

## Effect of Firm Demographics on Environmental Disclosure of Listed Consumer Goods Firms in Nigeria and Ghana

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### **Abstract**

*This study empirically investigated the effect of firm demographics on environmental disclosures of listed consumer goods firms in Nigeria and Ghana. In order to determine the effect of firm demographics on environmental disclosures, firm demographics key proxy variables were used in the study, namely; firm leverage (FLEV), ownership structure (OWS) and foreign directors (FDR) while environmental disclosure on the other hand was measured using Kinder Lydenberg Domini (KLD) environmental performance rating system. Three hypotheses were formulated to guide the investigation and the statistical test of parameter estimates was conducted using panel regression model operated with E-Views.12. Ex Post Facto design was adopted and data for the study were obtained from the Nigerian Exchange Group Factbook, Ghana Stock Exchange Factbook and audited annual reports and accounts of the firms under review in both Nigeria and Ghana spanning from 2015-2023. The findings generally indicate that firm leverage, ownership structure and foreign directors have positive and significant influence on environmental disclosures (EVD) at 5% significant level in both Nigeria and Ghana. Based on this, the study concludes that firm demographics determine corporate environmental disclosures in Nigeria and Ghana. In lieu of this, the study suggests above all that optimal financing mix is require by every corporate organization as the extent to which a firm is being funded by debt determines the level of environmental information disclosures in corporate financial reporting in Nigeria and Ghana. Also, more block shareholding by the shareholders (i.e shares ownership concentration of  $\geq 5\%$  shareholding) is recommended by the study in corporate organizations as this ensures the level of environmental information disclosures in corporate financial reporting in Nigeria and Ghana. Finally, foreign directorship presence should also be encouraged by the shareholders as their involvement encourages environmental information disclosures both in Nigeria and Ghana.*

**Keywords:** Firm Demographics; Environmental Disclosures; Firm Leverage; Ownership Structure; Foreign Directors

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## 1. Introduction

The solution to global environmental problems had dominated series of conferences and summits on climate change and global warming, wherever leaders of a number of countries have convened to discourse the issue of environmental improvement and remediation. There is a growing importance on corporations to be ecologically accountable in reaction to the adverse effects of their actions on the atmosphere and community. In the midst of others, Nigeria has been acknowledged as one of those nations with high level environmental contamination that contributes significantly to global environmental complications (Issa, Yunusa & Hamman, 2021). Health Effects Institute (2019) reported that Nigeria ranks world's seventh highest gas flaring nation and that Nigeria as the largest percentage of pollutants caused by air pollution in Africa in 2019. Companies are required to be more productive in their thinking, particularly in terms of ways and processes to alleviate and solve the requirements of various stakeholder groups (Nдалu, Ibanichuka & Ofurum, 2021). Employees, government, community members, consumers, and business owners who have a stake in a company are all stakeholders.

However, dynamic nature of the environment and its associated cost to humanity has generated concerns of stakeholders (Jones, Wynn, Hillier & Comfort, 2017; Rokhmawati & Gunardi, 2017) in search of ways of ameliorating the adverse impact of activities of various companies; emphasizing the need for environmental impact assessment and reporting (Ghani, Jamal, Puspitasari & Gunardi, 2018). There are many cases of respiratory infection and chronic obstructive pulmonary diseases as a result of industries environmental pollution and climate change issues (Ostro, 2004; Nriagu, Udofia, Ekong & Ebuk, 2016). There are other ecological damage and natural resources depletion (Li, Su, Shi & Zhang, 2015).

Environmental Information (EI) falls within the class of information that is voluntary in disclosure by listed firms in Nigeria. Onyema (2015) posited that there are mandatory and voluntary disclosures as required by the NSE and other regulatory bodies that oversee the preparation, presentation and publication of financial information. However, in France, the law requires that annual report of companies should include details of their commitment towards environmental and social development (Adeeko, 2019). Likewise, in Sweden, all companies owned by the state are compelled to include evidence of sustainability commitment in their published annual reports. This requirement is however tailored in compliance with Global Reporting Initiatives (GRI) guidelines (Sholotan, 2016). Awe (2017) pointed out that it is mandatory for companies operating in United State of America (USA), Denmark and the Netherlands to present information regarding the environment in which they operate.

In Africa, The Johannesburg Stock Exchange (South Africa) has ED as one of the criteria for listing Companies on its floor for trading. ED has moved beyond being absolutely new to relatively new in Africa. It started gaining considerable attention in Nigeria right from 2013, moving from different phases with a focus on the need for firms to include environmental information (EI) in their disclosures without much emphasis on the circumstances that calls for such disclosures. In Ghana, Edem et al (2017) reported that the disclosure of environmental information in corporate reporting by listed firms in Ghana is relatively low. However, firms disclose more of product and service related information with virtually non-existent information on biodiversity, emissions and effluent.

Also, in Nigeria, Ayoola (2017) established that absence of standardized guidelines and lack of commitment on the part of quoted firms hinders the disclosure of environmental information.

Uwaoma and Ordu (2016) revealed that firms in different industries faced challenges on how to measure, how to define and how to select appropriate disclosure indicators regarding ED. This is despite the fact that such disclosure is imperative for sustainable development (Ironkwe & Success, 2017).

Firm demographics refer to the characteristics which a particular firm possess that defines its activities. They are the key drivers that shape a company's financial decision and other policies that a company adopts. Therefore, the characteristics of a particular firm will influence its decision to disclosure non-financial information including environmental disclosure. Many researchers argued that determining the extent to which firm characteristics affect the choice of disclosure policy by a firm and identifying those characteristics that are influential has an important implication for stakeholders of such a company. Other researchers such as Abubakar, 2017; Ohidoa, Omekhodu and Oserogho, 2016 measured the level of disclosure by counting, for example, the number of words, sentences or pages in the annual report. Applying this measurement tool, questions can be raised because environmental disclosure may differ across companies due to variation in writing style; page and type size.

