmental disclosure as environmental management approach to convey environmental information to stakeholders. In order words, environmental disclosure involves the reporting of environmental information that will reflect the natural environment, environmental protection and resources used. Dixon, Mousa & Woodhead (2005) define environmental disclosures as reporting environmental issues that comprises of: the growing number of environmental regulations as well as pressures groups which bother on social and environmental implications of a company. Ndukwe and Onwucheka (2015) note that voluntary stance of environmental reporting has often be used as a cliché for firms to under report their effect on the environment and this is responsible for the negligence of several corporate entities with regards to corporate social and environmental reporting. Corporate environmental disclosure is an instrument for communicating firm's environmental performance. In effect, environmental disclosure is a continuous commitment in reporting cost incurred by corporate entity towards contributing positively in improving quality of life of the workforce and their families, host community and the society in general.

Antecedents of Environment disclosure

Antecedents of environmental disclosures are constructs that stimulate environmental disclosure. There are two types of environmental disclosure. These are mandatory and voluntary. The mandatory aspects are associated with laws or ethical rules and regulations, while voluntary aspects are discretionary in nature.

(1) Antecedents of Environmental Disclosure: Laws

The mandatory aspect is concerned with compulsory disclosure of environmental information. In Nigeria, environmental disclosure is voluntary, but there are ethical regulatory laws that prescribe sanctions about environmental activities of firms. A number of countries have environmental laws and regulations to protect their environment. These laws impose sanctions on offending companies. In Nigeria, ethical regulatory laws on the environment include:

a) The Nigerian Constitution

Section 30 (1) of the, Constitution of the Federal Government 1979 guarantees the right to life. These necessarily include access to unpolluted air, land, water, etc. The following legislations and regulations contain provisions which deal with some or all of the wastes associated with oil and gas activity**.**

b) Criminal Code Act (Cap 77 LFN 1990)

Another regulation guiding ethical factors was Section 234 of the Criminal Code which makes it as an offence for anyone who does anything which obstructs or causes inconvenience or damage to the public in the exercise of rights common to all members of the public. The section may be used to punish unlawful discharges of hazardous substances on public land and water by any oil and gas firm. Section 245 of the Criminal Code also creates an offence for any person who foul spring, stream, well, tank, reservoir or any water body, so as to render it unfit for the purpose which it is ordinarily used. Section 247 (a) of the Code further states that any person who commits noxious acts which affect public health is liable to 6 months imprisonment. The noxious acts include factories emitting gaseous hazardous substances and gas flare emissions in oil and gas activity

c) Associated Gas Re-injection Act 1979 (Cap 20 LFN 1990). This Act charged the oil and gas companies to stop the unhealthy gas flaring and commence re-injection of the oil – associated gas within 5 years of the enactment of the Act

d) Federal Environmental Protection Agency Act No. 88 of 1988 (Cap 131 LFN 1990). The Act prohibits the discharge of hazardous substances into the air, water and land by oil and gas except where such discharge is permitted or authorised under any law in force in Nigeria. Where the offence has been committed by a body corporate, like oil and gas it shall on conviction be liable to pay a fine not exceeding N500, 000 and an additional fine of N1, 000 for every day the offence subsists

e) The Harmful Waste (Special Criminal Provisions) Act of 1988 (Cap 165 LFN 1990).

The Act makes it an offence for corporate body to carry, transport, sell, buy, import, deposit, dump or cause to be carried, transported, sold, bought, imported, deposited, or dumped on any land or in territorial waters or Contagious Zone or Exclusive Economic Zone of Nigeria or its inland water ways. Most hazardous wastes generated in conjunction with oil and gas activity fall in this category. Penalties for the offences are life imprisonment, forfeiture of the vessel and of the land by and on which the harmful waste is dumped or deposited.

f) National Environmental Protection (Effluent Limitation Regulation 1991)

National Interim Guidelines and Standard for Industrial Effluents, Gaseous Emissions and Hazardous Wastes Management in Nigeria. Penalties contained in the regulations in (c) and (d) above may be meted out to violators of this Regulation.

