



## BOARD DIVERSITY AND SUSTAINABILITY REPORTING: EVIDENCE FROM INDUSTRIAL GOODS FIRMS

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### Abstract

The sustainable development goals (SDGs) adopted by all the United Nations member countries were to reduce the social and ecological outcome of businesses and governments across the globe, among others. Businesses can key into this agenda by disclosing their economic, environmental and social impact in their financial reports. However, in Nigeria, the extent of sustainability reporting amongst firms is still low and not a listing requirement. Against this backdrop, this study investigated the influence of a diverse board on the extent of sustainability reporting in listed industrial goods firms on the Nigerian Stock Exchange from the period 2014-2018. We developed a sustainability disclosure index using the Global Reporting Initiative (GRI) guidelines to score the information content of annual reports relating to sustainability performance. Nationality, age and educational level were used to proxy diversity in the boardroom. The study also used descriptive and inferential statistics to summarize the data and to draw an inference on the population studied. Our study failed to validate the theoretical framework - *Stakeholder-Dependency Theory* used in the study, as results from the panel least squares regression revealed that age diversity in the boardroom negatively and significantly affects the extent of sustainability reporting. Furthermore, we found no evidence on the nexus between nationality diversity and sustainability reporting; and education level diversity and sustainability reporting. The study concluded that diversity in boardroom influences the extent of sustainability reporting in Nigeria. This study recommends that firms should increase the representation of foreign directors in the boardroom because they add value and a wealth of experience to the board.

### Key words:

Nationality diversity; Age diversity; Education level diversity; Sustainability Reporting; Global Reporting Initiative, Nigeria.

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## 1. Introduction

Sustainability Reporting (SR) is an emerging voluntary reporting initiative across the globe in recent times. The idea was brought into the limelight following the 1987 Brundtland Report in bridging the gap between environmental and human development concerns (Bebington, & Larrinaga, 2014; Bebington, & Unerman, 2017). The concept was further popularised in academic literature and business environment following the United Nation's (UN) adoption of the Organization for Economic and Community Development's (OECD) eleven (11) Millennium Development Goals (MDGs) which was transformed into Seventeen (17) Sustainable Development Goals (SDGs) in 2015 (Bebington, & Unerman, 2017; UN SDG, 2015). The SDGs aim to address poor business and government's social, ecological and economic outcome. This poor businesses and government outcomes over time have resulted in the increased occurrences of natural disasters like flooding, earthquakes, and the increase in carbon emission as well as pollution (water and air), social inequalities and poverty (Chong, 2019; Manning, Braam & Reimsbach, 2019; Elaigwu, Ayoib & Salau, 2020). Hence, specifically, business firms in particular can contribute to the attainment of the goals through sustainability reporting.

However, it is sad to know that Sustainability Reporting (SR) has not been widely accepted or recognised as part of a business model for successful performance and survival by firms across the globe (Johari & Komathy, 2019). Although in 2019, Johari and Komathy (2019) observed that Europe had the highest sustainability disclosure rate of about forty-nine per cent, followed by Asia with fifteen per cent, North America fourteen per cent. They also observed the following disclosure rate: Latin America twelve per cent (12%), Oceania six per cent (6%) and Africa with the least disclosure rate of only four per cent (4%). The low compliance and disclosure rate could be attributed to the nature of the report – being voluntary. The nature of this report also makes the enforcement to lack regulatory and legal backing. In Nigeria, it is the same scenario: low compliance and disclosure rate of social and environmental issues among firms in the community where they operate (Adeniyi & Fadipe, 2018; Awodiran, 2019).

The board as one of the corporate governance mechanisms helps to protect the interests of business owners and other stakeholders. Their duty of overseeing and monitoring the reporting process makes them very important to the success and survival of a firm (Aifuwa & Embele, 2019; Saidu & Aifuwa, 2020). On sustainability reporting, a diverse board is far better in overseeing and monitoring the reporting of non-financial information of a firm (Michelon & Parbonetti, 2012). With their unique attributes, they

would improve the firm's strategic decision quality and identify and fulfil stakeholders needs (de Jong & van der Meer, 2017; Michelon & Parbonetti, 2012).