Hence the need for the present study to investigate the effect of firm demographics on environmental disclosure of consumer goods firms on Nigeria and Ghana which no known study had investigated based on the available literature.

To achieve this purpose, the following hypotheses were formulated:

**H<sub>01</sub>:** Firm leverage does not significantly affect environmental disclosure of consumer goods firms in Nigeria and Ghana.

**H<sub>02</sub>:** Ownership structure does not significantly affect environmental disclosure of consumer goods firms in Nigeria and Ghana.

**H<sub>03</sub>:** Foreign directors do not significantly affect environmental disclosure of consumer goods firms in Nigeria and Ghana.

## **2. Review of Related Literature**

### **2.1. Firm Demographics**

Researchers had studied very well on firm demographics, in spite of the fact that studies had recommended making environmental disclosure obligatory, corporate demographics features had been found influencing environmental disclosure by some studies with mixed results (Mohammed, 2018; Sulaiman, Aruwa and Musa, 2018; Onyinye & Amakor, 2019). Firm specific demographics are factors that are mostly under the direct control of management. The firm specific indicators include firm size, liquidity, growth rate of premium, leverage, underwriting risk and age of the firm. On the other hand, the macroeconomic indicators are those factors that are beyond the control of management. This includes interest rate, GDP, and industry size.

For the purpose of this study, firm demographics was proxied using firm leverage, ownership structure and foreign directors. This is discussed below as thus:

#### **2.1.1 Leverage and Environmental Disclosure**

Adenugba, Ige, and Kesinro (2016) explained financial leverage as the use of debt to acquire more assets. A firm with a moderate level of financial leverage is expected to disclose its

environmental commitment towards assuring the populace that the firm is financially buoyant. Leverage is employed to increase the return on equity. However, an excessive amount of financial leverage increases the risk of business failure. Olusegun (2012) found financial leverage to be positive and significant on firms willingness to disclose environmental information (EI). Egbunike and Tarilaye (2017) also found financial leverage to have a positive influence on firm's willingness to disclosure voluntarily its EI. In contrary, Adeniyi and Adebayo (2018) found financial leverage to be insignificant to firms' voluntary disclosure of EI. Ofoegbu and Odoemelum (2018) established that firms' commitment to voluntary disclosure of EI in the published annual report is not induced by level of its financial leverage. Akbas (2014) found financial leverage to be statistically irrelevant to the disclosure of EI.

Ohidoa, Omokhudu and Oserogho (2016) found financial leverage not to significantly influence the disclosure of environmental information. Barnali and Puja (2015) found financial leverage to be insignificant to firms' commitment to the disclosure of environmental information. This implies that the ratio of debt to equity does not influence firms to wake up to its environmental responsibilities. Financial leverage was found not to have significant influence on firms' voluntary ED among listed firms (Adeniyi & Adebayo, 2018). A study by Kiende and Karambu (2016) revealed that financial leverage has no significant effect on voluntary ED by listed firms. Companies with higher leverage are more likely to increase the volume of corporate disclosure to reduce agency costs (Ho & Taylor, 2007). It is argued that as firm debt (leverage) increases, the investors' monitoring demand for information also increases in order to keep themselves informed about operating performance of the company, including environmental performance (Clarkson, Li, Richardson & Vasvari, 2008). Some studies, such as Andrikopoulos, Samitas & Bekiaris (2014), Christopher and Filipovic (2008), On other hand, Ahmadi and Bouri (2017) and Dienes, Sassen & Fischer (2016) show that financial demographics (the need for capital and capital spending) are positively associated with environmental disclosure quality. Also, Karaman, Kili & Uyar (2018) shows capital structure is positively and significantly associated with sustainability reporting. In contrast, Drobetz, Merikas & Merika (2014) observed a significant negative relationship.

According to Kolsi (2017), the leverage ratio does not have any impact on the level of disclosure, while Bowrin (2013) indicates that the importance of public equity financing is not statistically related to environmental disclosure comprehensiveness. However, Chandok and Singh (2017) did not show a clear tendency to affect environmental disclosure, but indicated that environmental disclosure on the website and overall disclosure has an association with leverage. On the other hand, Dilling (2010), Khasharmeh and Suwaidan (2010) show that neither recently incorporated equity and debt, nor the debt ratio, are significant, while other studies (Bowrin, 2013; Chandok & Singh, 2017) find that there is an association, though not significant. Generally, results indicate that firms which are highly geared report highly about environmental issues to show that they are good citizens and to avoid more environmental liabilities, in line with legitimacy theory.

### **2.1.2 Ownership Structure and Environmental Disclosure**

To show how ownership structure influences environmental disclosure, Dienes et al. (2016), state that ownership structure is the most important driver of the disclosure of sustainability reports; Kolsi (2017), Gamerschlag et al. (2011) and Shan (2009) show that disclosures are inversely related to ownership concentration, in line with Aljifri et al. (2012), who find a

positive relationship between disclosure and block holders who own 5-10% and Karaman et al. (2018), who show that ownership structure is negatively and significantly associated with sustainability reporting.

Moreover, Christopher and Filipovic (2008) and Li et al. (2013) find a significant positive relationship between CSR disclosure and the percentage of ordinary shares that are held by shareholders other than the top 20, the top 10 and the top 5 shareholders. Furthermore, Drobetz et al. (2014) show a positive association for the percentage of shares held by the largest shareholder and for the free float. This trend indicates that, in legitimacy theory, firms with fewer block holders or many other public shareholders, disclose more environmental issues to show that the interests of other shareholders are protected and that the firms take care of them, even beyond dividends, and also that they are operating in line with society as a whole.