g) Department of Petroleum Resources (DPR) Environmental Guidelines and

Standards for the Petroleum Industry (1991). The Regulation deals specifically with management and disposal at hazardous wastes generated in conjunction with oil and gas exploration and production activity. The regulations can be used to convict violators of this DPR Regulation.

h) The Nuclear Safety and Radiation Protection Act of 1995.

i) **Nigerian Radiation Safety in the Management of Naturally-occurring Radioactive Materials (NORM), 2008**.

j) Nigerian Radiation Safety in Nuclear Well-Logging Regulations, 2008. Nonetheless, with the level legislations / regulations targeted at hazardous wastes, including the wastes arising from oil and gas activity. These regulations contain enforcement provisions and penalties which if properly enforced are to effect observance of the laws. However, grave problems of poor enforcement of these laws exist; causing environmental degradation, public health impairments and damage to properties. In this circumstance, it becomes imperative for the NGOs /communities to constitute themselves into pressure groups, to secure the enforcement of these environmental laws quickly and effectively (Oyeshola, 2008; Ngwakwe, 2009; Ngwakwe, 2008).

Ethical Environmental Regulating Bodies in Nigeria

The financial reporting council of Nigeria (FRCN), (formerly, Nigerian accounting standards Board (NASB), with the enactment of the NASB act 2003, now has statutory legal backing to reckon with in a push for a regulated CSR disclosure practices in Nigeria.. Ihugba (2012) suggested the need to introduced compulsory regulation into corporate governance via the Nigeria extractive industry transparency initiative (NEITH) Act, 2007. Others regulatory bodies involved in ethical factors include Security and Exchange Commission (SEC), Federal Environmental Protection Agency (FEPA), Corporate Affair Commission (CAC); and Accounting bodies like Institute of Chartered Accountants of Nigeria (ICAN) and Association of National Accountant of Nigeria (ANAN).

(2) Antecedents of Environmental Disclosure: Voluntary

Environmental disclosure practices among firms in Nigeria are voluntary in nature. Several firm's antecedents have relationship with voluntary environmental disclosure. The following antecedents have a way of influencing or having relationship with voluntary environmental disclosure practices of firms.

Firm Size and Environmental Disclosure

The size of a company has a significant role in decision making about the environment in which the company operate. Firm size may determine company's ability to disclose environmental information in their annual reports). A positive relationship between size of a corporation and the amount of environmental disclosure has been consistently found by prior studies (Stanny & Ely, 2008). Cormier, Ledoux and Magnan (2009) revealed that firm size is one of the key drivers of environmental disclosure. Based on the researches conducted by previous authors, the following results have been obtained. Setyorini and Ishak (2012) in their study on corporate social and environmental disclosure found that firm size has positive association with disclosure.

Aghdam (2015) found a positive association between firm size and the level of voluntary environmental disclosure (VED). Nawaiseh (2015) documented a positive significant relationship between firm size and environmental disclosure. Burgwal and Vieira (2014) studied environmental disclosure determinants in Dutch listed companies and found a positive association between firm size and environmental disclosure. While Dibia and Onwuchekwu (2015) they have documented a negative relationship between firm size and environmental disclosure. Gatimbu and Wabwine (2016) also found a negative association between firm size and environmental disclosure. Ohidoa, Omokhudu and Oserogho (2016), and Ahmad (2017) revealed that firm size has positive relationship on environmental disclosure. Following the outcome of prior studies, it expected that firm size as one of the antecedents factor could influence environmental disclosure. However, we hypothesize that, *"$H0_1$: Firm size has no significant influence on voluntary environmental disclosure"*