Diversity in the boardroom comes in different dimensions (nationality, race, gender, education level, educational background; experience). However, in this study, we examined nationality, age and education level diversity. In line with the agency theory, a board with a high proportion of foreign directors will increase agency cost and may cause poor performance in firms (Masulis, Wang & Xie, 2016). Thus, this negates the aim of a firm to maximise profit and minimise cost. In age diversity, the presence of both young and old directors may limit the board information processing speed. Specifically, having older directors above sixty (60) years leaves a fragment of the board redundant. According to the Nigerian Constitution, the attainment of the retirement age of sixty (60) years means the individual becomes unproductive. Thus, employing unproductive people on the board will not improve the extent of sustainability reporting. Lastly, an *inferiority complex* could set in between directors with different levels of experience. It would hinder their board relationship in resolving agency problems and reporting sustainability issues.

In sum, the purpose of this study is to investigate the influence of a diverse board on sustainability reporting in Nigeria. The choice of our explanatory variables (nationality, age and educational level) motivated the study. There seem to be mixed findings on the nexus between nationality diversity in the boardroom and sustainability reporting (see Sharif & Rashid, 2014; Fuente, Garcia-Sanchez & Lozano, 2017; Zaid, Wang, Adib, Sahyouni & Abuhijleh, 2020; Huijsman, 2017; Hesselink, 2017; Janggu, Darus, Zain & Sogamoi, 2014; Rodriquez-Ariza, Garcia-Sanchez & Frias-Aceituno, 2012; and Khan, Khan & Semturk, 2019a; Ibrahim & Hanifah, 2016; Khan, Khan & Saeed, 2019; Berger, 2019). Also, there is a dearth in literature on the nexus between age diversity, educational level diversity in the boardroom and sustainability reporting (see Baker, Ghazali & Ahmad, 2019; King'ori, Naibei, Sand & Kipkosgei, 2019; Janggu, Darus, Zain & Sawani, 2014). Against these backdrops, this study raised the following research questions:

- What is the effect of nationality diversity in the boardroom on sustainability reporting?
- What is the impact of age diversity in the boardroom on sustainability reporting?
- What is the influence of educational level diversity in the boardroom on sustainability (reporting)?

The preliminary results of the study bolster the need for a large board size in listed manufacturing firms (specifically in the industrial goods sector) on the Nigerian

Stock Exchange to promote diversity on the board. This would also improve their sustainability disclosure rate. The result of the descriptive statistics in Table 2 reported means of approximately 42% sustainability disclosure rate with 19% of foreign directors. Also, about 35% of the directors on the board were below sixty (60) years of age, and 96% of them had a higher degree qualification (MSc and PhD). The result from the inferential statistic did not support the Stakeholder-Dependency Theory. The result of the association between *age diversity in the boardroom* and sustainability reporting is negative and statistically significant, which is contrary to our a priori expectation of a positive relationship. The result shows that the presence of older board members on the board will not promote the idea of sustainability reporting. The result, however, is not unexpected, looking at high profile environmentally and socially scandalous firms like British Petroleum (BP) oil spillage in the Gulf of Mexico, Chernobyl nuclear power plant explosion in Russia, Exxon Valdez oil spill in the waters of Alaska, Kuwait oil well fires and Lonmin Markana mining maltreatment of its workers in South Africa, to mention a few. The study made a modest contribution to the existing literature by showing that the influence of both boards demographic and cognitive diversity on sustainability reporting.

We organised the rest of the paper as follows: Section two focuses on the literature review and hypotheses development. Section three addresses the method with emphasis on theoretical framework and model specification. Section four presents data analysis, interpretation and discussion of findings. Section five concludes.