### **2.1.3 Foreign Directors and Environmental Disclosure**

According to Dawar and Frost (1999), Influence of foreign directors on the board should be considered a great variable to motivate firm to disclose its commitment to environmental issues. Many indigenous firms are looking forward to collaborations with multinational firms towards moving their operations beyond the shores of Nigeria and as well gain international acceptability, global comparison and to attract more international subscribers beyond the local environment in which they operate. Al-Amarneh, (2014) found that the inclusion of foreign personality as a member of the board was found to play a significant role in influencing firms' commitment, values and performance in the disclosure of ED. Odera, Scott, and Gow (2016) revealed that firms with no trace of foreign directors are found to disclose more information on environmental activities than those with foreign directors. In contrary, Taufik, Widyastuti and Yam (2017) found that having foreign directors among the board members goes a long way in influencing firms' commitment to environmental activities.

It is important to understand who are on the boards to understand boards' effects. This is because board decisions are made by individual members in the boardroom through interactive activities among themselves (e.g., information sharing and information processing), even though board decisions are organizational choices (Christensen, Mackey, Whetten, 2014). Moreover, considering that CSR is a strategic choice that pursues long-term performance that could hurt short-term performance, the recognition and value of decision makers have a significant impact (Kang, 2016). Therefore, this study assumes that the attributes of board members are an important board characteristic. In particular, this study concentrates on the introduction of foreign directors, which was one of the most important changes to Korean boards during the last several decades (Jang & Kim, 2001). Board diversity (e.g., gender, nationality diversity) has been a widely examined characteristic in the literature on boards, because the presence of members distinct from the dominant members in the group is believed to make the board more vigilant and extend the resources utilized, consequently enhancing board quality (Zhu, 2013).

### **2.1.4 Environmental Disclosure**

Environmental disclosure, according to Dibua and Onwuchekwu (2015), aids corporations in capturing public opinion of their operations. Because of the importance of the environment and the devastating impact of companies' activities on the environment, environmental disclosure serves as a medium of communication between the company and stakeholders. Disclosure is

required because of the importance of the environment and the devastating impact of companies' activities on the environment (Abubakar et al, 2017).

Environmental Disclosure is an official declaration that explains the eco-friendly efforts of an entity which usually includes the purposes of the company on environmental strategic remediation. How the operation of the firm had impacted the environment are regularly reported and released to the public in the firm's annual report (Ong, Tho, Goh, Thai & The, 2016). The Association of Chartered and Certified Accountants, defined environmental disclosures as a combination of descriptions, which consists of the clarifications, purposes, and statistical data, such as the amount of resources expended, and pollution done for a particular accounting period on the environmental effect of the company (Olowookere, Taiwo & Onifade 2021).

## **2.2 Theoretical Framework**

The Legitimacy Theory and Stakeholders theory was adopted in this study.

### **2.2.1 Stakeholders Theory**

Stakeholders' Theory was originally introduced at Stanford research institute (SRI) by Freeman, 1984). The elementary proposal of the stakeholders' theory is that corporate success is reliant upon the effective administration of all the interactions that an entity has with all its stakeholders (current and potential shareholders, and other stakeholders). The concept affirms that, administrators must please suppliers, employees, customers, local community, etc. who can influence the firms results. Stakeholders' theory maintains that it is not appropriate for managers to focus completely on the needs of shareholders alone.

Applying the stakeholders' theory, Solomon 2020 posited that management should make effort in building a framework that will be reactive to the distresses of all stakeholders who are being affected by extraordinary levels of environmental issues and degradations. Relying on stakeholders theory, Olowookere et al., (2021), and Nor et al. (2016) had examined the effects of environmental disclosure on financial performance, while employing Stakeholder theory, Olaleye, and Igbekoyi (2020) emphasized that management should use environmental objectives to reveal to all stakeholders the firm's policies on occupational health and safety, compliance obligation, and company environmental culture and policies.

Thus, stakeholders and legitimate theories are considered appropriate for the study as they explain the theoretical perspective for managers to satisfy stakeholders on environmental disclosure quality which is the fundamental issues of this study. Hence, the firm would have satisfied justice, legislation and environmental care. The implication of these theories on this study is that, it would be beneficial for the entity to engage in certain environmental activities that non-shareholders recognized as important, since without this, these groups might withdraw their backing from the firm. The study is therefore anchored on Stakeholders Theory.

## **2.3 Empirical Review**

Ogboro and Osazuwa (2022) investigated the relationship between ownership structure and Corporate Social Responsibility Disclosures (CSR) with focus on the impact of managerial ownership, institutional ownership, foreign ownership, and ownership concentration on CSR. One hundred and eighteen (118) companies listed on the Nigeria Stock Exchange (NSE) as of 31st December 2018 was studied from year 2009 to 2018. The data collected was analyzed

using descriptive statistics, correlation analysis and panel regression analysis. The results indicate that CSR in Nigeria is low with an average CSR of 35% for the studied firms. The correlation results revealed that CSR and foreign ownership have positive correlation, while CSR and the proxies to the independent variables; institutional ownership, managerial ownership and ownership concentration have negative correlation while institutional ownership and ownership concentration have the highest correlation. The regression results suggested that among firms listed on the NSE, managerial ownership and foreign ownership have a significant negative effect on CSR, while institutional ownership and ownership concentration have a significant positive effect on CSR.

Mohammed, Alhassan and Mohammed (2022) assessed the relationship between the disclosure of environmental information and the financial performance of firms in the steel industry. Ex-post facto and content analysis research designs were used in the study. The 41 manufacturing companies that are registered on the Nigerian Stock Exchange from 2012 to 2019 made up the study's population, and a census sampling technique was utilized to choose samples from all 41 listed manufacturing companies. The study made use of secondary data gathered from the annual reports of the Nigerian Exchange-Group listed manufacturing firms and information from the fact book for a period of six (6) years. Multiple regression analysis was employed in the study and it found that the financial performance (ROA) of listed pharmaceutical manufacturing firms in Nigeria is not significantly affected by disclosure of material used.