Profitability and Environmental Disclosure

Profit is essential aspects of managing a business. Out of profits released that companies firms undertake environmental performance. It is also out of profit that dividend are paid to the shareholders. Therefore profitability of a company is very crucial in determining firm's strength to disclose information. For instance, when a firm makes profit, it hurriedly report the good news to stakeholders, compare to loss which is a bad news. Jariya (2015) maintained that profitability does affect environmental disclosure. Suleiman, Abdullah and Fatima (2014) and Ndukwe and Onwucheka (2015) indicated that profitability has no significant relationship with the quality of environmental reporting, while Agbdam (2015) and Emenike, et al, (2017) revealed a negative relationship between return on capital employed and net profit margin with environmental accounting disclosures. Ahmad (2017) found that profitability has significant positive relationship with environmental disclosure of listed companies in the brewery industry in Nigeria. Based the outcome of extant studies, it expected that profitability as one of the antecedents could influence environmental disclosure. However, we hypothesize that, *"$H0_1$: Profitability has no significant influence on voluntary environmental disclosure"*

Firms' Leverage and Environmental Disclosure

Investors in companies and lenders depend solely on financial statements for the evaluation of a firm's financial standing and credit rating. Thus, managers are disposed to increase disclosure to reduce agency costs between insiders and creditor (Mejda & Hakaim, 2013). Cormier and Magnan (2002) and Brammer and Pavelin (2006) demonstrated a negative association between environmental disclosure and leverage. Nevertheless, Naser et al. (2006) reported a positive relationship with the notion that firms polluting the environment more likely to be punished as such bankers and lenders will pay more attention to these companies' communication about corporate environmental responsibility. Polluting firms will have a preference to report more environmental information if they have more debt. Mejda and Hakaim (2013) indicate that firm with higher debt are more likely to disclose environmental information, but revealed that leverage has no significant relationship with environmental disclosure. Following the outcome of previous studies, it expected that leverage as one of the antecedents factor could influence environmental disclosure. However, we hypothesize that, *"$H0_1$: leverage has no significant influence on voluntary environmental disclosure"*

Managerial shareholding and Environmental Disclosure

Management is responsible for preparing the annual reports and accountable to all the owners and other stakeholders. As a result, they are expected to disclose all relevant information in the annual reports for stakeholders to make efficient economic decisions. Managerial shareholding indicates the proportion of shares held by managing executive directors. According to Samaha and Dahawy (2011), managerial ownership, measured by the percentage of ordinary shares held by the CEO and Executive Directors, also influences the level of voluntary disclosure. When managerial ownership is low, incentives for opportunistic behavior increase and, accordingly, demands for accounting-based restrictions increases (Samaha & Dahawy, 2011). Fan and Wong (2002) find that the information effect, where there are greater incentives to disclose as little proprietary information to the public as possible, is significant for firms with concentrated ownership.

Rouf and Harun (2011) examine the association between ownership structure and voluntary disclosure levels in the 2007 annual reports of 94 samples of Bangladeshi listed companies. The result shows that the extent of higher management of ownership structure negatively affect corporate voluntary disclosures. Vu (2012) evaluates the corporate voluntary disclosure of management's responsibilities in the Bangladeshi listed companies during 2005-2008 through the annual reports of 132 listed companies in Dhaka Stock Exchange. The results showed that the percentage of equity owned by the insiders has a negative relation with voluntary corporate governance disclosure level. Elmans (2012) established that no significant association is observed between managerial ownership and voluntary environmental disclosures. Having examined extant studies, It is expected that managerial shareholding as one of the antecedents factor could have influence on *voluntary* environmental disclosure. However, we hypothesize that, *"$H0_1$: Managerial shareholding has no significant influence on voluntary environmental disclosure"*

Industry Type and Environmental Disclosure

Industry type refers to particular industry which a company belongs. In Nigeria, companies are classified into different industries like banking, manufacturing, oil and gas, service, agriculture, etc. Some of these industries operations in the environment are detrimental to human because of their impacts like pollution and wastes. Abdul (2010) states that larger companies come under more scrutiny than smaller companies for environmental disclosure in some countries, compare to Nigeria where disclosure is voluntary. Predominantly, companies are separated into two types; high or low profile or sensitive companies (Choi, 1999). Ho and Taylor, (2007) have established that high profile firms are environmentally sensitive and would disclose more environmental information in annual reports than companies in low profile industries. Sahay (2004) found no relationship between type of industry and the levels of corporate environmental disclosure. Welbeck, Owusu and Bekoe (2017) showed that the level of disclosure by environmentally-sensitive firms is higher than the less sensitive firms. Following the outcome of earlier studies, it expected that industry type as one of the antecedents factor might influence environmental disclosure. However, we hypothesize that, *"$H0_1$: industry type has no significant influence on environmental voluntary disclosure"*