## **2. Literature Review and Hypotheses Development**

### ***Sustainability Reporting***

According to Aifuwa (2020) and Aifuwa, Saidu, Enehizena and Osazevaru (2019), sustainability reporting is a blend of two concepts: “sustainability” and “reporting”. Sustainability, as defined by Brundtland (1987), is meeting the needs of the current generation without compromising the ability of the next generations to meet their own needs. Reporting means disclosing an organisation's information fully or partially to stakeholders (Aifuwa, 2020). Therefore, sustainability reporting is disclosing organisational information about its daily economic, social and environmental activities as it affects the society and stakeholders where it operates. Global Reporting Initiative [GRI] (2019) defined sustainability reporting, performance or disclosure as the process whereby organisations provide information about the economic, environmental and social impact caused by its everyday

activities. Flowing from the GRI definition on sustainability reporting, visibly, there are enormous benefits to be derived from disclosing economic, social and environmental issues. Aifuwa et al. (2019) opined that the benefits of sustainability reporting include better financial performance, improved firm reputation, the attraction of better investors and high morale among employees.

However, despite these envisaged benefits, there are some issues in disclosing economic, environmental and social effects an organisation has on the environment. These issues include measurement and disclosure, motivation, enforcement and compliance, standardisation, and the comparability & reliability of the report (Muñoz, Zhao, & Yang, 2017). In Nigeria, sustainability disclosure rate is low among firms because of the voluntary nature of the report, and also not being a listing requirement for firms on the Nigerian capital market (Asaolu, Agboola, Ayoola, & Salawu, 2011; Emeka-Nwokoji & Osisima, 2019; Haladu & Salem, 2016; Nwobu, 2017; Oyekwelu & Eke, 2014).

Notwithstanding the adoption of the GRI framework by the Nigerian stock exchange in 2018 and also the recognition of sustainability disclosure in the Nigerian code of corporate governance of 2018, there still exists a low compliance rate in disclosing environmental and social issues (Aifuwa *et al.*, 2019). However, some countries like Brazil, China, Denmark, Hong Kong, India and Malaysia have made great strides in making the report mandatory (Ioannis & Serafeim, 2014). GRI seems to be the most popular framework in reporting sustainability issues (Johari & Komathy, 2019). However other frameworks or guidelines also exist, such as the Carbon Disclosure Project (CDP), International Standard Organization (ISO), Greenhouse Gas Protocol and United Nations Global Compact (UNGC), Sustainability Accounting Standards Board (SASB), International Integrated Reporting Council (IIRC) (Aifuwa, 2020; Aifuwa *et al.*, 2019; Nwobu, 2017).

### **Board Diversity**

The concept of ‘board diversity’ has emerged as the most prominent issue in corporate governance literature in recent times (Rhode & Packel, 2014; Ibrahim & Hanefah, 2016). Ayuso and Argandona (2009) and Van Knippenberg, De Dreu and Homan (2004) defined board diversity as the heterogeneity amongst directors on the board with unique attributes or dimensions. The dimensions of a diverse board can be grouped into observable difference (like race, ethnic background, nationality, gender and age) and less discernible diversity (educational level, educational background, functional and occupational background, industry experience and organisational membership) (Kang, Chen & Gray, 2007).

The importance of diversity in the boardroom cannot be overemphasised, as it fosters better decisions and brings about innovation in an organisation (Aifuwa & Embele, 2019). Kyaw, Olugbode and Petracci (2017) stated that a more diverse board could attract more resources into an organisation. Rathnayaka (2018) and Michelin and Parbonetti (2012) argued that a diverse board would improve the quality of a firm's strategic decision. Furthermore, Arora and Sharma (2016) and Butler (2012) argued that diversity in the boardroom would improve a firm's performance and reputation, as also its global existence. Drawing inspiration from the above arguments, this study envisages that board diversity will positively affect sustainability reporting in firms. Therefore, in this study, we examined the impact of nationality, age and education level diversity on sustainability reporting.

### ***Board Member Nationality and Sustainability Reporting***

Nationality diversity reflects the presence of foreign directors of different nationalities in the boardroom. Oxelheim and Randey (2003) asserted that foreign directors are deeply devoted to the firm's transparency, accountability and reputation in the competitive market. In line with this, Zaid *et al.* (2020) echoed that nationality diversity is one of the modern drivers of corporate sustainability reporting in the present-day business world. A board with a high representation of foreign directors from different nationalities brings a diverse idea and perspective to the boardroom (Ferrero-Ferrero, Fernandez-Izquierdo & Munoz-Torres, 2015). This is because of their international market engagement, diverse professional background, religion, language, life experience, knowledge and culture which may lead to improved decision making in particular (Ferrero-Ferrero *et al.* 2015), and enhanced boardroom performance (Estelyi & Nisar, 2016).