Moruff, Salisu, Muhammed and Garba (2021) examined the relationship of specific oil and gas firms' attributes; firms age, board composition, financial performance, existence of foreign directors on the board and financial leverage with Environmental Disclosures (ED). Data were collected from the published annual reports of nine listed oil and gas firms quoted on the floor of the Nigerian Stock Exchange (NSE) as at 2018, for a period of seven years (2012-2018). Generalized Least Square (GLS) was used to test the hypotheses after satisfying the criteria of post estimation tests. The result established a positive and significant relationship between board composition, financial leverage, existence of foreign directors on the board and ED. However, firm age and financial performance was found not to have significant relationship with ED.

Prot, Mzenzi and Chalu (2021) investigated the influence of firm characteristics on environmental disclosure in an extractive industry in Tanzania. The study applies legitimacy theory as the foundation for theoretical perspective. The study uses the panel data of 18 firms from 2004 to 2018 as reported in Tanzania Extractive Industry Transparency Initiative (TEITI). Data was extracted from annual reports, and a Random Effects General Least Square (GLS) regression analysis model was used for analysis. The results show that firm age, firm size, capital structure, and firm and ownership structure are significant factors that positively influence environmental disclosure. This indicates that older firms, large firms, high leveraged and firms owned by more block shareholders disclose more environmental information. However, although firm type and firm profitability factors seem to influence environmental disclosure, they are insignificant. The results help firms' management to improve their levels of environmental disclosure, participate in environmental activities as social citizens and also ensure that they disclose more environmental information for all users to access.

Olurankinse and Mamidu (2021) investigated corporate characteristics and quality of environmental disclosures in pre and post IFRS adoption among Nigeria Oil and gas companies

from 2004 to 2019. Ordinary Least Square Regression analysis was used to determine the influence of corporate characteristics on the quality of the environmental disclosure. The results show that during pre IFRS period, leverage ratio has significant positive relationship with environmental disclosure quality; firm size, return on asset, and firm age have no significant relationship with environmental disclosure quality. On the other hand, in post IFRS adoption, Firm size and firm age have positive and significant relationship with environmental disclosure quality; while leverage ratio and return on asset have no significant relationship among the oil and gas industry in Nigeria. The overall result shows that contribution of profitability, leverage, firm age and firm size to environmental disclosure quality reduced after the adoption of IFRS among the oil and gas industry in Nigeria.

Ndal, Ibanichuka and Ofurum (2021) investigated the relationship between board characteristics and environmental disclosure of quoted oil and gas firms in Nigeria: The moderating role of firm size with its specific objectives such as to determine the relationship between board independence and environmental disclosure. The research design adopted was ex-post facto design while, the population and the sample size for the study is the 12 quoted oil and gas companies in the Nigerian Stock Exchange (NSE). Secondary data were used in this study and data were analyzed using both descriptive, inferential statistics and Pearson Correlation Coefficient Statistical tool complementarily with the aid of Statistical Package for Social Sciences version 23.0 to test the null hypotheses. The findings of the study reveal that board independence has a negative relationship with environmental disclosure. The findings of the study further indicate that firm size significantly moderates the relationship between board characteristics and environmental disclosure.

Kabiru (2020) examine the influence of firm characteristics on environmental disclosure quality of listed cement companies in Nigeria. Data were extracted from the annual report and accounts of the listed cement companies for the period of 2013-2017. Firm age, firm size and leverage was used as a proxy for firm characteristics. In order to measure the extent of environmental disclosure quality, the annual reports of the firms were analyzed through content analysis using GRI as index of disclosure and the study analyzed the data using descriptive statistics, correlation and multiple regression technique via STATA 12.0. Findings from the study revealed that firm age, firm size and leverage has significant impact on quality of environmental disclosure.

### **3. Methodology**

An *ex post facto* research design was used in the study based on the fact that the data for the study was secondary which already existed and cannot be controlled. The study examined the effect of firm demographics on environmental disclosures of listed consumer goods firms in Nigeria for the period of 2015-2023. The population of the study covers all the twenty nine (29) listed consumer goods firms composed of twenty one (21) firms listed on Nigerian Exchange Group (NGX) and eight (8) firms listed on Ghana Stock Exchange (GSE). (Source: <https://ngxgroup.com> & <https://gse.com.gh>).

Out of twenty nine (29) firms that formed our sample size both in Nigeria and Ghana, 5 firms in Nigeria only have empty financial information within the period under review (*Union Dicon Slat Plc, Golden Guinea Breweries Plc, DN Tyre and Rubber Plc, BUA Foods Plc and Multi-Trex Integrated Plc*) which was removed. Based on this, a total of 24 firms formed our sample size with 216 observations. i.e 16 firms from Nigeria and 8 firms from Ghana. The data for the



study was sourced from the Nigerian Exchange Group (NGX) Factbook, Ghana Stock Exchange (GSE) Factbook and Audited Annual Reports and Accounts of the sampled consumer goods firms available at the website of the NGX ([www.NGX.com.ng](http://www.NGX.com.ng)) and GSE ([www.gse.co.za](http://www.gse.co.za)). Panel regression model was therefore used to examine the relationship between firm demographics and environmental disclosures of listed consumer goods firms in Nigeria

### 3.1 Measurement and Operationalization of Variables

The independent variable for the study is firm demographics and was proxied using audit type, firm leverage, ownership structure and foreign directors while the dependent variable (environmental disclosure) was measured using Kinder Lydenberg Domini (KLD) environmental performance rating system.

