# Impact of Board Quality on Sustainability Disclosure of Quoted Firms in Nigeria

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***ABSTRACT***

*This study empirically investigated the impact of board quality on sustainability disclosure of quoted firms in Nigeria. The study is vital as it portrays the extent to which board quality ensures organizational sustainability in Nigeria. In order to determine the relationship between board quality and sustainability disclosure, board quality was proxy using board independence, female directorship presence and board diligence while sustainability disclosure was proxy using Kinder Lydenberg Domini (KLD) social-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 STATA V.15. Ex Post Facto Design was adopted and data for the study were obtained from the published annual financial reports and accounts of the entire consumer goods and industrial goods firms quoted on Nigerian Exchange Group (NGX) spanning from 2016-2020. The findings of the study generally indicate that board independence, female directorship presence and board diligence have significant and positive impact on sustainability disclosures of quoted firms in Nigeria at 1-5% significant level respectively. Thus, the study concludes that board quality have significant impact on sustainability disclosures of firms in Nigeria. The study however suggests the need for firms' to increase the number of independent directors, female directors in the board and board of directors' level of expertness, expertise, intelligence and proficiency as it ensure sustainability among the quoted firms in Nigeria*

***Keyword:*** *Board Quality; Board Independence; Female Directorship Presence; Board Diligence, Sustainability Disclosure*

## 1.0 Introduction

Nowadays, a dynamic business environment features the emergence of increased knowledge economies and enhances both global competition and innovative business practices; these are now at the core of any competitive business advantage (Lawson & Samson, 2011). According to Garengo, Biazzo and Bititci (2015) in this modern age, businesses strive to satisfy their customers who are central to the organization and, nowadays, demand from organization quality products and services in a professional manner. Consequently, a proper governance mechanism has to be incorporated in order to ensure that the organization functions well with due consideration to the needs of its various stakeholders.

The major contribution of the board to corporate organizations includes; formulation of company's strategy, establishment of corporate monitoring mechanism ranging from CEO Share Ownership (CSO), Directors Remuneration (DR), Board Independence (BI), Female Directorship Presence (FDP) to Board Diligence (BD) and exercising a proper oversight function throughout the company's operations (Zinkin, 2010). Independent directors contribute their independent views and actively participate in board discussion and also represent shareholders on the company's board. The independent directors also ensure that their presence and performance are free from any influence of insiders or management. The company appoints independent directors to monitor the performance of executive directors and top managements. Therefore, they pursue the interest of shareholders by maximizing shareholders' value. One of the most significant findings that emerge from the apriori expectations so far is that there are various possible ways through which board quality (board diligence, board independence, CEO share ownership, female directorship & board remuneration) may influence firms' performance. The implication of this is the possibility that this debate on board quality is unlikely to end. However, there is no known study which had examined the influences of board quality on sustainability disclosure of quoted firms in Nigeria. Whilst this, the study opt to confirm the relationship between board quality on sustainability disclosure of quoted firms in Nigeria.

Most studies on board quality were limited to firms' performance. For instance; in the developed nations, attempts were made as follows, Heemalin and Wallace (2017); Firth (2016); Conyon (2015); Doucouliagos, Haman and Askary (2007); Chubbin and Hall (2012); Krishnan and Daewoo (2015); Francoeur, Labelle and Sinclair-Desgagne (2018); Coles, McWilliams and Sen (2017); Berger, Ofek and Yermack (2017); Westpal (2012); Harford (2012); Alzoubi and Selamat (2012) examined the association that existed between board quality (directors remuneration, board diligence, board independence, female directorship & CEO share ownership) and firm performance.

On the other hand, attempts were made in the developing nations as thus, Ilaboya and Obaretin (2015); Abdullah (2016); Brown (2016); Lau and Tong (2018); Darmadi (2010), Dezso and Ross (2012); Nwaobia, Kwarbai, and Ogundajo (2016) etc examined the relationship between board quality (directors remuneration, board diligence, board independence, female directorship & CEO share ownership) and firms performance.

None of the empirical literature as shown above in the developed and developing nations' related board quality to sustainability disclosure of quoted firms. And more importantly, there is no known study that had examined the Impact of board quality on sustainability disclosure of firms quoted under consumer goods and industrial goods sector of Nigerian Exchange Group (NGX) based on available literature. Against this backdrop, the present study seeks to examine the impact of board quality on sustainability disclosure of consumer goods and industrial goods sector of Nigerian Exchange Group.