Notwithstanding the above assertions on the positive impact of the presence of foreign directors in the boardroom, Masulis *et al.* (2016) argued that a nationally diverse board would cause poor performance because of the high cost of foreign directors and ineffective monitoring oversight. Also, empirical literature evidenced no relationship between a nationally diverse board and sustainability reporting (Sharif & Rashid, 2014; Fuente *et al.*, 2017; Zaid *et al.*, 2020; Huijsman, 2017; Hesselink, 2017; Janguu *et al.*, 2014; Rodriguez-Ariza *et al.*, 2011). However, Khan *et al.*, (2019a); Ibrahim and Hanifah (2016); Khan *et al.*, (2019b); and Berger (2019) found a positive relationship between foreign directors on the board of an organisation and sustainability reporting. This study, therefore, hypothesises that;

***Ho<sub>1</sub>: Nationality diversity in the boardroom has no significant effect on sustainability reporting***

### ***Board Member Age and Sustainability Reporting***

Age diversity reflects the existence of both old and young directors on the board. Darmadi (2011) asserted that age diversity in the board creates value and diverse views on the social economic and political environment in a firm. Ali, Ng, and Kulik (2014) argue that age diversity in the board leads to transfer of knowledge, skills and experience from older directors to younger directors, which may lead to better decision making and increased effectiveness in the board. Abdullah and Ismail (2013) emphasised the importance of age diversity in the board (and added) that it significantly reduces business in leadership and decision-making style of same age group members.

However, some studies claimed that boards comprising older directors are likely to disclose more non-financial information of a firm (Hasfi & Turgut, 2013; Post, Rahman & Rubow, 2011). They based their argument on the fact that age reflects the director's experience in business and that they are more sensitive towards social and environmental issues. Empirically, little or no studies have been carried out on the nexus between age diversity in the boardroom and sustainability reporting in Nigeria. Baker *et al.*, (2019) found no significant difference between the ages of directors on the board to the extent of sustainability reporting, implying that age diversity in the boardroom does not bear a significant relation to sustainability reporting. Therefore, this study hypothesises that;

***H<sub>0</sub>: Age diversity in the boardroom has no significant impact on sustainability reporting***

### ***Board Member Education Level and Sustainability Reporting***

Diversity in the level of education on the board reveals the existence of directors with both low and high level of education. The presence of directors with different levels of education on the board leads to advanced thinking capacity. Hsu, Chen and Cheng (2013) assert that diversity in the level of education on the board improves the directors' ability and proficiency in processing information and recognising fresh business opportunities. Diversity in the level of education in the boardroom leads to the generation of alternative ideas on strategic issues on non-financial disclosure (Katmon, Mohamad, Norwani & Farooque, 2017). Khan *et al.* (2019b) argue that education level diversity of directors would help in solving the board's problem in a sophisticated and strategic directional manner. Therefore, directors with both low and high education qualifications would help the board to resolve economic, environmental and social issues in an organisation. However, it is sad that they have

done few empirical studies on the nexus between the education level diversity in the boardroom and sustainability reporting. King'ori *et al.*, (2019) and Janguu *et al.* (2019) found that the education qualification of the directors on the board positively affects sustainability reporting. Thus; this study hypothesises that;

***Ho<sub>3</sub>: Education level diversity in the boardroom has no significant influence on sustainability reporting***

### ***Control Variables***

This study introduced two firm-specific variables to control the dependent variable. The variables are firm age and firm size. Haladu and Beri (2016) submitted that older firms are (more) socially and environmentally responsible than younger firms. Leaning on this empirical evidence, we envisage likewise in our study. Secondly, the size of the firm is another determinant of sustainability reporting. Prior studies have argued that a firm's size positively affects the extent of sustainability disclosure (Hesselink, 2017; Ong, 2016, Aman & Baker, 2018; Awodiran, 2019; Hu & Loh, 2018). Thus, leaning on these empirical pieces of evidence, our study also envisages likewise.