Theoretical Framework

Stakeholder theory ideology can be traced back to Clark (1916) and later to Dodd (1932) as cited in Mahoney (2010). However, the stakeholders' theory was credited to Edward Freeman (Freeman, Wicks, & Parmar, 2004). The argument behind the theory is that company is owned by many persons or various stakeholders (Learmount, 2002). Olatunji (2013) avers that the stakeholder's concept enables corporate organization management to address various groups associated with the firm like shareholders, employees, customers and suppliers, as well as the governments, competitors, consumers, advocates, environmentalists and special interest groups.

The stakeholder theory suggests that as a company disclose environmental information to shareholders and other interested groups can help reduce agency problem in terms of environmental costs. Stakeholder's theory provides rich insights into the factors that motivate managerial behaviour in relation to environmental disclosure practices of organizations and other qualitative disclosures (Dibia & Onwuchukwa, 2015). Therefore, these companies feel the heaviness to disclose more social information to obtain approval from the stakeholders for continued survival (O'Donovan, 1997). Larger firms are as well perceived to be important economic entities and thus have greater demands placed on them to provide more information for customers, suppliers, analysts and government bodies (Cooke, 1991). Environmental disclosure is an umbrella term that described diverse ways by which firms report information about their environmental activities to the stakeholders.

Summary of Related Empirical Studies

SN	Author (s)	Year	Place	Topic	Methodology	Findings
1	Ndukwe. & Onwuchek a	2015	Nigeria	Determinants of environmental disclosures in Nigeria: a case study of oil and gas companies.	Regression analysis.	The results revealed that there is a significant relationship between company size and corporate social responsibility disclosures, while profit, leverage and audit firm showed no significant relationship with corporate social responsibility disclosures.
2	Ezhilarasi & Kailash	2015	India	Determinants of environmental disclosures practices by most polluting industries in India	Multiple regression.	The study found company size and environmental certification are important factors in explaining environmental disclosures practices.
3	Aghdam	2015	Iran	Determinants of voluntary environmental disclosure: the case of Iran.	Multiple linear regressions.	The results indicated that firm size, industry type and leverage have positive association, while profitability has no relationship with voluntary environmental disclosure.
4	Ohidoa, et al.,	2016	Nigeria	Determinants of environmental disclosure.	Panel data regression.	Findings revealed that industry type, firm size has positive relationship, while leverage has no significant effect on environmental disclosure.
5	Abdul, et al.,	2017	Bangla desh	Analysis of environmental accounting and reporting practices of listed banking companies in Bangladesh	Descriptive	Outcome of study revealed that banks examined significantly disclosed environmental information for the 12 categories especially in green banking and renewable energy categories, while least disclosed were for environmental recognition and waste

						management categories.
6	Edem, et al.,	2017	Ghana	Determinants of environmental disclosures of listed firms in Ghana.	Regression analysis.	Results showed that some amount of environmentally-related information supported by GRI. Also, found that firm size, auditor type, age of the firm and industry type to be significant predictors of firms' environmental disclosure practices. especially the ones in high sensitive areas compare to less sensitive
7	Emenike, et al.,	2017	Nigeria	Environmental accounting disclosures and financial performance: a study of selected food and beverage companies in Nigeria (2006-2015).	Pearson's correlation and multiple regression.	It established that there is a significant relationship between environmental accounting disclosures and return on equity of selected companies. It also revealed a negative relationship between environmental accounting disclosures and return on capital employed and net profit margin of selected companies.
8	Ahmad	2017	Nigeria	Influence of firms attributes on environmental disclosure in listed brewery companies in Nigeria.	Multiple regression technique	The study found board size has negative but significant influence on environmental disclosure; leverage has negative and insignificant influence on environmental disclosure with value; firm size has positive insignificant influence on environmental disclosure with value; and, profitability has positive significant influence on environmental disclosure of listed breweries companies in Nigeria.
9	Amaechi, et al.,	2017	Nigeria	Firm's specific attributes and voluntary environmental disclosure in Nigeria: evidence from listed manufacturing companies.	Descriptive and inferential statistics.	The empirical study showed that there is a positive relationship between firm size, leverage, earnings per share and governance in relation to environmental disclosure of the studied manufacturing companies in Nigeria.

