Annals of Spiru Haret University.
Economic Series
Since 2000
ISSN:2393-1795 ISSN-L:2068-6900

Issue 1/2021

# BOARD MEMBERS' EDUCATION DIVERSITY AND SUSTAINABILITY REPORTING

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**How to cite:** GOLD, N.O., AIFUWA, H.O., USMAN, M.K., SUBAIR, M.L., OSAZEVBARU, A., & OLOYEDE, B.M. (2021). "Board Members' Education Diversity and Sustainability Reporting." *Annals of Spiru Haret University. Economic Series, 21*(1), 109-129, doi: https://doi.org/10.26458/2115

**Abstract**

*The objective of this study is to investigate the influence of an educationally diverse board on sustainability reporting of listed consumer goods in Nigeria*

Annals of Spiru Haret University.
Economic Series
Since 2000
ISSN:2393-1795 ISSN-L:2068-6900
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*for the period 2014-2019. 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. Board members' education level and background were used to proxy education diversity in the boardroom. We employed descriptive and inferential statistics to summarize the data and to draw an inference on the population studied. Results from the panel least squares regression revealed that board educational background diversity positively and significantly affects the sustainability reporting of consumer goods firms in Nigeria. However, we found no evidence on the nexus between diversity in the level of education of board members and sustainability reporting. The study concluded that board education diversity influences sustainability reporting in Nigeria. Consumer goods firms should frequently conduct workshops and symposiums on environmental and social reporting issues for their board members and employ directors from a diverse educational background into the board.*

***Keywords:*** *education level diversity; education background diversity; sustainability reporting; global reporting initiative, consumer goods firms.*

**JEL Classification:** M10, M14, M41, M48

## 1. *Introduction*

Sustainability Reporting (SR) is a trending issue in accounting and management sciences literature. It is a process wherein companies disclose information on the economic, environmental, and social impact on the society and environment as a result of their daily business activities. [Global Reporting Initiative (GRI), 2019] The report emphasizes the need for firms and business organizations across the globe to be socially and environmentally responsible. In terms of how firms and businesses respond to human rights protection, fair treatment of staff or workers, and a significant reduction of environmental hazards was a result of their daily activities.

The recognition of sustainability reporting by stakeholders of firms is due to businesses and firms' neglect of social and environmental responsibility. This is evident in the cases of British Petroleum (BP) oil spillage in the Gulf of Mexico, Chernobyl nuclear power plant explosion in Russia, and Lonmin Markana Mining firm's maltreatment of its workers in South Africa and a host of others. [Ismail & Latiff, 2019; Castro & Diaz, 2015] The consequence of the firms' neglect of social and environmental responsibilities resulted in a huge financial and reputational damage. As seen in the case of British Petroleum (BP), who were charged for health and safety issues due to the oil spillage experienced at the Gulf of Mexico [British Petroleum, 2015], causing damage to the marine ecosystem, that also caused loss of livelihood and hunger for the residents. In consequence, it triggered devaluation of the firm's share price since substantial legal cost was imposed on the company by the authorities for a breach of the health and safety regulations. [Cruden, 2016; John & Cruden, 2016]

Another scenario is the case of Lonmin Marikana (a mining company in South Africa) where human rights violation and unfair treatment of workers often played as a general norm. [Ismail & Latiff, 2019] For instance, workers employed by the said company at their mining site were always in poor condition due to neglect and unpaid salaries even though the firm made an enormous profit. [Baron, 2013] This spell negative doom in two-folds for the company. First, it led to a halt of their essential business production activities (mining), and secondly, it damaged their reputation. [Chibber, 2012; Orji, Ogbuabor & Anthony-Orji, 2018]

