FEMALE DIRECTORS AND CORPORATE SUSTAINABILITY OF QUOTED CONGLOMERATES IN NIGERIA

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Abstract: This study ascertained the nexus between Female Directors and Corporate Sustainability of quoted Conglomerates in Nigeria from 2006-2020. Specifically, this study determined the relationship between Female Directors and Environmental Sustainability; Female Directors and Social Sustainability; Female Directors and Economic Sustainability. Panel data were used in this study, which were obtained from the annual reports and accounts of the six (6) quoted conglomerates for the periods 2006-2020. Ex-Post Facto research design was employed. Descriptive statistics of the dataset from the sampled firms was employed to summarily describe the mean, standard deviation, minimum and maximum values of the data for the study variables. Inferential statistics using Pearson correlation coefficient, Multicolinearity test, Heteroscedasticity test and Panel least square regression analysis were employed to test the hypotheses of the study. The results showed that there is a significant and positive relationship between Female Directors and Environmental Sustainability; Female Directors and Social Sustainability; Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria. at 5% level of significance respectively, The study recommended inter alia the recruitment of an ample number of females in the top-notch positions of the board to create a gender-diverse management team to reap the benefits of leadership styles of both genders.

Keywords: Female Directors, Environmental Sustainability, Social Sustainability and Economic Sustainability.

Background to the Study

In the modern business world, the sense of responsibility toward key stakeholders is an essential element and serves as a sensitive strategic element. The policies and overall management of norms, morals values, and ethical culture are the main ingredients for companies to continue their project in the medium term and long term. Therefore, such companies must devise plans, policies, and systems that include all stakeholders without any biases. The board is the most influential decision-making unit of an organization, with responsibilities ranging from making key financial and strategic decisions to choosing the company’s top executive leadership. Given the level of expertise and the amount of information needed to understand and govern today’s complex businesses, it is unrealistic to expect an individual director to be knowledgeable and informed about all phases of business. This is where the concept of board diversity comes into play. Corporations are increasingly under pressure to ensure diversity within their boardrooms, and many academic research works have reported findings consistent with the view that boards perform better when they include a diverse range of people. Mbonu and Amahalu (2021b) described board diversity as a demographic phenomenon entailing age, gender, and ethnicity. There are no specific legal requirements for gender diversity in the Nigerian legal system except for regulations issued by the Central Bank of Nigeria (CBN), the Securities and Exchange Commission (SEC) Code of Corporate Governance, and the 2018 Nigerian Code of Corporate Governance (CCG). CBN regulations mandate a minimum of 30 percent female representation on boards of Nigerian commercial banks, the SEC Code recommends that publicly listed companies consider gender when selecting board members and the CCG encourages the board to set diversity goals and to be mindful of them when filling board vacancies. However, the SEC and CCG codes do not prescribe gender quotas.

Sustainability is the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability is the avoidance of the depletion of natural resources in order to maintain an ecological balance. Boards of directors play a very significant role in ensuring the sustainability of companies not only from the economic aspect but also from the environmental and social aspects (Okudo, & Ndubuisi, 2021). It is believed that a company is no longer judged by its economic success but also on its environmental and
social success. Therefore, a board of directors as major decision makers is collectively responsible and accountable for the sustainability of companies to a wider range of stakeholders. There is a plethora of literature with conflicting results on the relationship between female directors and corporate sustainability. Arguments have been presented both favoring and opposing the idea of increasing female representation. Chebbia, Aliedanb and Alshahawic (2020); Oshiole, Elamah and Amahalu (2020) proved that companies with high female representation on their boards tend to have stronger corporate governance than those with few or no women on the board of directors. Zaid, Seaman, Mauricio, Al-Haddad and Marashdeh (2020); Wang (2020) documented that men are more trustworthy and collaborative than women, and this can improve board dynamics. Romano Cirillo, Favino and Netti (2020) found that male employees at Cadbury Nigeria Plc often rejects female managers while workers at Cadbury (UK) Plc. see female managers as normal managers as the male managers. Mbonu and Amahalu (2021a) reported that women are more ‘communal’ and men more ‘agentic’ hence companies with agency problems are firms that have homogenous boards. It is against this backdrop that this study sought to examine the nexus between female directors and corporate sustainability of quoted conglomerates in Nigeria.

**Objectives of the study**

The main objective of this study is to examine the relationship between female directors and corporate sustainability of quoted conglomerates in Nigeria.

The specific objectives of this study were to:

i. Determine the relationship between Female Directors and Environmental Sustainability of quoted Conglomerates in Nigeria.

ii. Evaluate the relationship between Female Directors and Social Sustainability of quoted Conglomerates in Nigeria.

iii. Ascertain the relationship between Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria.

**Research Hypotheses**

The following propositions were hypothesized in a null form:

**Ho:** There is no significant relationship between Female Directors and Environmental Sustainability of quoted Conglomerates in Nigeria.

**Ho:** There is no significant relationship between Female Directors and Social Sustainability of quoted Conglomerates in Nigeria.