3.0 METHODOLOGY

Research Design

It is an expost facto type of research and covers periods of five years (2012-2016). Choice of periods was necessitated by adoption of International Financial Reporting Standards (IFRS) in 2012 among quoted firms in Nigeria. It is a content and panel data analysis. A total of one hundred and sixty-seven (167) firms quoted on Nigerian Stock Exchange constituted the population of this study (Nigerian stock Exchange, Fact-Book, 2017), while the sample size was 118. The sample size was achieved using Yemane, 1967 formulae.

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = sample size;

N = population size (finite population);

e = desired level of significance, (in this case is 5%)

Stratified purposive sampling was used in selection of sampled firms, because only firms their annual reports and accounts are up to date within the given periods are considered. Historical data were obtained from financial statements and accounts of sampled firms.

Model Specifications and Measurement of variables

Model explains real world situation. Our model is adapted Hieu and Lan (2015) as specified:

$VOL.DIS = X_0 + X_1CSIZE + X_2PROF + X_3LEV + X_4SOWNS + X_5MGOWNS + X_6FOWNS + X_7BIN\ D + X_8RDUAL + X_9AUDTYPE + U$……………………..1

ViDIj = Voluntary disclosure index for *j*th company; *ni* = Voluntary disclosure item applicable to *j*th company ($n \leq 42$ items); *Xij* = 1 if the item *i* of company *j* is disclosed, and 0 if otherwise. *Company characteristics:* CSIZE=Company size, PROF=Profitability, LEV=leverage SOWNS=State ownership, MGOWNS=Managerial ownership, FOWNS=Foreign ownership.
BIND=Board independence, RDUAL= Role duality, and AUDTYPE= Type of external auditors.

For the purpose of this study, our model is specified in explicit form as

$ED= \beta_0 + \beta_1FSIZE_{it} + \beta_2PAT_{it} + \beta_3LEV_{it} + \beta_4MS + \beta_5IT_{it} + U$……………………………………2

Where:

ED = Environmental Disclosure , β_0 = Constant, β_1, β_2, β_3, β_4 and β_5 = Coefficients

ED= Environmental disclosure for firm (i) and at time (t) measured as "2" when environmental cost is disclosed, as "1" when environmental activities of the firm is disclosed, and "0" when environmental information is not disclosed (Ramly, 2012).

FSIZE=Firm siez is measured as natural logarithms of total assets for firm (i) and at time (t) (Ahmad, 2017), PAT=Profits after tax divided by total assets for firm (i) and at time (t)((Ndukwe. & Onwucheka, 2015), LEV=Leverage measured as total debt divide by total assets for firm (i) and at time (t), MS=Managerial shareholding measured as shares held by executive directors divided by total shares of firm (i) and at time (t) (Amaechi, et al., 2017), IT = Industry type measured in dichotomous form such that if the firm is in manufacturing sector 1, otherwise 0 for firm (i) and at time (t)(Ohidoa, et al., 2016)

Our a priori expectation is $\beta_1>0$, $\beta_2<0$, $\beta_3>0$, $\beta_4>0$ and $\beta_5>$ or <0

4.0 INTERPRETATION OF RESULTS AND DISCUSSION

Outcomes of data collected and analysed with computer software (SPSS 20 and E-views 8.0) are presented in Tables, interpreted and discussion of findings.