These scenarios among several others sparked the interest of Socially Responsible Investors (SRI), who began mounting pressure on firms to start disclosing information on social and environmental performance alongside their conventional financial performance. However, for firms and businesses to align with this strategy and philosophy, corporate governance reform is deemed highly crucial in terms of a diverse board. [Ismail & Latiff, 2019] Likewise, arguments imply that a diverse board *will* broaden the board members' understanding and knowledge of complexities in the society and environment compared to a homogenous board. [Carter, Simkims & Simpson, 2003; Ujunwa, Okoyeuzu & Nwakoby, 2012] It is also believed that it will assist in promoting *the functional ability of the board in solving complex problems, strategic decision-making, and the monitoring of management.* [Forbes & Miliken, 1991] Notably, researchers document that an educationally diverse board has a constructive influence on firm sustainability performance and disclosure. [Umukoro *et al.*, 2019]

Shreds of evidence have established the link between board demographic diversity and sustainability reporting [see Anazonwu, Egbunike, & Gunardi, 2018; Berger, 2019; Fuente, Garcia-Sanchez & Lozan, 2017; Zaid *et al.*, 2020; Adeniyi & Fadipe, 2018; Awodiran, 2019; Iyafekhe, Aifuwa, & Odu, 2020), but some authors document contrary findings. Musa, Gold, and Aifuwa (2020) examined the influence

Annals of Spiru Haret University.
Economic Series
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ISSN:2393-1795 ISSN-L:2068-6900

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of board member educational level on sustainability reporting of listed industrial goods firms in Nigeria but failed to provide supporting evidence on the relation between board members' education level and sustainability reporting. Similarly, Iyafehke, Imagbe, and Odu (2020) examined the influence of an educationally diverse board on sustainability reporting of listed deposit money banks in Nigeria and equally found that board members education level background has no significant impact on sustainability reporting. Their findings are suggestive of an existence of a dearth of literature on the influence of an educationally diverse board and sustainability reporting. Therefore, the decision to examine this issue in the case of consumer goods companies in Nigeria, because, to the knowledge of the researchers, a study focusing on this sector is almost non-existent. Besides, the above-noted works of literature failed to further carry out a robustness test on the estimation of their results. Against this backdrop, our study aims to fill the void in the literature on the influence of an educationally diverse board on sustainability reporting for the consumer goods firms in Nigeria, after we controlled corporate administration and firm-level qualities.

The remaining part of our research paper is organized as follows: Section two focuses on the literature review and hypotheses development and the theoretical framework. Section three addresses the research methodology with an emphasis on the research design, data collection techniques, and model specification. Section four presents the data analysis, interpretation, and discussion of findings, and finally, section five concludes the study.

## 2. *Literature Review and Hypotheses Development*

### 2.1. **Sustainability Reporting (SR)**

Musa *et al*. (2020) defined sustainability reporting (SR) as the process of disclosing organizational information concerning its daily economic, social, and environmental activities and its effects on the society and stakeholders where it operates. Hanh, Preuss, Pinkse and Figgs (2014) defined SR as a set of firms' activities that reveals the inclusion of social and environmental concerns in the business operations and interaction with stakeholders. SR is the documentation of a firm's economic, social and environmental impacts on its performance to inform stakeholders at a specified time. [Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019] Baker, Ghazali, and Ahmad (2019) defined SR as the process of simultaneously addressing interlinked aspects of the economic, environmental, and social well-being of an organization. Perusing the above definitions, we can conclude that SR encompasses three dimensions – economic, environmental, and social aspect of reporting, thus a multidisciplinary approach.

2.2. **Board Members' Education Diversity**

According to Dedunu and Anuradha (2020) and Musa *et al*. (2020), board education diversity (BED) is a sub-subset of board diversity that significantly affects the firm's strategic decision. It could be classified as education level, education background, and professional membership diversity of board members. [Aifuwa *et al.*, 2020] It is a cognitive aspect of the directors on the board of an organization.

A heated debate with conflicting opinions has been on whether BED affects firm performance. For instance, some researchers such as Hoffman (1959), Hoffman, Harburg, & Maier (1961), Hoffman & Maier (1962), Willems & Clark (1971) provided supportive evidence of a positive association. The authors argued that cognitively diverse groups tend to be more beneficial in creative and innovative tasks rather than the normal routine tasks. More recently, the studies of Umukoro *et al.* (2019) and Iyafekhe *et al*. (2020) documented that a highly-diversified board in terms of the board educational level showed a constructive influence on firm sustainability performance and disclosure.