This is shown on table 1 as thus:

**Table 1: Measurements of Variable**

Variable	Measurement	Source	A Priori Expectations
<b>Independent</b>			
Firm Leverage (FLEV)	Measured as the ratio of total debt to total assets.	Ogbeide (2017); Ohidoa et al. (2016)	It is expected to have a positive effect.
Ownership Structure (OWS)	Number of block shareholders in the firm in relation to the public shareholders.	Al-Shaer et al. (2017), Aljifri et al. (2012), Waweru et al. (2011)	It is expected to have a positive effect.
Foreign Directors (FDR)	Ownership of Shares Concentration i.e. Shareholders with $\geq 5\%$ Ratio of foreign directors to board size	Odera et al. (2016)	It is expected to have a positive effect.
<b>Dependent</b>			
Environmental Disclosure	Kinder Lydenberg Domini (KLD) environmental performance rating system was used. Thus, a score of (1) is awarded if an item is reported; otherwise a score of (0) is awarded. Consequently, a firm could	Uwugbe (2011), Adeniyi & Adebayo (2018), Ofoegbu & Megbulu (2016) Said et al. (2013), Bowrin (2013), Kolsi (2017), Dobbs and Staden (2016), Hossain et al. (2017),	.

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score a maximum of 28 points and a minimum of 0 Beck et al. (2010), Kamal et al. (2012), Eltaib (2012), Adeyemi (2023)

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**Source: Empirical Survey (2024).**

### 3.2 Model Specification and Justification

The econometric model of the study was adapted from the studies by Ohidoa, Omekhodu, and Oserogho (2016) as shown below:

$$ED_{it} = \alpha + \beta_1 FAGE_{it} + \beta_2 FSIZE_{it} + \beta_3 LEV_{it} + \epsilon_i$$

Where;

ED = Environmental Disclosure

FAGE = Firm Age

FSIZE = Firm Size

LEV = Leverage

$\alpha$  = Constant Term

$\beta$  = Coefficient Term

i = No of firms

t = Time Period

e = Error term

Thus, in order to ascertain the effect of firm demographics on environmental disclosure of consumer goods firms listed on the NGX and GSE, the study adopted the following models in a bid to provide answers to the null hypotheses of the study.

The modified functional model for the study is expressed as:

$$EVD = f(FLEV, OWS \& FDR)$$

The general econometric model for the study based on Nigerian Context is specified as thus;

#### Model 1:

$$EVD_{it} = \beta_0 + \beta_1 FLEV_{it} + \beta_2 OWS_{it} + \beta_3 FDR_{it} + \epsilon_{it}$$

The general econometric model for the study based on Ghanaian Context is specified as thus;

#### Model 2:

$$EVD_{it} = \beta_0 + \beta_1 FLEV_{it} + \beta_2 OWS_{it} + \beta_3 FDR_{it} + \epsilon_{it}$$

Where;

EVD = Environmental disclosure.

FLEV = Firm Leverage

OWS = Ownership Structure

FDR = Foreign Directors

$\beta_0$  = Constant Coefficient (intercept) of the Model

$\beta_1 - \beta_3$  = The Coefficient of the Parameter Estimate.

$\mu$  = Stochastic Term

'A Priori' is given as:  $\beta_0, \beta_1, \beta_2, \beta_3 > 0$

**Decision Rule:** accept  $H_0$  if P-value > 1%-5% significant level otherwise reject  $H_0$

#### 4. Data Analysis and Results

**Table 2: Descriptive Statistics**

	<b>EVD</b>	<b>FLEV</b>	<b>OWS</b>	<b>FDR</b>
Mean	14.30556	0.617014	7.996736	0.275903
Median	14.00000	0.615000	0.480000	0.250000
Maximum	23.00000	1.130000	74.74000	0.750000
Minimum	4.000000	0.180000	0.000000	0.000000
Std. Dev.	1.862124	0.175001	1.824195	0.200403
Skewness	0.212763	0.047955	2.816981	0.326129
Kurtosis	2.074368	2.952212	2.913483	2.260635
Jarque-Bera	6.227201	0.436857	477.2266	5.832613
Probability	0.344441	0.803781	0.987464	0.154133
Sum	2060.000	88.85000	1151.530	39.73000
Sum Sq. Dev.	3380.556	4.379416	47585.92	5.743083
<b>Observations</b>	<b>144</b>	<b>144</b>	<b>144</b>	<b>144</b>

**Source: E-View 12 Computational Results (2024)**

The table 2 above shows that the mean value of environmental disclosures (EVD) of the listed consumer goods firms in Nigeria for the period covering 2015 to 2023 was 14.3. This implies that environmental information disclosures are determined by firm demographics in Nigeria. Also, the distribution for environmental disclosures is platykurtic since the kurtosis (2.07) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.344 is greater than 0.05, which means that the distribution of firm environmental information disclosures in Nigeria is not different from a normal distribution.

Firm leverage (FLEV) has an average value of 0.617. This means that firms with FLEV value of 0.617 and above are funded by debt which determines the level of environmental information disclosures in firm financial reporting in Nigeria. Hence, firm leverage is a determinant of firm environmental disclosures in Nigeria. The maximum value for the study was 1.13 while the minimum value was 0.18. The wide variation in maximum and minimum FLEV values justify the need for this study that firms with higher FLEV values disclose more environmental information in their financial reporting than those firms with low FLEV values at a degree risk of 0.18%. The distribution for firm leverage is platykurtic since the kurtosis (2.95) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.804 is greater than 0.05, which means that the distribution of firm leverage does not deviate from a normal distribution.