Table 1: Descriptive Statistics

	ED	FSIZE	PAT	LEV	MS	IT
Mean	0.236879	7.172952	1.236333	2.356494	10.77383	0.726949
Median	0.003273	7.426729	0.001850	0.050091	0.035000	0.100000
Maximum	1.314000	9.975703	16.15699	41.39691	37.28000	1.000000
Minimum	0.000000	5.972011	-0.003187	1.99E-06	19.62519	0.000000
Std. Dev.	1.628560	1.395821	0.532108	1.182715	2.506160	0.557579
Skewness	4.389776	-0.025171	3.730613	4.647847	1.904893	3.341209
Kurtosis	22.04272	1.651718	15.86387	28.12692	5.157561	14.30936
Jarque-Bera	1.099264	4.550994	552.8724	1.794.430	47.92386	4.242011
Probability	0.456270	0.102746	0.000000	0.370417	0.000000	0.137428
Sum	242.0927	610.3771	74.17995	141.3896	646.4300	42.89000
Sum Sq. Dev.	10958.52	114.9506	736.0712	2255.332	29885.12	140.7111
Observations	118	118	118	118	118	118

Table 1 showed profiles of variables examined. It is deduced that environmental disclosure with value of 0.2369 unit, suggested that about 24% environmental information were voluntary disclosed in annual reports of listed firms in Nigeria. Similarly, the Jarque-Bera results indicated that environmental disclosure (ED), Firm size (FSIZE), leverage (LEV) and industry Type (IT) were normally distributed.

Table 2 Correlation of Variables

VARIABLES	ED	FSIZE	PAT	LEV	MS	IT
ED	1					
FSIZE	.073	1				
PAT	.218	.069	1			
LEV	-.095	.004	.219	1		
MS	-.123	-.470**	.470**	.019	1	
IT	.653**	-.068	.426**	-.454**	-.353**	1

Table2 showed associations among variables examined. It is deduced that firm size (Fsize) is positively associated with environmental disclosure at 0.073; Profit after tax (PAT) is positively related at 0.218; leverage (LEV) is negatively related at -0.095; Managerial shareholding is negatively associated at -0.123, while, industry type is positively related at 0.653 with environmental disclosure. Since none of the values exceeded 0.90 (90%) suggested absence of multi-collinearity (Bryman & Cramer, 2005). The outcomes are correlated at 0.05 (5%) and 0.01 (1%) significant level (2-tailed).

Table 3: HAUSMAN TEST (Diagnostic Test)

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		1.258117	5	0.8350
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.

Table 3 shows the diagnostic test carried out whether to employ Panel least square, random or fixed effect regression. The Hausman test calculated is statistically insignificant. This shows that the panel least square regression (random effect (H0.)) cannot be rejected.

Table 4: Estimation of Panel Least Square Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.38807	3.238536	3.516426	0.0000
FSIZE	0.186322	0.069498	2.680981	0.0104
PAT	1.156879	0.233847	4.947163	0.0000
LEV	-0.472609	0.101608	-0.429017	0.6701
MS	-0.432834	0.044017	-9.833337	0.0000
IT	0.764489	1.589003	0.481112	0.6329

ROA = 11.388+ 0.186FSIZE+ 1.157PAT -0.473LEV-0.433MS +0.764IT
(3.516) (2.681) (4.947) (0.429) (-9.833) (0.481)

$R^2 = 0.6839$

$\bar{R}^2 = 0.6312$

S.E of regression = 3.2856

F-statistic = 10.8392

DW = 2.1413

Table 4 above revealed that coefficient of determination (R^2) which stood at a value of 0.6839, indicates that over 68% of environmental disclosure were accounted by the explanatory variables (firm size, profit after tax, leverage, managerial shareholding and industry type). Also, the adjusted coefficient of determination (the adjusted R-square($\bar{R}^2$) with a value 0.6312 with the dependent variable, implying that about 63% of the systematic variations in environmental disclosure were explained while the remaining 37% were unexplained, hence captured by the stochastic disturbances. The standard error of regression at a minimal value of 3.2857 compared to the overall F-statistic of 10.8392, indicating that the general result is statistically significant and suitable for prediction. In addition, Durbin Watson (DW) statistic of 2.1413, suggested absence of autocorrelation in the result which also further indicated that the entire results are impressive for policy implementation