Contrarily, Daft and Lengel (1986) and Glick, Miller and Huber (1993) found that BED negatively affects firm performance specifically on the team's ability to coordinate. They opined that should board members' perceptions differ significantly, it could spark friction and incompatibility of ideas in the team or board. Also, Dahlin *et al.* (2005); Knight, Weingart and Hinds (1999); and Weber and Camerer (2003) posit that diversity in the education of board members would make the coordination and accomplishment of the task to be ineffective and less efficient if members expectation and beliefs are incongruent. To provide an empirical basis to these arguments, our study examined the impact of board members' education level and background diversity on sustainability reporting.

2.2.1. *Board Members Education Level Diversity and Sustainability Reporting*

Education level diversity (ELD) in the boardroom shows the depth of directors' experience and competence in carrying out the board activities. Musa *et al.* (2020) asserts that ELD in the boardroom is evidence of the directors possessing a lower and higher educational qualification. The ELD of board members is an indication that they possess undergraduate and postgraduate degree qualifications. [Iyafekhe, *et al.*, 2020] Meanwhile, Aifuwa *et al.* (2020) reiterated the importance of board members with diverse educational qualifications on improving the quality of an organization's workforce. In line with the Resource-Base View, Barney (1991) noted that ELD plays an important role in improving the firm's strategic decision. As per Hsu, Chen, and Chen (2013) and Musa *et al.* (2020), diversity in the education level of board members would contribute to improve and enhance their ability and proficiencies in processing information and recognizing new business opportunities. Similarly, Nielsen (2010) opined that firms would compete better in the international market when board members' education levels are diverse.

On a contrary, Ngo, Pham and Luu (2019) believed that no degree could totally and systematically substitute for the board members' skills and experience or background knowledge. In their opinion, educational degrees are merely a part of a board's knowledge and expertise. Aifuwa *et al.* (2020) further argued that ELD would not lead to improved market performance for the firms. While Ibadin (2021) posits that a wide gap exists between the education level of board members acquired locally and those from foreign institutions. Accordingly, a postgraduate degree acquired over the shores of Africa is far detailed and better than the ones acquired in the African locality.

Furthermore, from an empirical front, scanty works of literature have been conducted on the nexus between board members' education level diversity and sustainability reporting. For example, using a panel least square, Iyafekhe *et al.* (2020) examined the influence of educationally diverse boards on sustainability reporting of listed deposit money banks in Nigeria over the period 2014 to 2018. They however found no evidence proving the influence. A similar study was conducted by Musa *et al.* (2020) on the influence of a diverse board on the extent of sustainability reporting of the industrial goods firms listed on the Nigerian Stock Exchange for the period between 2014-2018. Employing the panel least squares for their investigation, they equally found no evidence of the supposed association. Similar studies that corroborate the arguments include Khan, Khan and Saeed (2019a) and Khan, Khan and Senturk (2019b) who found no evidence on the nexus between board education level diversity and the quality of corporate social responsibility.

Despite the opposing shreds of evidence, Umukoro *et al.* (2019) who examined the association between board expertise and sustainability reporting for the listed banks in Nigeria found a significant and positive association between board member education level and sustainability reporting. The conflicting arguments are thus indicative of a linkage between ELD and sustainability reporting. Therefore, we hypothesize that:

*$Ho_1$: Board members' education level diversity has no significant impact on sustainability reporting.*

2.2.2. **Board Members Education Background Diversity and Sustainability Reporting**

Generally, it is believed that education background diversity (EBD) is a major impetus in understanding and achieving sustainable performance. [Iyakekhe *et al.* 2020] A board composed of varying members with a diverse educational background will be equipped with a wealth of intellects, cognitive abilities, and attitudes that can contribute to improving firm performance. [Aifuwa *et al*., 2020] Another suggestion is that diversity in educational backgrounds like business, management, sciences, art, law, and engineering or a host of other disciplines [Khan *et al.*, 2019a] can contribute to encouraging sustainability disclosure and subsequently its performance. [Iyafekhe *et al.*, 2020] Similarly, Clark and Maggitti (2012) believe EBD is a valuable resource and a catalyst for strategic decision-making on corporate social responsibility disclosure. While Krishnan, Wen, and Zhao (2011) and Vo and Phan (2013) reiterated that board effectiveness increases when the background education of board members is diverse such as having discipline in areas of accounting, engineering, humanities, finance, economics, law, and other related fields.