## **3. Material and Methods**

### ***Theoretical Framework***

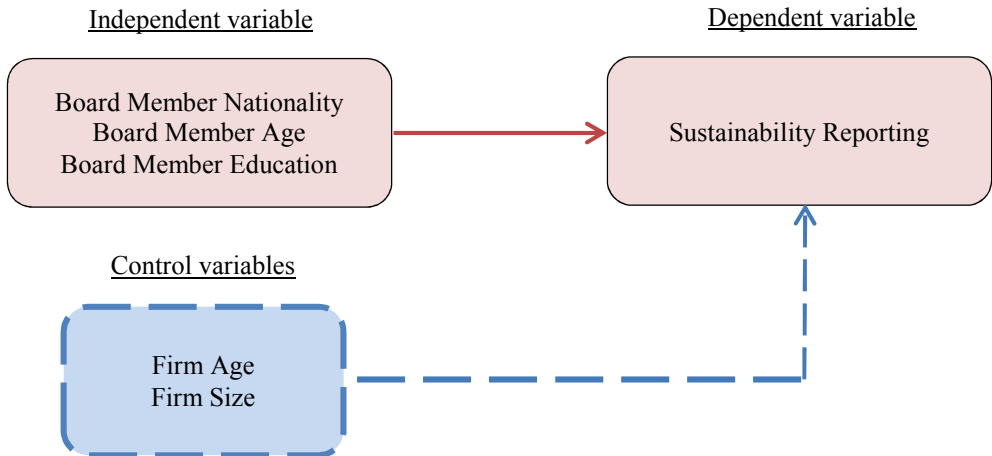
This study hinges on the Stakeholders theory of (Freeman, 1984) and the Resource Dependency theory of (Pfeffer & Salancik, 1978) to explain and understand the influence of a diverse board on sustainability reporting in Nigeria. The Stakeholder theory explains the tripartite relationship that exists between the principal (owner of a firm), agent (managers/board of directors) and stakeholders (suppliers, local community, investors and the public) (Aifuwa, Embele, & Saidu, 2018). The theory addresses the expectations of specific stakeholder groups in society and considers the effect of their expectation on information disclosure, bearing in mind the existence of more powerful stakeholders (Font, Guix & Bonilla-Preigo, 2016; Ngu & Amran, 2018). Therefore, the survival of a firm's business hugely depends on the support of the stakeholders; hence, they must adjust their business model to address stakeholders' concerns and needs. To achieve this, we cannot ignore a diverse board. The Resource dependency theory stressed that the board as one of the vital resources in a firm has a significant impact on the strategic decision making and disclosing information (Pfeffer & Salancik, 1978; Hasfi & Turgut, 2013). Fasan and Moi (2016) argued that board members play a vital role in influencing information disclosure to minimise environmental uncertainties and external interdependency. Therefore, in



line with the stakeholders and resource dependency theory, the principal of the firm must use the services of a diverse board to meet the needs of stakeholders in reporting the economic, social and environmental issues. Based on the unique qualities that diverse boards possess, issues on sustainability reporting will be resolved swiftly and increase the performance and reputation of the firm (Baker et al., 2018; Ngu & Amran, 2018). In line with the Stakeholder-Dependency theory, this study proposes that a diverse board will increase the extent of sustainability reporting.

### 3.1. Model Specification

In line with the theoretical framework of the study, we recognised sustainability reporting as a dependent variable. In contrast, board member nationality, age and education were identified as the independent variable of the study.



**Fig. 1. Schematic representation of the variables of the study**

Flowing from the theoretical framework and the existing literature, we specified the model as;

In functional form;

$$SNR = f(BMN; BMA; BME; FAGE; FSZE) \quad (1)$$

In econometric form:

$$SNR = \beta_0 + \beta_1 BMN_{it} + \beta_2 BMA_{it} + \beta_3 BME_{it} + \beta_4 FAGE_{it} + \beta_5 FSZE_{it} + \varepsilon_{it} \quad (2)$$

Where

SNR = Sustainability Reporting;

$\beta_0$  = Constant;

BMN = Board Member Nationality;

BMA = Board Member Age;

BME = Board Member Education;

FAGE = Firm Age; and

FSZE = Firm Size.