Hypotheses formulated against each review were tested such that if calculated t-statistic probability value is greater than critical t-probability value of 5%, we accept the hypothesis, otherwise wereject. From the results, it is observed that:

First, firm size (FSIZE) is statistically significant and the result is consistent with our apriori expectation. The result suggested that firm size is a strong antecedent or stimulating factor of environmental disclosure among quoted firms in Nigeria. The result buttressed Amaechi and Egbunike (2017), Edem et.al., (2017), Aghdam (2015) and Ohidoa, et al., (2016) who found that firm size is significant and positively related to environmental disclosure. But the finding is inconsistent with Gatimbu and Wabwine (2016) found a negative association between firm size and environmental disclosure.

Second, profit after tax (PAT) is statistically significant and has positive relationship with environmental disclosure. The result is in line with our apriori expectation. The implication is that when a firm reports profit, it has tendency to disclose more environmental information in annual accounts compare to when loss is reported. The finding concurred to Ahmad (2017), but argued against Ezeagba, et.al., (2017) who found that profitability and environmental disclosure are negatively related.

Third, leverage (LEV) is found to be statistically insignificant and negatively associated with environmental disclosure. The result showed that leverage is a weak stimulating factor of environmental disclosure. This implied that when a firm is financed with debt, much attention will be channeled towards settlement of the debt and not incurring much cost on environmental disclosure. The finding is in line with Prastiwi, et al., (2016), Suleiman, et al., (2014) who documented that leverage do not significantly influence the ability of a company to disclose environmental information. Also, Cormier and Magnan (2002) and Brammer and Pavelin (2006) revealed a negative association between leverage and environmental disclosure. But argued against Juhmani (2014) and Agbdan (2015) who established that leverage of a company can positively influence the ability of a company to make available in their annual reports environmental information..

Fourth, managerial shareholding (MS) was statistically significant, but has negative relationship with environmental disclosure. The result supports our apriori expectation. The result also showed that managerial shareholding is a important stimulating factor of voluntary environmental disclosure among firms. This corroborated with Vu (2012) who showed that the percentage of equity owned by the insiders has a negative relationship with voluntary corporate disclosure. But against Elmans (2012) who established that no significant association is observed between managerial ownership and voluntary environmental disclosures.

Finally, industry type was found to be statistically insignificant, but positively related to environmental disclosure. The finding supported Sahay (2004) who found no relationship between type of industry and the levels of corporate environmental disclosure. The implication is that irrespective of the industry, voluntary environmental disclosure is vital to listed firms.

5.0 CONCLUSION AND RECOMMENDATIONS

The thrust of this study is on antecedents of environmental disclosure in Nigeria. Having examined prior studies and analysed results of various tests conducted, it was observed that antecedents in terms of various laws, firm size, industry type, profitability, leverage and managerial shareholding have influence on environmental disclosure. It was also found that firm size, profitability and managerial shareholding strong antecedents of voluntary environment information disclosure, while leverage and industry type were weak antecedents. Therefore, environmental information disclosure in annual report by implications can enhance stakeholders' decision making and as well as resolve some problems between firm and its stakeholders. Hence, this study recommends as follow:

(1) All quoted firms on the Nigeria Stock Exchange irrespective of the size should voluntarily disclose environmental information in their annual reports for the interest of their stakeholders.
(2) Where a company release profit in a particular year, more environmental information should be disclosed in annual report showing activities and performance of the firm for the benefits of stakeholders.
(3) All quoted companies financed with debt should be able to voluntarily disclose their environmental information in the annual reports for the interest of

creditors for evaluation and decision making.

(4) Directors of companies regard less the numbers of shares owned, should encourage voluntary environmental information so as to reduce agency problem and promote stakeholders relationship

(5) Firms in some sensitive industries whose operations have impacts ion the environmental like oil and gas industry should be subjected to mandatory disclosure of environmental information to the sake of the host communities and other affected stakeholders.

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