Despite these suggestions, empirical evidence to prove the nexus between education background diversity and sustainability disclosure is still scanty. Iyafekhe *et al.* (2020) examined the influence of educationally diverse boards on sustainability reporting of listed deposit money banks in Nigeria between 2014 and 2018. The author employed a panel least squares to empirically ascertain the influence of board education background diversity on sustainability reporting and found a positive and significant association. Other researchers proved a mixed relationship between board education background diversity and corporate social responsibility reporting. For example, in Pakistan, Khan *et al.* (2019b) found no evidence on the nexus, while Khan *et al.* (2019a) found a negative association between education background diversity and corporate social responsibility. Arguments from the identified studies are suggestive of inconsistent findings on the nexus between board members' education background diversity and sustainability reporting. Hence, our hypothesis is that:

*$Ho_2$: Board members' education background diversity has no significant impact on sustainability reporting.*

### 2.3. *Theoretical Framework*

We hinged our study on the Upper Echelon theory proposed by Hambrick and Mason (1984) and the Stakeholders theory of Freeman (1984) to explain the influence of an educationally diverse board on sustainability reporting for the consumer goods firms listed on the Nigerian Stock Exchange (NSE). The Upper Echelon theory explains the correlation between the organizational outcome and managerial background attribute. According to Hambrick and Mason (1984), organizational performance reflects the values and cognitive bases of powerful actors in the organization. Relating this theoretical stance to our study, powerful organizational actors such as the board of directors and their managerial attributes such as cognitive diversity, educational level, and background, affects the firm's performance. The reason is the board of directors, due to their cognitive abilities they strive to meet stakeholders' expectations.

Stakeholder theory addresses the expectations of specific stakeholder groups in the society and considers the effect of their expectation on information disclosure. [Freeman, 1984] Despite that sustainability has always been in the heart of stakeholders, it has been consistently ignored in the past. [Aifuwa *et al.*, 2019] But recently, stakeholders had begun demanding from firms to report on their environmental and social aspects. [Aifuwa, 2020] For these expectations to be successfully met, owners of businesses must use the services of an educationally diverse board to meet the needs of stakeholders in reporting on the economic, social, and environmental concerns as they affect the society they operate. Hence, our study propositions that an educationally diverse board will serve as a contributory to the extent of sustainability reporting.

## 3. *Methodology*

### 3.1. **Research Design**

Inclined on the positivist research philosophy and the deductive research approach, we adopted the multi-method quantitative research design for our study due to the following reasons. First, the study is designed to examine the

Annals of Spiru Haret University.
Economic Series
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ISSN:2393-1795 ISSN-L:2068-6900

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relationship(s) between variables measured numerically and analyzed using a range of statistical and graphical techniques; Secondly, our study employed more than one quantitative data collection technique and corresponding analytical procedure, i.e. content analysis of sustainability reports and the annual reports. [Saunders, Lewis & Thornhill, 2016] Furthermore, we employed the classical experimental strategy to determine the effect of the independent variables on the dependent variables [Saunders *et al.,* 2016] Besides, we used corporate administration and firm-level qualities to control for the influence of board members' education diversity on sustainability reporting of listed consumer goods firms in Nigeria.

3.2. **Data Collection Method and Analysis**

The study population comprised the consumer goods firms listed on the Nigerian Stock Exchange as of December 2019. We chose the firms because their activities revolve around the three dimensions of sustainability reporting earlier noted for which prior studies have not been investigated recently. This led us to a sample of nineteen (19) companies having a sound basis for generalization of the manufacturing industry. Secondary data sourced from annual reports of the firms' span between 2014 and 2019 with descriptive and inferential statistics being employed for the data analysis. The Panel least squares were equally utilized to test the research hypotheses since the study data had properties of time-series and cross-sectional data. Furthermore, we employed logistic analysis for the robustness check.