To this effect, the present study adapted and modified the model of Shukeri, Shin and Shaari (2012) with reference to firms quoted under consumer and industrial goods sector in Nigeria. This is to capture the real effect of board quality (BI, FDP & BD) on sustainability disclosures among the quoted firms in Nigeria and also identify the board quality that has the highest level of influence on sustainability disclosure of those firms.

To achieve this purpose, the following hypotheses were formulated:

**$H_{01}$:** Board Independence has no significant impact on Sustainability Disclosure of Firms in Nigeria

**$H_{02}$:** Female Directorship Presence has no significant impact on Sustainability Disclosure of Firms in Nigeria

**$H_{03}$:** Board Diligence has no significant impact on Sustainability Disclosure of Firms in Nigeria

## 2.0 Review of Related Literature

### 2.1.1 Board Quality

In this modern age, businesses strive to satisfy their customers who are central to the organization and, nowadays, demand from organization quality products and services in a professional manner. Consequently, a proper governance mechanism has to be incorporated in order to ensure that the organization functions well with due consideration to the needs of its various stakeholders. According to Harford (2012), board quality ensures board's role in monitoring the organization's management. Board of directors plays a pivotal role in corporate governance and is appointed by the shareholders to govern the company. Therefore, board quality is viewed as a bestowed responsibility of board of directors in governing the organization and has corporate governance to ensure that those, who invest in the company, are able to obtain a return on their investments. In this respect, the board has the legal mandate to protect the right of investors as well as their shareholders.

For the purpose of this research, the present study developed a model fit on board quality using the following Indexes; Board Independence (BI), Female Directorship Presence (FDP) and Board Diligence (BD).

#### 2.1.1.1 Board Independence

Literature in corporate governance and especially those undertaken through experimental research, reflected on the independence of the boards (Bhagat & Black, 2012). According to the study, when a board was independent, it was able to monitor effectively that company's senior executives and as a result this hindered them from pursing activities which were regarded as self-interest. According to Westpal (2012), directors, who sit on independent boards, do not face any obstacles such as pursuance of personal interests in the company. An independent board is able to perform its role effectively and satisfactorily. The study notes that when the board consists of insiders, it brings about the best result from the board as opposed to those boards which consist of outsiders.

#### 2.1.1.2 Female Directorship Presence

Women representation in business management has been the focus of public debates from researchers, policy makers and investors in the recent decade. The 21st century workforce is typified by more women and employees with diverse ethnic backgrounds, alternative lifestyles, and intergenerational differences than in the past. According to Adams and Ferreira (2019), Female directors are said to possess higher levels of awareness and demonstrate this type of behavior more easily. The study notes that female directorship presence is an active participation of the female representative in the organizations board.

#### 2.1.1.3 Board Diligence

The study of Foo and Zain (2010) noted that, since the board was mandated to supervise the organization, they are required to have the knowledge which would allow them to carry out their roles perfectly. Board Diligence presupposes that those directors, who have sat on the board for a long time, are less likely to be engaged in accounting malpractices. This means that all the board's members are able to contribute positively to the decision making process (DeZoort, Hermanson, Archambeault & Reed, 2012).

### 2.1.2 Organizational Sustainability (OS)

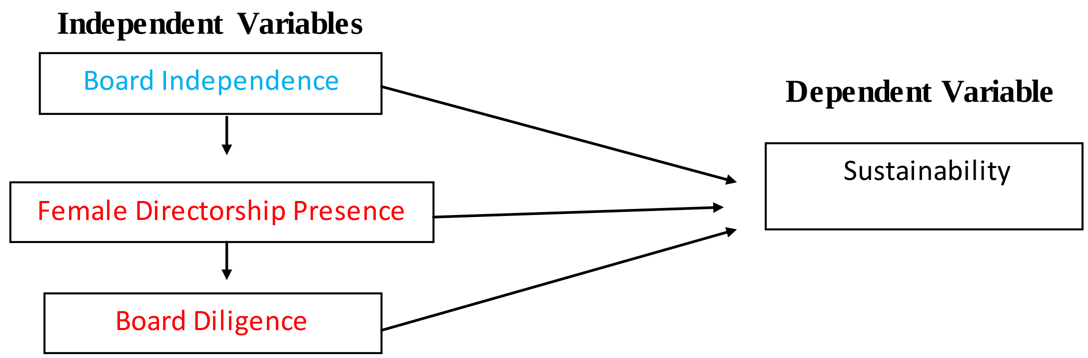
Omaliko, Okeke and Obiora (2021) assert that OS is having the leadership, global insights, talent and change in strategies necessary to rise to the unique challenges facing the organizations. From the perspective of an organization, sustainability is the capability of an organization to transparently manage its responsibilities for environmental stewardship, social well-being, and economic shared value over the long term while being held accountable by its stakeholders (Pojasek, 2017).