The mean value of ownership structure (OWS) was 7.99. This means that firms with OWS value of 7.99 and above are owned by shareholders with block shareholding which determines the level of environmental information disclosures in firm financial reporting in Nigeria. The

maximum value for the study was 74.7 while the minimum value was 0. This wide variation in maximum and minimum OWS values justify the need for this study that firms with higher OWS values disclose more environmental information in their financial reporting than those firms with low OWS values at a degree risk of 1.82%. The distribution is platykurtic since the kurtosis (2.91) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.987 is greater than 0.05, which means that the distribution of ownership structure is not different from a normal distribution.

Finally, the average value of foreign directorship (FDR) was 0.275. This implies that foreign directorship presence determines the level of environmental information disclosures in firm financial reporting in Nigeria. The maximum value for the study was 0.75 while the minimum value was 0. This variation in maximum and minimum FDR values justify the need for this study that firms with higher FDR values disclose more environmental information in their financial reporting than those firms with low BC values at a degree risk of 0.20%. The distribution for FDR is platykurtic since the kurtosis (2.26) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.154 is greater than 0.05, which means that the distribution of foreign directorship is not different from a normal distribution.

#### 4.1 Diagnostic Test to Check for Multi-Collinearity Problem, Using Variance Inflation Factor.

**Table 3 Variance Inflation Factors**

Variance Inflation Factors

Date: 05/22/24 Time: 15:59

Sample: 2015 2023

Included observations: 144

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
FLEV	6.333623	6.768060	1.233952
OWS	0.000760	1.919469	1.608252
FDR	5.069355	3.767221	1.295172
C	8.900189	7.201531	NA

**Source: E-View 12 Computational Results (2024).**

From the table above, the centered VIF ranges from 1.23 to 1.29 which suggests non multi-collinearity feature. Multi-collinearity feature according to Sabo, Rabi, Usman, Fatima, and Tjjani (2015) exists where VIF exceeds 10 i.e VIF>10.

#### Table 4: Hausman Test Result.

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	201.511938	7	0.0000

**Source: E-Views 12 Computational Results (2024)**

The Hausman test conducted shows a chi-Square Statistics value of 201.51 with a Probability value of 0.0000. This probability value is statistically significant since the P-value is less than 5%. Therefore the rule is that if the p-value is significant (i.e P-value < 5%), interpret fixed effect result, otherwise, use the random effect result and from our Hausman result, our P-value is significant. Therefore we interpreted fixed effect result (table 5) for our analysis.

**Table 5: Fixed Effect Regression Result on Effect of Firm Demographics on Environmental Disclosures of Consumer Goods Firms in Nigeria**

Dependent Variable: EVD

Method: Panel Least Squares

Date: 05/22/24 Time: 16:50

Sample: 2015 2023

Periods included: 9

Cross-sections included: 16

Total panel (balanced) observations: 144

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FLEV	0.943717	0.128780	7.328133	0.0001
OVS	0.209639	0.062567	3.350632	0.0340
FDR	4.167733	1.349895	3.087449	0.0399
C	6.528487	0.727727	8.971066	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.932779	Mean dependent var	14.30556
Adjusted R-squared	0.920557	S.D. dependent var	4.862124
S.E. of regression	1.370418	Akaike info criterion	11.61353
Sum squared resid	227.2434	Schwarz criterion	10.08787
Log likelihood	-237.1741	Hannan-Quinn criter.	5
F-statistic	76.32001	Durbin-Watson stat	9.806277
Prob(F-statistic)	0.000000		2.016073

**Source: E-Views 12 Computational Results (2024)**

In table 5, R-squared and its adjusted R-squared values were (0.93) and (0.92) respectively. This is an indication that all the independent variables jointly explain about 93% of the systematic variations in environmental disclosures (EVD) of our sampled firms over the nine-

year period (2015-2023) while 7% of the systematic variations are captured by the error term. The F-statistics 76.32001 and its P-value of (0.000000) portrays the fact that the regression model is well specified.

**Test of Autocorrelation:** Using Durbin Watson (DW) statistics which we obtained from our regression result in table 5, it was observed that DW statistic is 2.016073 which is approximately 2, agrees with the Durbin Watson rule of thumb. Showing that our data is free from autocorrelation problem and as such fit for the regression result to be interpreted and result relied on. Akaike Info Criterion, Schwarz Criterion and Hannan-Quinn Criterion which are 11.61, 10.08 and 9.806 respectively further strengthen the fitness of our regression result for reliability as they confirm the goodness of fit of the model specified.

In addition to the above, the specific findings from each explanatory variable from fixed effect regression model as shown on table 5 is provided below as follows:

**H<sub>01</sub>:** Firm leverage has no significant effect on environmental disclosure of consumer goods firms in Nigeria.

This hypothesis was tested and the result of the regression model as expounded on table 5 indicates that the relationship between firm leverage (FLEV) and environmental disclosure (EVD) is positive and significant with a P-value (significance) of 0.0001 for the model which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 0.944 for the model indicates that, the extent to which a firm is funded by debt determines the level of environmental information disclosures in firm financial reporting in Nigeria. Hence, firm leverage is a determinant of environmental disclosures in Nigeria.

We therefore rejected the null hypothesis and accepted the alternate hypothesis which contends that firm leverage has significant effect on environmental disclosure of consumer goods firms in Nigeria.

**H<sub>02</sub>:** Ownership structure does not significantly affects environmental disclosure of consumer goods firms in Nigeria.

This hypothesis was tested and the result of the regression model as expounded on table 5 indicates that the relationship between ownership structure (OWS) and environmental disclosure (EVD) is positive and significant with a P-value (significance) of 0.0340 for the model which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 0.209 for the model indicates that firm ownership structure is a determinant of environmental information disclosures in Nigeria. The implication of this is that, block shareholding (i.e shares ownership concentration of  $\geq 5\%$  shareholding) determines the firms' level of environmental information disclosures in Nigeria

We therefore rejected the null hypothesis and accepted the alternate hypothesis which contends that ownership structure significantly affects the environmental disclosure of consumer goods firms in Nigeria

**H<sub>03</sub>:** Foreign directors do not significantly influence environmental disclosure of consumer goods firms in Nigeria.