3.3. **Model Specification**

Our study adopted the model of Iyafekhe *et al.* (2020) in examining the impact of board education diversity on sustainability reporting of listed consumer goods firms in Nigeria. The author specified their model as:

$$SBR = f(BEL; BEB; Control\ variables) \quad \text{......................................(i)}$$

In econometric form:

$$SBR_{it} = \beta_0 + \beta_1 BEL_{it} + \beta_2 BEB_{it} + \beta_3 BSZE_{it} + \beta_4 BIND_{it} + \beta_5 BMT_{it} + \beta_6 FSZE_{it} + \beta_7 PROF_{it} + \beta_8 AUDC_{it} + \varepsilon_{it} \quad \text{..........................................................(ii)}$$

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ISSN:2393-1795 ISSN-L:2068-6900

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where: SBR = sustainability reporting; $\beta_0$ = constant; BEL = board member education level; BEB = board member educational background; BSZE = board size; BIND = board independence; BMT = board meeting/diligence; FSZE = firm size; PROF = profitability; AUDC = audit credibility; $\beta_{1,}$ $\beta_2$ $\beta_3$ = coefficient of explanatory variables; ε = standard error; i = cross sectional (companies); t = time series. A priori expectations for with extant literature noted to be $\beta_{1,}$ $\beta_{2\,,}$ > 0

3.4. **Development of Sustainability Disclosure Index (SDI)**

In developing the sustainability reporting index, we used the G4 sector-specific disclosures of the Global Reporting Initiative (GRI). The rationale for this is that the general framework focusing on the economic, environmental, and social indicators addresses specific industry needs. [Ozordi *et al.*, 2020; GRI, 2013] Therefore, based on the content analysis, we developed an unweighted sustainability disclosure index for the economic, environmental, and social performance of the sampled firms. For instance, where the sampled firm fully discloses economic, environmental, and social information, they will be scored 1, otherwise 0 for partial or non-disclosure.

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

where: SBR = 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 of 158.

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ISSN:2393-1795 ISSN-L:2068-6900

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**Table 1. Measure of Variables**

| **Variable** | **Type** | **Measurement** | **Supporting Scholars** |
|---|---|---|---|
| Sustainability Reporting (SBR) | Dependent Variable | GRI G4 framework on economic, social, and environmental sustainability disclosure as stated above. | GRI (2013); Anazonwu *et al.* (2018) |
| Board Member Education Level (BEL) | Independent Variable | Total numbers of the board members with Postgraduate degree divided by the total number of directors. | *Ngo et al.* (2019); Vo and Phan (2013); Aifuwa *et al.* (2020) |
| Board Member Educational Background (BEB) | Independent Variable | Blau index for board educational background diversity comprising six categories: Human Resource (HR) and Accountancy, Banking and Finance, Economics, Engineering, Law, and others. | Aifuwa *et al.* (2020); Blau (1977) |
| Board Size (BSZE) | Control Variable | The total number of directors sitting on the board. | Adeniyi & Fadipe (2018) |
| Board Independence (BIND) | Control Variable | The number of non-executive directors on the board divided by the total number of directors sitting on the board. | Aifuwa & Embele (2019); Saidu & Aifuwa (2020) |
| Board Meeting (BMT) | Control Variable | Total number of meetings held by the corporate board. | Iyafekhe *et al.* (2020) |
| Firm Size (FSZE) | Control Variable | Natural logarithm of total assets. | Aifuwa & Embele (2019); Saidu & Aifuwa (2020) |
| Profitability (PROF) | Control Variable | Measured by return on assets (ROA), i.e. Profit after tax divided by Total assets. | Aifuwa, Saidu & Gold (2020) |
| Audit Credibility (AUDC) | Control Variable | Dichotomous variable, i.e. 1 if a firm is audited by the BIG4 in a particular year; otherwise, 0. | Saidu & Aifuwa (2020) |

Source: Authors' Compilation, 2020

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

In this section, we described the data used in the variables of the study and also inferences were drawn on them.