Omaliko and Onyeogubalu (2021) noted that for organizations to be sustainable, the following shall be conceded:

- Be accountable for its impacts on the environment, society, and the economy
- Be transparent in its decisions and activities that impact its responsibilities
- Behave ethically
- Respect, consider, and respond to the interests of its stakeholders
- Accept that respect for the rule of law is mandatory

Organizational sustainability as a concept requires that organizations should map out and give effect to specific programmes in accordance with a well-defined social (Omaliko, Nweze & Nwadialor, 2020).

**Figure 1: The Diagram of Conceptual Framework**




**Source:** Researcher's Concept (2022)

## 2.2 Theoretical Framework

The theoretical framework which gives the meaning of a word in terms of the theory on board quality and sustainability established in this study is Agency Theory (AT). It assumes both knowledge and acceptance of this theory that this research work depends upon.

### 2.2.1 Agency Theory

Agency theory was propounded by Jensen and Meckling in the year 1976. Agency theory has been widely used by empirical researchers to explain the relationship between corporate monitoring mechanism i.e remuneration of agent, independence of agent, diligence of agent, share ownership of agent etc (director) and the benefit of principal (shareholders) in terms of firm performance. According to Jensen and Murphy (1990), principal-agent theory can be used to justify the positive correlation between board quality and firm's sustainability.

The linkage between board quality and sustainability disclosure should provide an attractive incentive for firm to succeed since a priori expectations found that board quality ensures corporate performance. According to Desai and Dharmapala (2018), board quality integrates more aspects of the agency conflicts between managers and investors.

According to Jensen and Meckling (1976), managers who are agents of the principals (shareholders), are employed to work for maximizing the returns to the shareholders. Managers of organizations are agents to the shareholders. Therefore, in order to maximize shareholders' wealth they would need to reduce their operating costs. One of such ways to reduce operating costs is to have quality board members that will engage in tax sheltering to reduce their tax liability. Similarly, agency theory was found to establish a relationship between board quality and firms performance based on available literature. Hence, the study is anchored on this theory.

### 2.3 Empirical Review

#### 2.3.1 Board Independence

Bhagat and Black (2012), on the non-correlation between board independence and long term firm performance used coefficient of correlation and noted that greater board independence is not correlated with various measures of long-term performance in Germany.

Westpal (2012) in his study referred as Second Thoughts on Board Independence: Why Do So Many Demand Board Independence When It Does So Little Good?" used OLS model and concluded, that after nearly two decades of research by the corporate governance researchers to study the effect of outside directors on the performance find no convincing evidence that board independence enhances board effectiveness.

In regards to independent directors' remuneration, a direct relationship is expected between the pay and the corporate performance since the independent directors are also an instrument of the shareholders. This view supported by a number of studies, using different performance measures regression model, which found significant, positive relationship between pay and performance (Harford, 2012).

This is similar to the results found on the association of the board independence and the earning management in Malaysia (Johari, Saleh, Jaafar & Hassan, 2008). Using regression model, the findings showed that the board's independence was not associated with the earning management even though the proportion of independent directors on the board was one-third of the total majority.

Cybinski and Windsor (2013), the independence remuneration committee may align CEO remuneration with firm performance in larger Australian Stock Exchange (ASX) as compared to smaller and medium ASX300 firms. It showed that independent directors were having a crucial function of the monitoring remuneration process of CEOs and executive directors for larger public companies, and later the remuneration paid to them commensurate with their performance.

Abdul and Mohamed (2016) concluded that Malaysian companies had insignificant relationship between other corporate governance mechanisms such as the independence of the board and the audit committee with the earnings management. It relates to the ineffectiveness of the board directors in their monitoring roles due to the dominant role of the manager and the executive directors in board matters.