**Ho:** There is no significant relationship between Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria.

**Conceptual Review**

**Female Directors**

Female Directors are elected women on board that represent shareholders. Female directors are also responsible for helping a corporation set broad goals, supporting executive duties, and ensuring the company has adequate, well-managed resources at its disposal. Boards guide the success or failure of a company by steering the overall corporate direction, setting policies, choosing executives, and ensuring that major decisions are ethical and prudent. They make a commitment to building the mission and vision of the company, ensuring that it is carried through all areas of the organization. Board gender diversity is a significant aspect of corporate governance; it is defined as the presence of female directors on the board of directors of corporations (Okegbe, Enneh, & Amahalu, 2019).
Corporate Sustainability

Sustainability is skilled positioning of the organization in the economic reality, taking account of the social and economic challenges, environmental opportunities and threats. The awareness that the organization functions within a broader framework, amid complex interrelations with many stakeholder groups, allows it to get ready and make use of the opportunities linked with sustainability. Corporate sustainability is an approach aiming to create long-term stakeholder value through the implementation of a business strategy that focuses on the ethical, social, environmental, cultural, and economic dimensions of doing business. The strategies created are intended to foster longevity, transparency, and proper employee development within business organizations (Amahalu, Ezechukwu & Obi, 2017).

Environmental Sustainability

Environmental sustainability is defined as responsible interaction with the environment to avoid depletion or degradation of natural resources and allow for long-term environmental quality. The practice of environmental sustainability helps to ensure that the needs of today’s population are met without jeopardizing the ability of future generations to meet their needs (Marni, 2020). Environmental sustainability is the rates of renewable resource harvest, pollution creation, and non-renewable resource depletion that can be continued indefinitely. If they cannot be continued indefinitely then they are not sustainable (Iliemena, Goodluck & Amahalu, 2019). Environmental sustainability is concerned with whether environmental resources will be protected and maintained for future generations.

Social Sustainability

Social sustainability is a process for creating sustainable successful places that promote wellbeing, by understanding what people need from the places they live and work. Social sustainability combines design of the physical realm with design of the social world – infrastructure to support social and cultural life, social amenities, systems for citizen engagement, and space for people and places to evolve. Social sustainability occurs when the formal and informal processes; systems; structures; and relationships actively support the capacity of current and future generations to create healthy and livable communities (Ezeokafor & Amahalu, 2019). The ability of a community to develop processes and structures which not only meet the needs of its current members but also support the ability of future generations to maintain a healthy community.

Economic Sustainability

Economic sustainability refers to practices that support long-term economic growth without negatively impacting social, environmental, and cultural aspects of the community. Economic sustainability is the ability of an economy to support a defined level of economic production indefinitely (Omojolaibi, Okudo & Shojobi, 2019). Economic sustainability occurs when a political unit, such as a nation, has the preferred percent of its population below its preferred minimum standard of living level. Economic sustainability can refer either to the continued success of an economy over time or more recently to the way an economy operates in a sustainable manner, protecting social and environmental elements (Courtneil, 2019). Economic sustainability is understood to be economic development that does not have a negative impact on ecological or social sustainability. An increase in economic capital must therefore not be at the expense of a reduction in natural capital or social capital. Economic sustainability is equated with economic growth, which is considered sustainable as long as the total amount of capital increases. Increased economic capital can thus be allowed at the expense of a reduction of other assets in the form of natural resources, ecosystem services or welfare (Ecowas. Omojolaibi, Oladipupo & Okudo. 2019).

Female Directors and Corporate Sustainability

Colakoglu, Eryilmaz and Martínez-Ferrero (2020) reported that environmental problems have many effects on the economic systems as well as on people’s lives. Prior research offers evidence that society is highly asking firms to pay greater attention on environmental and social issues instead of focusing only on financial self-interest (El Ghoul, Guedhami, Nash & Patel, 2019; Amahalu, Okoye & Obi, 2018) showed that stakeholders are demanding more transparency about environmental, social and governance disclosure. To sustain their competitive advantages and acceptability in society, the firms recognize that addressing environmental concerns is an
important key. To this end, environmental sustainability is a significant issue for firms that need to be addressed at the board level (Okudo, Omojolaibi & Oladele, 2021).

Theoretical Framework

Agency Theory

Agency theory has a long, rich history dating back to the formative economics-based works of Jensen and Meckling (1976). Agency theory is a principle that is used to explain and resolve issues in the relationship between business principals and their agents. Most commonly, that relationship is the one between shareholders, as principals, and company executives, as agents. An agency, is any relationship between two parties in which one, the agent, represents the other, the principal, in day-to-day transactions. The principal or principals have hired the agent to perform a service on their behalf (Amahalu & Obi, 2020b). The agency relationship is a ubiquitous feature of economic life and exists in many contexts, such as between politicians/voters, brokers/investors, lawyers/clients, and even editors and authors of an invited article. Within business and management, the relationship most commonly considered from an agency perspective is between the manager(s) and owner(s) of the firm. Generally, the principal (i.e., the owner) hires or contracts work to the agent (i.e., the manager), who is then expected to act according to the agreement and in the best interests of the principal (Jensen & Meckling, 1976).