$\beta_1, \beta_2, \beta_3$  = Coefficient of explanatory variables

$\varepsilon$  = Standard error

$i$  = Cross sectional (Companies)

$t$  = Time Series

A priori expectations is in with the theoretical framework to be  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$

### ***3.2 Development of Sustainability Disclosure Index (SDI)***

We recognised sustainability reporting as the study's dependent variable. In developing the sustainability reporting index, we will use the GRI G4 general framework, which is made (of) economic, environmental and social indicators. Afterwards, we employed content analysis to develop weighted sustainability disclosure index for the economic, environmental and social performance of the sampled firms. If firms fully disclosed economic, environmental and social information, they were awarded one, while zero for non-disclosure, respectively.

$$\text{Therefore, SNR} = \frac{TD}{M}$$

Where;

SNR = Sustainability Reporting

TD = Total disclosure (N1 + N2 + N3)

N1 = for the economic indicator  $i$

N2 = for the environmental indicator  $i$

N3 = for the social indicator  $i$

M = Maximum possible score

Table 1

**Measure of variables**

<b>Variable</b>	<b>Type</b>	<b>Measurement</b>	<b>Supporting Scholars</b>
Sustainability Reporting	Dependent Variable	GRI G4 framework on economic, social and environmental sustainability disclosure; at stated above	GRI (2013); Anazonwu Egbunike & Gunardi (2018)
Board Member Nationality	Independent Variable	Number of foreign directors sitting on the board divided by total number of directors	Anazonwu et al (2018)
Board Member Age	Independent Variable	Dichotomous index; 1 if the average age of the board of directors is less than 60 years, else 0.	Abdullah & Ismail (2013); Baker et al (2019).
Board Member Education	Independent Variable/	Dichotomous index; 1 if the board has directors with second or third degree, else, 0	
Firm Age	Control Variable	Number of years since the time the company was quoted on the floor of the Nigerian Stock (Exchange)	Emeka-Nwokeji & Osisioma (2019)
Firm Size (FSZE)	Control Variable	Natural logarithm of total assets	Aifuwa & Embele (2019); Saidu & Aifuwa (2020); Aifuwa, Musa & Gold (2020)

*Source: Authors' Compilation, 2020.*

**3.3. Research Design**

This study adopted the multi-method quantitative research design. We chose this design in the study because it is inclined on the positivist research philosophy and deductive approach. Also, it examines relationships between variables measured numerically and analysed using a range of statistical and graphical techniques (Saunders, Lewis & Thornhill, 2016).

### 3.4. Method of Data Collection and Analysis

The population comprises manufacturing firms on the Nigerian Stock Exchange. The target population of the study was the industrial goods sector listed on the Nigerian Stock Exchange as of December 2018. We preferred these firms because their activities revolve around the three dimensions of sustainability reporting (Awodiran, 2019). This study sampled all thirteen (13) companies in the sector to have a sound basis for generalisation (Aifuwa & Okojie, 2015). The study also utilised secondary data (audited financial statements) from the Nigerian Stock Exchange spanning from 2014 to 2018. Descriptive and inferential statistics were used to analyse data. The Panel least squares were used to test hypotheses stated because the data include properties of time-series and cross-sectional data.

### 4. Data Presentation, Analysis and Discussion of Findings

Table 2

#### Descriptive Statistics for Secondary data

	SNR	BMN	BMA	BME	FAGE	FSZE
Mean	0.4242	0.1927	0.3529	0.9608	28.9412	6.5788
Median	0.3333	0.0000	0.0000	1.0000	30.0000	6.3575
Maximum	0.7273	0.5900	1.0000	1.0000	44.0000	8.7897
Minimum	0.0606	0.0000	0.0000	0.0000	5.0000	5.4186
Std. Dev.	0.1892	0.2191	0.4826	0.1960	10.3042	0.8634

*Source: Authors' Computation, 2020.*

Table 2 presents the summary statistics about the sampled firms over the study period. The mean proportion of companies providing sustainability disclosures was 42.4% while companies with the highest disclosure had 72.7% of the GRI disclosures reported. The lowest disclosure recorded was 6%. The mean value of the proportion of foreign directors, directors' age, and level of education, firm age and firm size were 19.3%, 35%, 96%, 28 years and nine months and NGN 6,579,000 respectively. The highest value in the proportion of foreign directors, firm age and firm size was 59%, 44 years, and NGN 8,789,701,000 respectively. Lastly, the standard deviation in the ratio of foreign directors and the ages of directors did not exhibit considerable clustering around the mean.