In Hong Kong firms, study on board committee independence and firm performance in family firm showed no association. However, there is a positive relationship between board independence and firm performance in nonfamily firms (Leung, Richardson and Jaggi, 2014). It is due to the minority of independent directors in family firms as compared to non-family firms. The recommendation by regulators on composition of independent directors on board is voluntary basis. If the company could not comply, they may explain for the non-compliance. From the results, the independent directors' views would help companies to improve their corporate performance.

In contrast, a research was carried out by Abdullahi (2014). The study measured the relationship between the percentages of independent directors at 412 Companies with the firm's performance. It showed positive and significant correlation with returns on assets, profit margin and earnings per share. From that finding, it showed that the board's independence might contribute to the effective performance of a firm. It showed evidences that the high number of independent directors on the board influenced the company's financial performance in Malaysia.

A study of 279 Malaysian firms listed on the KLSE and 271 Singapore firms listed on the Singapore Stock exchange for the year 2000 showed the proportion of independent directors on the Audit Committee is significant and negatively related to abnormal accruals using regression model (Bradbury, Mak and Tan, 2016). This means that the higher the number of independent directors on the audit committee, the lower the abnormal accruals which are associated with the roles of the independent directors when present in audit committee.

**2.3.2 Female Directorship Presence**

Krishnan and Daewoo (2015) in their study on A few good women on top management teams in France noted using OLS that the proportion of female directors has positively significant effect on firm performance. This research was conducted on 679 Fortune 1,000 companies registered since 1998 and leads to large implications for future career women.

Francoeur, Labelle and Sinclair-Desgagne (2018) in their study on gender diversity in corporate governance and top management in Canada and found empirical evidence using regression model that having a higher proportion of women does generate positive and significant abnormal returns.

Ibarra and Obodaru (2009) in their study on women and the vision thing in Harvard reported that women's effectiveness in top management scored higher than men's did. This research was conducted using regression model and the study concludes that women involvement improves performance

Miller and Triana (2009) on Demographic Diversity in the Boardroom: Mediators of the Board Diversity ± Firm Performance Relationship in Germany mentioned that women will increase firm performance. The study explored the use of OLS tool and found significant positive relation between firms performance and women involvement.

Post and Byron (2015) on women on board and firm financial performance combined 140 studies that examined empirical evidence that a female director is positively significant for firm's performance in Bangladesh. The study used regression model and advocated for women's involvement in boards composition.

Dezso and Ross (2012) on does female representation in top management improve firms performance mentioned that female representation in top management will enrich the information and social diversity of a board, which can bring benefits to management, enrich the manager's behaviour and motivate the women in middle management. Hence, female representation remains an important indicator of the success of firms.

According to Darmadi (2010), the proportion of female directors is negatively significant to firm performance in Indonesia. This research was conducted over 1 year period on board diversity and firms performance, using as its sample 169 companies listed on the Indonesian Stock Exchange (IDX). The research focused on examining whether women, foreign nationals and younger people in the boardroom influenced the firm's performance, but was unable to prove any significant impact.

Lam, McGuiness and Vieito (2013) in their research on CEO Gender executive compensation and firm performance into the China Stock Market Financial Statements and the Shenzhen Stock Exchange, found female directors are negatively significant to firm performance.

Garcia-Mec, Garcia-Sanches and Martinez-Ferrero (2015) on board diversity and its effect on bank performance Kenya suggest the presence of women on the boards of banks improves their governance, which causes the bank to be more profitable. The findings suggest women directors are not a substitute for the traditional corporate directors with identical abilities, but rather that these qualified women directors have unique characteristics that create additional value for the banks.

### 2.3.3 Board Diligence

DeZoort, Hermanson, Archambeault and Reed (2012) in their study on Audit committee effectiveness: a synthesis of the empirical audit committee literature, suggest that the frequency of meetings can be a proxy of diligence. Meetings are considered as important proxies for the time directors spend monitoring managerial performance

Carcello, Hermanson, Neal and Riley (2012), in their study on Board Characteristics and Audit Fees in Italy noted that those board members, who have experience, know what to ask from the organization's auditors to bring about a better audit process within the organization. This means that all the board's members are able to contribute positively to the decision making process. Using regression model, it was observed that board diligence leads to higher profitability.

According to Marrakchi Chtourou, Bedard, and Courteau (2011) on corporate governance and earnings management note that those directors, who have sat on the board for a long time, are less likely to be engaged in accounting malpractices. The study concludes using OLS that board diligence improves organizational performance in Bangladesh.