**Table 2. Descriptive Statistics**

| Variables | Mean | Minimum | Maximum | Std. Dev |
|---|---|---|---|---|
| SNR | 0.349137 | 0.000000 | 0.727273 | 0.180211 |
| GRI | 0.221053 | 0.000000 | 1.000000 | 0.417157 |
| BEL | 0.485189 | 0.000000 | 1.540000 | 0.324351 |
| BEB | 0.698438 | 0.34588 | 0.80000 | 0.043781 |
| BSZE | 10.05263 | 4.000000 | 15.00000 | 2.803373 |
| BIND | 0.657716 | 0.400000 | 0.920000 | 0.119654 |
| BMEET | 3.168421 | 1.000000 | 6.000000 | 1.208592 |
| FSZE | 7.701260 | 6.240489 | 8.916817 | 0.653474 |
| PROF | 0.110437 | 0.160000 | 0.380000 | 0.093876 |
| AUDC | 0.610526 | 0.000000 | 1.000000 | 0.490218 |

Source: Authors' Computation, 2020

**Table 3. Correlation Matrix**

| | SNR | GRI | BEL | BEB | BIND | BSZE | BMEET | FSZE | PROF | AUDC |
|---|---|---|---|---|---|---|---|---|---|---|
| **SNR** | 1 | | | | | | | | | |
| **GRI** | 0.0635 | 1 | | | | | | | | |
| **BEL** | 0.0313 | 0.0004 | 1 | | | | | | | |
| **BEB** | 0.1730 | -0.0113 | 0.5518 | 1 | | | | | | |
| **BIND** | 0.3523 | 0.0858 | -0.0833 | -0.0527 | 1 | | | | | |
| **BSZE** | 0.1990 | 0.0536 | 0.1490 | 0.2362 | 0.2127 | 1 | | | | |
| **BMEET** | -0.0985 | -0.0113 | 0.0826 | 0.0720 | -0.0941 | 0.0570 | 1 | | | |
| **FSZE** | 0.0224 | 0.0977 | 0.3047 | 0.6608 | -0.2170 | 0.2478 | -0.0608 | 1 | | |
| **PROF** | 0.0912 | 0.1156 | 0.40093 | 0.3508 | -0.0452 | -0.1624 | 0.2385 | 0.2403 | 1 | |
| **AUDC** | 0.0909 | -0.0947 | 0.5258 | 0.2359 | -0.0566 | 0.1544 | 0.0221 | 0.3221 | 0.1661 | 1 |

Source: Authors' Computation, 2021

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Table 2 presents the summary of statistics for the sampled listed consumer goods firms over the study period. The mean proportion of a company's sustainability disclosures was 34.9% while the company with the highest disclosure had 72.7% of the aggregate of sustainability disclosures. The mean value of the proportion of directors' with postgraduate education and directors with diverse educational backgrounds stood at about 49% and 70% respectively. The means of the board size, the proportion of non-executive directors, and board meetings were 10 board members, 66% independent directors, and 3 times attendance at board meetings respectively. While the mean of firm size was ₦7,701,260,000, profitability showed 11% growth in profit level, and for audit credibility, about 61% of the firms were found to have employed the services of the big four audit firms. Finally, all the variables exhibited considerable clustering around their means.

The linearity of variables (correlation matrix) as presented in Table 3 showed that the variables exhibited both positive and negative relationships. For example board meeting and sustainability reporting (-0.0985); and education background diversity in the boardroom and sustainability reporting (0.1730). Also, 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**

We present the result of the Hausman test and the Panel Least Squares Regression in this section. Hypotheses of the study were tested at 5% level of significance (that is, if p-value < 0.05 reject **Ho**, else accept otherwise)

**Table 4: Hausman Test of Effect Specification**

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 6.594599 | 9 | 0.6792 |

Source: Authors' computation, 2020

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The table above revealed the result of the Hausman test, HM (9) = 6.5946, p = 0.6792. Leaning on this result, we ignored the fixed effect model at 5%, therefore accepted the random effect model of the panel least squares the regression.