This hypothesis was tested and the result of the regression model as expounded on table 5 indicates that the relationship between foreign directors (FDR) and environmental disclosure

(EVD) is positive and significant with a P-value (significance) of 0.0399 for the model which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 4.17 for the model indicates that, foreign directorship presence determines the level of environmental information disclosures in firm financial reporting in Nigeria. Hence, foreign directorship presence is a determinant of environmental disclosures in Nigeria. We therefore rejected the null hypothesis and accepted the alternate hypothesis which contends that foreign directorship presence significantly influences the environmental disclosure of consumer goods firms in Nigeria.

**Table 6: Descriptive Statistics of Ghanaian Firms**

	<b>EVD</b>	<b>FLEV</b>	<b>OWS</b>	<b>FDR</b>
Mean	12.16667	0.583472	0.406806	0.025972
Median	12.00000	0.475000	0.125000	0.000000
Maximum	21.00000	1.420000	1.120000	0.170000
Minimum	4.000000	0.030000	0.010000	0.000000
Std. Dev.	1.995773	0.407708	0.450767	0.053304
Skewness	0.261599	0.537478	0.482357	1.648161
Kurtosis	1.842051	1.998761	1.397385	2.907120
Jarque-Bera	4.843741	6.474028	10.49714	35.06581
Probability	0.088755	0.439281	0.625255	0.954521
Sum	876.0000	42.01000	29.29000	1.870000
Sum Sq. Dev.	1772.000	11.80203	14.42657	0.201732
<b>Observations</b>	<b>72</b>	<b>72</b>	<b>72</b>	<b>72</b>

**Source: E-Views 12 Computational Results (2024)**

The table 6 above shows that the mean value of environmental disclosures (EVD) of the listed consumer goods firms in Ghana for the period covering 2015 to 2023 was 12.2. This implies that environmental information disclosures are determined by firm demographics in Ghana. Also, the distribution for environmental disclosures is platykurtic since the kurtosis (1.84) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.089 is greater than 0.05, which means that the distribution of firm environmental information disclosures in Ghana is not different from a normal distribution.

Firm leverage (FLEV) has an average value of 0.583. This means that firms with FLEV value of 0.583 and above are funded by debt which determines the level of environmental information disclosures in firm financial reporting in Ghana. Hence, firm leverage is a determinant of firm environmental disclosures in Nigeria. The maximum value for the study was 1.42 while the minimum value was 0.03. The wide variation in maximum and minimum FLEV values justify the need for this study that firms with higher FLEV values disclose more environmental information in their financial reporting than those firms with low FLEV values at a degree risk of 0.41%. The distribution for firm leverage is platykurtic since the kurtosis (1.99) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.439 is greater than 0.05, which means that the distribution of firm leverage does not deviate from a normal distribution.

The mean value of ownership structure (OWS) was 0.407. This means that firms with OWS value of 0.407 and above are owned by shareholders with block shareholding which determines the level of environmental information disclosures in firm financial reporting in Ghana. The maximum value for the study was 1.12 while the minimum value was 0.01. The wide variation

in maximum and minimum OWS values justify the need for this study that firms with higher OWS values disclose more environmental information in their financial reporting than those firms with low OWS values at a degree risk of 0.451%. The distribution for ownership structure is platykurtic since the kurtosis (1.40) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.625 is greater than 0.05, which means that the distribution of ownership structure is not different from a normal distribution.

Finally, the average value of foreign directorship (FDR) was 0.026. This implies that foreign directorship presence determines the level of environmental information disclosures in firm financial reporting in Ghana. The maximum value for the study was 0.17 while the minimum value was 0. The wide variation in maximum and minimum FDR values justify the need for this study that firms with higher FDR values disclose more environmental information in their financial reporting than those firms with low BC values at a degree risk of 0.05%. The distribution for foreign directorship presence is platykurtic since the kurtosis (2.91) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.954 is greater than 0.05, which means that the distribution of foreign directorship is not different from a normal distribution.

#### 4.2: Diagnostic Test to Check for Multi-Collinearity Problem, Using Variance Inflation Factor.

**Table 7: Variance Inflation Factors**

Date: 05/22/24 Time: 18:11

Sample: 2015 2023

Included observations: 72

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
FLEV	1.853614	5.020304	1.631610
OWS	1.153532	2.266299	1.241175
FDR	213.4757	3.985196	3.211911
C	26.59024	9.647891	NA

**Source: E-View 12 Computational Results (2024).**

From the table above, the centered VIF ranges from 1.63 to 3.21 which suggests non multi-collinearity feature. Multi-collinearity feature according to Sabo, Rabi, Usman, Fatima, and Tjjani (2015) exists when the value of VIF exceeds 10 i.e  $VIF > 10$ .

#### Table 8: Hausman Test Result.

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	313.122157	7	0.0000

**Source: E-Views 12 Computational Results (2024)**

The Hausman test conducted shows a chi-Square Statistics value of 313.12 with a probability value of 0.0000. This probability value is statistically significant since the P-value is less than 5%. Therefore the rule is that if the p-value is significant (i.e P-value < 5%), interpret fixed effect result, otherwise, use the random effect result and from our Hausman result, our P-value is significant. Therefore we interpreted fixed effect result (table 9) for our analysis.