Alzoubi and Selamat (2012) on the effectiveness of corporate governance mechanisms on constraining earning management revealed that, higher level of board expertise resulted in a greater level of motivation for monitoring the organization's operations. Using logistic regression, the study found that board diligence is positively and significantly related.

Hambrick and Manson (2014) on "Upper echelons: The organization as a reflection of its top managers," argued that there were two types of essential competencies necessary for the top management team of a company including company's directors: Functional knowledge and firm-specific knowledge. Functional knowledge covers knowledge in finance, accounting, legal, marketing and economics. The study found that financial competency was the most important competency and it affects performance. On the other hand firm-specific knowledge relates to detail information about the firm and its operation.

Similar results were revealed by Conger and Ready (2014) in their study on rethinking leadership competencies noted that directors who had reasonable financial backgrounds were more effective in providing internal control system mechanisms to control firm performance. Using regression model, the study found significant positive association between board diligence and performance.

## 3.0 Methodology

This study adopts *Ex-Post Facto Design*. Secondary data was used which already exists and cannot be manipulated or controlled. The population of the study consists of the entire 34 firms quoted under consumer goods and industrial goods sector of Nigerian Exchange Group (NGX) as at 2022 business list covering from 2016-2020. The use of quoted consumer goods and industrial goods sector firms on Nigerian Exchange Group (NGX) could be justified based on the fact that no study had concentered on board quality and firm sustainability with reference to Consumer Goods and Industrial Goods Sector of NGX especially in the developing economies to the best of our knowledge. Out of 34 firms that formed our sample size, 3 firms have empty financial information within the period under study (*Golden Guinea Breweries Plc, Multi-Trex Integrated Foods Plc and Autin Laz Plc)* which were removed. The selected firms range from Cadbury Nigeria Plc, Champion Breweries Plc, Dangote Sugar Refinery Plc, DN Tyre & Rubber Plc, Flour Mills Nig Plc, Guiness Nigeria Plc, Honeywell Flour Plc, International Breweries Plc, Mnichols Plc, N Nigeria Flour Plc, Nascon Allied Industries Plc, Nestle Nigeria Plc, Nigerian Breweries Plc, Nigerian Enamelware Plc, P Z Cussons Nigeria Plc, Unilever Nigeria Plc, Union Dicon Salt Plc, Vita foam Nigeria Plc, Cutix Plc, Dangote Plc, Grief Plc, Berger Paints Plc, Meyer Paints Plc, Lafarage Plc, Beta Glass Plc, Premier Paints Plc, Notore Chemical Plc, Bua Cement Plc, Cap Plc to Triple Gee & Company Plc.

Based on this, a total of 31 firms formed our sample size with 155 observations. The data were obtained from the Annual Reports and Accounts of the sampled firms. OLS Model was employed to examine the impact of board quality (BI, FDP & BD) on Firms Sustainability measured using Kinder Lydenberg Domini **(**KLD) social-environmental performance rating system.

### 3.1 Operationalization and Measurement of Variables

### 3.1.1 Dependent Variable

The dependent variable in this study is organizational sustainability and was measured using Kinder Lydenberg Domini **(**KLD) social-environmental performance rating system and the content analysis method of data collection as used by Uwuigbe (2011), Omaliko and Okpala (2020), Omaliko, Nwadialor and Nweze (2020). For this purpose, a score of (1) was awarded if an item was reported; otherwise a score of (0) was awarded ***(See Appendix 1).*** Consequently, a firm could score a maximum of 20 points and a minimum of 0. The formula for calculating the reporting scores by using these 20 attributes ***(See Appendix 1)*** is expressed in a functional form below:

$$\mathbf{RS} = \sum_{i=1}^{20} \mathbf{di}$$

Where:
RS = Reporting Score
di = 1 if the item is reported and 0 if the item is not reported
i = 1, 2, 3.... 20.