Table 3

**Correlation Matrix**

	<b>SNR</b>	<b>BMN</b>	<b>BMA</b>	<b>BME</b>	<b>FAGE</b>	<b>FSZE</b>
SNR	1.0000	0.4829	0.1725	0.1797	0.4112	0.6165
BMN		1.0000	-0.1927	0.1795	0.4181	0.6328
BMA			1.0000	0.1492	-0.4100	0.1395
BME				1.0000	0.3256	0.1745
FAGE					1.0000	0.3278
FSZE						1.0000

*Source: Authors' Computation, 2020.*

The linearity of variables (correlation matrix) as presented in Table 3 show that the variables exhibited both positive and negative relationship. Nationality diversity and sustainability reporting (0.483), age diversity and sustainability reporting (0.173), education level diversity and sustainability reporting (0.180), firm age and sustainability reporting (0.411), firm size and sustainability reporting (0.617) and age diversity and sustainability reporting (-0.193). As seen in the matrix, the strength of the relationship between variables measured by the Pearson product-moment correlation showed that the association between the variables is relatively small and were below the threshold of 0.80, suggesting the absence of the problem of multicollinearity in the predictor variables (Studenmund, 2014)

**4.1. Multivariate Analysis**

This study presents the result of the Hausman test and the Partial Least Squares Regression in this section. The study tested the hypotheses at a 5% level of significance (that is if p-value < 0.05 reject **H<sub>0</sub>**, else do otherwise).

Table 4

**Hausman test of effect specification**

**Correlated Random Effects - Hausman Test**

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	16.8242	5	0.0048

*Source: Authors' computation, 2020.*

The table above shows the result of the Hausman test,  $HM(5) = 16.82$ ,  $p = 0.0048$ . This study ignored the random effect model because the p-value was less than 5%. The study, therefore, accepted the fixed effect model of the Panel least squares regression.

Table 5

**Fixed effect panel regression**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.8046	0.8089	0.9947	0.3267
BMN	0.1219	0.2646	0.4608	0.6478
BMA	-0.3012	0.0603	-4.9928	0.0000
BME	-0.0224	0.0725	-0.3088	0.7593
FAGE	0.0095	0.0082	1.1626	0.2529
FSZE	-0.0838	0.1369	-0.6122	0.5443
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.9236	Mean dependent var		0.4242
Adjusted R-squared	0.8909	S.D. dependent var		0.1892
S.E. of regression	0.0625	Akaike info criterion		-2.4562
Sum squared resid	0.1367	Schwarz criterion		-1.8501
Log likelihood	78.6323	Hannan-Quinn criter.		-2.2246
F-statistic	28.2220	Durbin-Watson stat		2.4661
Prob(F-statistic)	0.0000			

*Source: Authors' computation, 2020.*

The result of the Panel least squares (fixed effect) revealed in Table 5 that board diversity influences sustainability reporting in Nigeria, as the F-statistic = 28.222,  $p = 0.0001$ . Also, the Adjusted R-Squared stood at 0.8909, that is about 89% of the systematic variation in the dependent variable is caused by the explanatory variable used in the study. In comparison, about 11% of the change is caused by other variables not included in the model but were adequately captured by the standard error of the regression,  $SE = 0.0625$ . The Durbin-Watson statistics of 2.46 indicates negative autocorrelation in the sample.