**Table 9: Fixed Effect Regression Result on Effect of Firm Demographics on Environmental Disclosures of Consumer Goods Firms in Ghana**

Dependent Variable: EVD  
 Method: Panel Least Squares  
 Date: 05/22/24 Time: 18:01  
 Sample: 2015 2023  
 Periods included: 9  
 Cross-sections included: 8  
 Total panel (balanced) observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FLEV	4.593859	1.297757	3.539845	0.0079
OVS	3.283502	1.078791	3.043687	0.0305
FDR	8.971410	1.547990	5.795522	0.0000
C	0.962914	0.155524	6.191417	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.925423	Mean dependent var	12.16667
Adjusted R-squared	0.907106	S.D. dependent var	4.995773
			12.86182
S.E. of regression	1.522640	Akaike info criterion	1
			10.33612
Sum squared resid	132.1507	Schwarz criterion	6
Log likelihood	-124.0255	Hannan-Quinn criter.	9.050643

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F-statistic	50.52209	Durbin-Watson stat	1.998959
Prob(F-statistic)	0.000000		

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### Source: E-Views 12 Computational Results (2024)

In table, 9., R-squared and its adjusted R-squared values were (0.92) and (0.90) respectively. This is an indication that all the independent variables jointly explain about 92% of the systematic variations in environmental disclosures (EVD) of our sampled firms over the nine-year period (2015-2023) while 8% of the systematic variations are captured by the error term. The F-statistics 50.52209 and its P-value of (0.000000) portrays the fact that the regression model is well specified.

**Test of Autocorrelation:** Using Durbin Watson (DW) statistics which we obtained from our regression result in table 9, it was observed that DW statistic is 1.998959 which is approximately 2, agrees with the Durbin Watson rule of thumb. Showing that our data is free from autocorrelation problem and as such fit for the regression result to be interpreted and result relied on. Akaike Info Criterion, Schwarz Criterion and Hannan-Quinn Criterion which are 12.86, 10.34 and 9.05 respectively further strengthen the fitness of our regression result for reliability as they confirm the goodness of fit of the model specified.

In addition to the above, the specific findings from each explanatory variable from fixed effect regression model as shown on table 9 is provided below as follows:

**H<sub>01</sub>:** Firm leverage has no significant effect on environmental disclosure of consumer goods firms in Ghana.

This hypothesis was tested and the result of the regression model as expounded on table 9 indicates that the relationship between firm leverage (FLEV) and environmental disclosure (EVD) is positive and significant with a P-value (significance) of 0.0079 for the model which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 4.594 for the model indicates that, the extent to which a firm is funded by debt determines the level of environmental information disclosures in firm financial reporting in Ghana. Hence, firm leverage is a determinant of environmental information disclosures in Ghana.

We therefore rejected the null hypothesis and accepted the alternate hypothesis which contends that firm leverage has significant effect on environmental disclosure of consumer goods firms in Ghana.

**H<sub>02</sub>:** Ownership structure does not significantly affects environmental disclosure of consumer goods firms in Ghana.

This hypothesis was tested and the result of the regression model as expounded on table 9 indicates that the relationship between ownership structure (OWS) and environmental disclosure (EVD) is positive and significant with a P-value (significance) of 0.0305 for the model which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 3.284 for the model indicates that firm ownership structure is a determinant of environmental information disclosures in Ghana. The implication of this is that, block shareholding (i.e shares ownership concentration of  $\geq 5\%$  shareholding) determines the firms' level of environmental information disclosures in Ghana.

We therefore rejected the null hypothesis and accepted the alternate hypothesis which contends that ownership structure significantly affects the environmental disclosure of consumer goods firms in Ghana.

**H<sub>03</sub>:** Foreign directors do not significantly influence environmental disclosure of consumer goods firms in Ghana.

This hypothesis was tested and the result of the regression model as expounded on table 9 indicates that the relationship between foreign directors (FDR) and environmental disclosure (EVD) is positive and significant with a P-value (significance) of 0.0000 for the model which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 8.971 for the model indicates that, foreign directorship presence determines the level of environmental information disclosures in firm financial reporting in Ghana. Hence, foreign directorship presence is a determinant of environmental disclosures in Ghana. We therefore rejected the null hypothesis and accepted the alternate hypothesis which contends that foreign directorship presence significantly influences the environmental disclosure of consumer goods firms in Ghana.

## 5. Conclusion and Recommendation

The study examined the effect of firm demographics on environmental disclosures of listed consumer goods firms in Nigeria and Ghana. To achieve this, four (4) categories of firm demographics such as (FLEV, OWS & FGR) were examined in the study. Among these three (3) categories of firm demographics examined in this study; firm leverage (FLEV) was found to have the highest level of influence on firms environmental disclosures (EVD) according to our study followed by foreign directors (FDR) and ownership structure (OWS) as evidenced in Nigeria in our Model 1. Also, as evidenced in Ghana according to our Model 2, it was found that among the three (3) categories of firm demographics examined in this study; foreign directors (FDR) has the highest level of influence on firm environmental disclosures (EVD) according to our study followed by firm leverage (FLEV) and finally ownership structure (OWS)

Therefore, the study having developed a model fit on firm demographics found that FLEV, OWS & FDR have joint effect on environmental disclosures. Hence, it was concluded that firm demographics ensure environmental disclosures of listed consumer goods firms in both Nigeria and Ghana.

### 5.3 Recommendations

In lieu of the findings of the study, the following recommendations were made:

1. Optimal financing mix is recommended by every corporate organization as the extent to which a firm is being funded by debt determines the level of environmental information disclosures in corporate financial reporting in Nigeria and Ghana.
2. The study also recommends for more block shareholding by the shareholders (i.e shares ownership concentration of  $\geq 5\%$  shareholding) in corporate organizations as this ensures the level of environmental information disclosures in corporate financial reporting in Nigeria and Ghana.

3. Foreign directorship presence should also be encouraged by the shareholders as their involvement encourages environmental information disclosures both in Nigeria and Ghana.

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