### 3.1.2 Independent Variable

The independent variable of board quality was proxy by board independence (BI), female directorship presence (FDP) and board diligence (BD). The measurements were exposited on the table below as thus;

**Table 1: Measurement for Dependent and Independent Variable**

| Variables | Measurement | A priori Expectations |
|---|---|---|
| **Independent Variable** | | |
| **Board Independence** | Number of independent director on the board | Shukeri, Shin and Shaari. (2012), Baysinger and Bulter (2015), Foo and Zain (2010) |
| **Board Diligence** | Number of board meetings | Conger and Ready (2014), Hambrick and Manson (2014), Johl, Kaur and Cooper (2013) |
| **Female Directorship Presence** | Proportion of women in management to total number of board | Adams and Ferreira (2019), Smith, Smith and Verner (2016) |

**Source: Empirical Survey (2022)**

### 3.2 Model Specification and Justification

The study adapted and modified the model of Shukeri, Shin and Shaari (2012) in examining the impact of board quality on sustainability disclosure of firms in Nigeria as shown below;

Shukeri, Shin and Shaari (2012): $\mathbf{ROE = \beta_0 + \beta_1\,BI + \beta_2\,BD + \beta_3\,DR} + \varepsilon$ -----------------------**1**
The modified model for the study is shown as thus;
$\mathbf{SEP = \beta_0 + \beta_1\,BI + \beta_2\,FDP + \beta_3\,BD} + \varepsilon$ --------------------------------------------------------------**11**
Where:

SEP = Social-Environmental Performance

BI = Board Independence
FDP = Female Directorship Presence
BD = Board Diligence
ε = error term

## 4.0: Data Analysis and Results

**Table 2: Descriptive Statistics**

| | BI | FDP | BD | SEP |
|---|---|---|---|---|
| Mean | 2.660645 | 2.075097 | 1.89600 | 1.689677 |
| Std. Dev. | .6655236 | .5728414 | .4522751 | 1.003188 |
| Maximum | 4 | 3.5 | 7 | 4.3 |
| Minimum | 1 | .8 | 2 | 0 |
| Observations | 155 | 155 | 155 | 155 |

**Source: Researcher's Computation (2022).**

Table 2 shows that on the average, in a 5-year period (2016-2020), the listed industrial goods firms in Nigeria were characterized by positive sustainability (SS) value of 1.6896677. This is an indication that the entire industrial goods firms in Nigeria have positive sustainability value with a standard deviation value of 1.003188. The average board independence (BI) for the sampled firms was 2.660645 with a standard deviation value of .6655236. This means that firms with BI values of 2.660645 and above are firms that have independent directors in the board while firms with the values below 2.660645 are firms without independent directors in the board. There is also a high variation in maximum and minimum values of BI which stood at 4 and 1 respectively. This wide variation in BI values among the sampled firms justifies the need for this study as we assume that firms with higher BI values are more sustainable than those firms with low BI values.

The average female directorship presence (FDP) for the sampled firms was 2.075097 with a standard deviation value of .5728414. This means that firms with BI values of 2.075097 and above are firms that have female directorship presence in the board while firms with the values below 2.075097 are firms without female directorship presence in the board. There is also a high variation in maximum and minimum values of FDP which stood at 3.5 and 0.8 respectively. This wide variation in FDP values among the sampled firms justifies the need for this study as we assume that firms with higher FDP values are more sustainable than those firms with low FDP values.

The average board diligence (BD) for the sampled firms was 1.89600 with a standard deviation value of .5728414. This means that firms with BI values of .4522751and above are firms with diligent and proficient members in the board while firms with the values below 1.89600 are firms without with diligent and proficient members in the board. There is also a high variation in maximum and minimum values of BD which stood at 7 and 2 respectively. This wide variation in BD values among the sampled firms justifies the need for this study as we assume that firms with higher BD values are more sustainable than those firms with low BD values.

### 4.1: Test of Hypothesis

**Table 3: Result on Impact of Board Quality on Sustainability Disclosure of Firms in Nigeria.**

| Source | SS | df | MS |
|---|---|---|---|
| Model | 2.80024132 | 3 | .933413774 |
| Residual | 152.183240 | 151 | 1.00783602 |
| Total | 154.983481 | 154 | 1.00638624 |

| | |
|---|---|
| Number of obs | = 155 |
| F (3, 151) | = 7.93 |
| Prob > F | = 0.0429 |
| R-squared | = 0.6181 |
| Adj R-squared | = 0.5983 |
| Root MSE | = 0.4039 |

| SEP | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| BI | .0632698 | .1428471 | 0.44 | 0.001 | .2189673 | .3455068 |
| FDP | .0255832 | .1946257 | 0.13 | 0.002 | .3589580 | .4101243 |
| BD | .2300365 | .2225029 | 1.03 | 0.018 | .2095845 | .6696574 |
| _cons | 1.032102 | .4144879 | 2.49 | 0.014 | .2131576 | 1.851047 |

Source: Result output from STATA 15.