**Table 5: Panel Least Squares (Random Effects Specification)**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.289997 | 0.370092 | 0.783582 | 0.4361 |
| BEL | 0.040303 | 0.233841 | 0.172354 | 0.8637 |
| BEB | 0.303446 | 0.099628 | 3.045795 | 0.0033 |
| BIND | 0.350175 | 0.176069 | 1.988850 | 0.0509 |
| BMEET | 0.017431 | 0.016966 | 1.027366 | 0.3080 |
| BSZE | 0.012918 | 0.007773 | 1.661833 | 0.1013 |
| FSZE | -0.071277 | 0.047028 | -1.515615 | 0.1344 |
| PROF | 0.293045 | 0.280028 | 1.046487 | 0.2992 |
| AUDC | 0.080752 | 0.047250 | 1.709040 | 0.0921 |

Effects Specification

Period fixed (dummy variables)

| | | | |
|---|---|---|---|
| Root MSE | 0.141915 | R-squared | 0.350863 |
| Mean dependent var | 0.338622 | Adjusted R-squared | 0.223003 |
| S.D. dependent var | 0.177253 | S.E. of regression | 0.156244 |
| Akaike info criterion | -0.717172 | Sum squared resid | 1.611197 |
| Schwarz criterion | -0.300317 | Log-likelihood | 42.68688 |
| Hannan-Quinn criteria. | -0.550043 | F-statistic | 12.74412 |
| Durbin-Watson stat | 1.066556 | Prob(F-statistic) | 0.003644 |

Source: Authors' computation, 2021

The results of the panel least squares (random effect) regression in table 5 above reveal that board members' education diversity has an influence on sustainability reporting of listed consumer goods firms in Nigeria after controlling for corporate governance performance and firm-level qualities, F-statistic = 12.744, p = 0.0003.

Also, the Adjusted R-Square for the model stood at 0.223 which implies that about 22% of the systematic variation in the dependent variable is caused by the explanatory variable used in the study. While about 78% of the variations can be linked to other variables not included in the model but adequately captured by the standard error of the regression, SE = 0.1562.

For the first hypothesis, we found board members' education level diversity has no significant influence on sustainability reporting, $\beta 1 = 0.0403$; SE = 0.2338, $p > 0.05$. Hence, we failed to reject the null hypothesis stated. Our study results failed to support the argument of neither of the two theories (the Upper Echelon nor the stakeholder theory), that board members with a diverse educational qualification will promote sustainability reporting. Notwithstanding, findings support the argument of Ngo *et al.* (2019) that no degree could completely and comprehensively substitute for the board members' skills and experience or background knowledge. Therefore, our findings are consistent with the studies of Iyafekhe *et al.* (2020) and Musa *et al.* (2020), which found no evidence of the nexus. Similar studies also corroborate this finding. For example, Khan *et al.* (2019a) and Khan *et al.* (2019b) found no evidence on the nexus between board education level diversity and the quality of corporate social responsibility. Our result support the argument of Dahlin *et al.* (2005); Knight *et al.* (1999); and Weber and Camerer (2003) that diversity in the education of board members would make the coordination and accomplishment of the task to be ineffective and less efficient when members expectation and beliefs are incongruent. Our findings are in dissonance with the work of Umukoro *et al.* (2019) which submitted a positive relationship between directors' education level and sustainability reporting of listed deposit money banks in Nigeria.