On the hypotheses, we found out that nationality diversity in the boardroom has a positive but insignificant effect on sustainability reporting,  $t = 0.4607$ ,  $\beta_1 =$

0.122,  $p = 0.648$ . This study failed to reject the null hypothesis stated. This result partially supports the resource dependency theory and disagrees with the argument of Masulis, *et al.*, (2016) that a nationally diverse board will cause poor performance because of the high cost of foreign directors and ineffective monitoring oversight. Also, our finding is consistent with the work of (Sharif & Rashid, 2014; Fuente *et al.*, 2017; Zaid *et al.*, 2020; Huijsman, 2017; Hesselink, 2017; Janggu *et al.*, 2014; Rodriquez-Ariza *et al.*, 2011): they found no evidence on the nexus between a nationally diverse board and sustainability reporting. However, it sharply deviates from the findings of Khan *et al.*, (2019a); Ibrahim and Hanifah (2016); Khan *et al.*, (2019b); and Berger (2019) which found a positive and significant relationship between foreign directors on the board of an organisation and sustainability reporting.

Secondly, the study discovered that age diversity in the boardroom has a negative and significant impact on sustainability reporting,  $t = -4.992$ ,  $\beta_2 = -0.301$ ,  $p = 0.0001$ . Hence, the study failed to accept the null hypothesis stated in it. This result supports the position of the constitution of the Federal Republic of Nigeria that older directors (60 years and above) will (prove) non-productive on the board of an organisation. However, the study failed to agree with the stakeholder-resource dependency perspective that age diversity on the board promotes sustainability reporting. This finding is in dissonance with the work of Baker *et al.*, (2019) (which) found no significant difference between the ages of directors on the board (in the effect) on the extent of sustainability reporting, implying that that age diversity in the boardroom does not have a significant relation to sustainability reporting.

On education level diversity, we found a negative and insignificant nexus on sustainability reporting,  $t = -4.992$ ,  $\beta_3 = -0.301$ ,  $p = 0.7593$ . This implies that educational level diversity of directors in the boardroom has no significant influence on sustainability reporting. This result supports the stakeholder-resource dependency perspective that diversity in the director's education level would promote sustainability reporting. Also, this result disagreed with the views of Khan *et al.*, (2019b) that education level diversity of directors would help in solving the board's problem in a sophisticated and strategic directional manner. Also, this finding is in contradiction with the studies of King'ori, *et al.*, (2019) and Janggu *et al.*, (2014). They submitted that the education qualification of the directors on the board positively affects sustainability reporting. Lastly, firm age and firm size were statistically not related to sustainability reporting,  $t = 1.162$ ,  $\beta_4 = 0.0095$ ,  $p = 0.253$  and  $t = -0.612$ ,  $\beta_5 = -0.083$ ,  $p = 0.5443$  respectively.

## 5. Conclusion and Recommendations

The broad objective of this study was to examine the influence of a diverse board on sustainability reporting in industrial goods firms in Nigeria. Specifically, the study examined the impact of nationality, age and educational level diversity in the boardroom on the extent of sustainability reporting in the listed industrial goods firms in Nigeria. The descriptive statistics revealed that sustainability disclosure rate was about 42%, and the proportion of foreign directors was about 19%. Also, about 35% of the directors on the board were below sixty (60) years of age, and 96% of them had a higher degree qualification (MSc and PhD). Hence, owing to these findings in the result of the descriptive statistics, listed industrial goods firms will not be contributing to the attainment of the UN SDGs before 2030 as envisaged. This claim was further bolstered in our inferential statistics results. Based on the overall findings of this study, listed industrial firms must do more to change the current narratives, as regards their environmental and social performance. Hence, we, therefore, recommend that: firms should increase the representation of foreign directors in the boardroom because they add value and a wealth of experience to the board; the representation of younger directors should be increased in the boardroom to have a vibrant board, and firms should encourage more directors with a first degree in the boardroom to have a mix of knowledge resource.

This study is subject to some limitations. First, we only studied listed industrial goods firms in the manufacturing industry, thereby ignoring the unlisted industrial goods firms. Thus, generalisations should be made with caution. Secondly, the period studied – 2014-2018 may not accurately capture the subject of the study. This study, therefore, recommends that future research should cut across the other unlisted industrial goods firms and the period of study should be increased.

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