### 4.2: Discussion of Findings

The result of the analysis of the study using OLS Model is expressed as follows:

**$H_{01}$:** Board Independence has no significant impact on Sustainability Disclosure of Firms in Nigeria. This hypothesis was tested and the result of the OLS model as exposited on table 3 indicates that the relationship between Board Independence (BI) and sustainability disclosure is positive and significant with a P-value (significance) of 0.001 which is less than the 1% level of significance adopted. Likewise the result of positive coefficient of 0.063 for the model is proving that an increase in firms' independent directors in the board ensures sustainability by 6.3%. Thus implies that firms should increase the number of independent directors in their board in order to main performance. We consequently rejected null hypothesis and accepted alternate hypothesis which contends that board independence has significant effect on sustainability disclosure of quoted firms in Nigeria. The implication of this is that, firms should increase the number of independent directors in their board as it ensures organizational sustainability.

**$H_{02}$:** Female Directorship Presence has no significant impact on Sustainability Disclosure of Firms in Nigeria**.** This hypothesis was tested and the result of the OLS model as exposited on table 3 indicates that the relationship between female directorship presence (FDP) and sustainability disclosure is positive and significant with a P-value (significance) of 0.002 for the model which is less than the 1% level of significance adopted.

Likewise the result of positive coefficient of 0.026 is proving that, an increase in firms' number of female directors in the board while other remaining variables remain constant increases ensures organizational sustainability by 2.6 %. Thus implies that firms with high number of female directors in the board have higher performance. We consequently accepted null hypothesis and rejected alternate hypothesis which contends that female directorship presence has significant effect on sustainability disclosure of quoted firms in Nigeria. Therefore, firms should increase the number of female directors in the board in order to ensure sustainability.

**$H_{03}$:** Board Diligence has no significant impact on Sustainability Disclosure of Firms in Nigeria**.** This hypothesis was tested and the result of the OLS model as exposited on table 3 indicates that the relationship between board diligence (BD) and sustainability disclosure is positive and significant with a P-value (significance) of 0.018 which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 0.23 for the model is proving that firms with diligent and proficient directors in the board ensure sustainability by 23%.

We therefore rejected null hypothesis and accepted alternate hypothesis which contends that board diligence has significant effect on sustainability disclosure of quoted firms in Nigeria. In other words, shareholders should consider in the composition of board of directions, their level of expertness, expertise, intelligence and proficiency as these led to sustainability among the quoted firms in Nigeria

## 5.1 Conclusion

The study having developed a model fit on board quality using (BI, FDP & BD) captured that BI, FDP & BD have joint effect on firms' sustainability. Based on this, the study concludes that board quality ensure sustainability of listed manufacturing firms in Nigeria.

## 5.2: Recommendation

Based on findings of the study, the following recommendations are suggested:

1. The study established a positive association between board independence and firms sustainability. Thus, it was suggested that firms should increase the number of independent directors in their board as it ensures sustainability.
2. The study recommended that firms should increase the number of female directors in the board in order to maintain sustainability.
3. Shareholders should consider in composition of the board of directors, their level of expertness, expertise, intelligence and proficiency as these ensure sustainability of quoted firms in Nigeria

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## Appendix 1

**Table 5: Twenty Testable Social-Environmental Performance Items**

| S/N | Environmental | Energy | Research & Development | Employee Health and Safety |
|---|---|---|---|---|
| 1 | Environmental Pollution | Firms Energy Policies | Investment in Research on Renewal Technology | Disclosing Accident Statistics |
| 2 | Conservation of Natural Resources | Disclosing Energy Savings | Environmental Education | Reducing or eliminating Pollutants, Irritants, or Hazards in the work Environment |
| 3 | Environmental Management/Environmental Policies | Reduction in energy Consumption | Environmental Research | Promoting Employee Safety and Physical or Mental Health |
| 4 | Recycling Plant of Waste Products | Received Awards or Penalties | Waste Management/Reduction and Recycling Technology | Disclosing Benefits from increased Health and safety Expenditure |
| 5 | Air Emission Information | Disclosing increased Energy Efficiency Products | Research on New Methods of Production | Complying with Health and Safety Standards and Regulations and Establishment of Educational Institution |

**Source: Adapted from (Hackston & Milne, 1996 & Adler, 1999)**