Secondly, we found the board members' education background diversity had a positive and significant impact on sustainability reporting, $\beta 2 = 0.3034$; SE = 0.0996, $p < 0.05$. Hence, we reject the null hypothesis stated in the study since the result rather supports our theoretical framework of the Upper Echelon theory and stakeholder theory that a board with directors from diverse educational backgrounds will promote sustainability reporting, suggesting a board composed of directors with a diverse educational background ranging from the fields of sciences (such as Engineering, Environmental Science, Geology, Zoology, Botany), management field (such as Accounting, Banking and Finance, Economics, Management, Insurance, Taxation, Business Administration) and humanities (Law, Social works, History, Languages/Linguistics) would improve and increase the firm's sustainability

Annals of Spiru Haret University. Economic Series
Since 2000
ISSN:2393-1795 ISSN-L:2068-6900

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reporting and performance as well. Our findings are therefore in tandem with the work of Iyafekhe *et al.* (2020), but in dissonance with the work of Khan *et al.* (2019a), which documented a negative association between board education background diversity and quality of corporate social responsibility disclosure in Pakistan. Also, Khan *et al.* (2018b) found no evidence on the relationship between board education background diversity and quality of corporate social responsibility disclosure in Pakistan.

**Table 6. Logistic Regression**

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| C | -7.419397 | 4.320877 | -1.717104 | 0.0860 |
| BEL | 1.220730 | 1.068748 | 1.142206 | 0.2534 |
| BEB | 1.794299 | 0.854556 | 2.099685 | 0.0358 |
| BIND | 2.158359 | 1.866010 | 1.156670 | 0.2474 |
| BMEET | -0.161137 | 0.165880 | -0.971408 | 0.3313 |
| BSZE | 0.128552 | 0.084907 | 1.514022 | 0.1300 |
| FSZE | 0.671094 | 0.537999 | 1.247389 | 0.2123 |
| PROF | 3.918411 | 2.682709 | 1.460617 | 0.1441 |
| AUDC | -1.085270 | 0.539542 | -2.011467 | 0.0543 |

| | | | |
|---|---|---|---|
| McFadden R-squared | 0.074753 | Mean dependent var | 0.162500 |
| S.D. dependent var | 0.371236 | S.E. of regression | 0.351128 |
| Akaike info criterion | 0.957477 | Sum squared resid | 8.753646 |
| Schwarz criterion | 1.225455 | Log likelihood | -29.29907 |
| Hannan-Quinn criter. | 1.064917 | Deviance | 58.59815 |
| Restr. Deviance | 71.00677 | Restr. log likelihood | -35.50338 |
| LR statistic | 32.40862 | Avg. log likelihood | -0.366238 |
| Prob(LR statistic) | 0.00882 | | |
| Obs with Dep=0 | 67 | Total obs | 80 |
| Obs with Dep=1 | 13 | | |

Source: Authors' computation, 2020

### 4.2. Robustness Test

To find the robustness of the study, we further extend our regression model by classifying the sustainability reporting to high and low quality. We then allocate a dummy variable where 1 stand for any value greater than 0.5 signifying high-quality sustainability reporting and 0 stands for any value less than 0.5 representing low-quality sustainability reporting. Since the dependent variable is represented by the dummy variable, we then employ logistic analysis for the robustness check. From Table 6, these results confirm the robustness of the main test as the desired variables retain their result.

For both hypotheses tested, the results were the same. Education level diversity had no significant influence on sustainability reporting, $\beta 1$ = 1.220730; SE = 1.068748, $p > 0.05$, while education background diversity showed a positive impact on sustainability reporting, $\beta 1$ = 1.794299; SE = 1.068748, $p > 0.05$

## 5. Conclusion and Recommendations

The broad objective of this study was to investigate the influence of board members' education diversity on sustainability reporting for the listed consumer goods firms in Nigeria. Specifically, the study examined the influence of board members' education level and background diversity on sustainability reporting of listed consumer goods in Nigeria. Descriptive statistics and inferential statistics were used to summarize the data and inferences were drawn on the population studied. The result from the inferential statistics revealed board members' educational background diversity influence sustainability reporting. Based on the finding, the study concluded that board members' education diversity partially influences sustainability reporting for the consumer goods firms examined. We, therefore, recommend for the consumer goods firms to frequently conduct workshops and symposiums for their board members with a specific focus on the need to report environmental and social issues and also include among the board members directors having a diverse educational background.

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