Stakeholder Theory

Stakeholder theory was propounded by Edward Freeman in 1984. Stakeholder theory upholds that firms have accountability towards a broad range of stakeholders, apart from shareholders, that is customers, suppliers, employees, government, community, environment, lenders and future generation. The traditional definition of a stakeholder is any group or individual who can affect or is affected by the achievement of the organization’s objectives (Freeman 1984). The general idea of the stakeholder concept is a redefinition of the organization. In general the concept is about what the organization should be and how it should be conceptualized. Friedman and Miles (2006) state that the organization itself should be thought of as grouping of stakeholders and the purpose of the organization should be to manage their interests, needs and viewpoints. This stakeholder management is thought to be fulfilled by the managers of a firm. The managers should on the one hand manage the corporation for the benefit of its stakeholders in order to ensure their rights and the participation in decision making and on the other hand, the management must act as the stockholder’s agent to ensure the survival of the firm to safeguard the long term stakes of each group (Amahalu & Obi, 2020a).

Empirical Review

Wang, Deng, Álvarez-Otero, Sial, Comite, Cherian, Oláh (2021) investigated the impact of women and independent directors on corporate social responsibility (CSR) and financial performance. The study used the fixed effect regression model as a baseline methodology. The data set included information from 2010 to 2019 regarding Chinese non-financial companies, from which yearly information were used. The study used a two-stage least square (TSLS) regression model to control the possible problem of endogeneity. The empirical results showed that gender diversity on boards significantly and positively affects CSR reporting. The study did not find an effect due to non-executive directors on CSR reporting. The presence of non-executive directors on a board is mostly trivial in the case of China, as they do not have much influence with regard to decision making, especially related to CSR reporting. The control variables, such as board size, board member meeting frequency and leverage, were also found to have a significant effect on CSR reporting.

Pareek, Sahu & Gupta (2021) evaluated and established the relationship between gender diversity (GD) on the board and corporate sustainability performance. A sample of 212 non-financial companies listed on the National Stock Exchange, India has been considered for a period of 2013–2014 to 2018–2019. The study conducted the static panel data model analysis. The study, from its analysis, interpreted that GD or the proportion of women directors in the company plays a significant role in the decisions related to the sustainability performance of the company. Alongside GD, the profitability of the company, measured in terms of Tobin’s Q, and firm size are also seen to have a positive impact on the sustainability performance of the company.
Cicchiello and Fellegara (2021) investigated the influence of organisations’ board gender diversity on the adoption of the United Nations sustainable development goals (SDGs) and on the use of external assurance. The study combined data from the Global Reporting Initiative’s Sustainability Disclosure Database and the Orbis database from Bureau van Dijk. The study used logit models based on a sample of 366 large Asian and African companies which have addressed the SDGs in their sustainability reports published in 2017. The results revealed that board gender diversity is positively associated with sustainability reporting and the involvement of an external assurance provider.

Methodology

Research Design

Ex-post facto research design was employed in this study.

Population of the Study

The population of this study consisted of the six (6) conglomerates listed on the floor of the Nigerian Stock Exchange (NSE) from 2010 to 31st December 2019. The conglomerates include: A.G. Leventis Nigeria Plc; Chellarams Plc; John Holt Plc; SCOA Nigeria Plc; Transnational Corporation of Nigeria Plc; UACN Plc.

Sample Size and Sampling Method

Consequent upon the fact that the entire population size was utilized as the sample size, then there is no need for sampling method.

Source of Data

Primarily, this study made use of secondary data. The data were sourced from publications of the Nigerian stock exchange (NSE), fact books and the annual report and accounts of the sampled quoted conglomerates.

Table 1 Variable Description

<table>
<thead>
<tr>
<th>Variable</th>
<th>Proxies</th>
<th>Acronym</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Directors</td>
<td>FEMD</td>
<td>Number of Female Directors Number of the Board of Directors</td>
<td></td>
</tr>
<tr>
<td>Corporate Sustainability  (Dependent Variable)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Sustainability</td>
<td>ENVSUS</td>
<td>Total Environmental Disclosure Score Maximum Environmental Disclosure Score Possible for a Firm</td>
<td></td>
</tr>
<tr>
<td>Social Sustainability</td>
<td>SOSUS</td>
<td>Total Social Disclosure Score Maximum Social Disclosure Score Possible for a Firm</td>
<td></td>
</tr>
<tr>
<td>Economic Sustainability</td>
<td>ECOSUS</td>
<td>Total Economic Disclosure Score Maximum Economic Disclosure Score Possible for a Firm</td>
<td></td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td>LEV</td>
<td>Total Debt/Total Assets</td>
<td></td>
</tr>
<tr>
<td>Firm Size</td>
<td>FSIZE</td>
<td>Natural logarithm of Total Assets</td>
<td></td>
</tr>
</tbody>
</table>
Model Specification

This study adapted the model of Triana and Asri (2017):

\[ Q_{it} = \beta_0 + \beta_1 FDIR_{it} + \beta_2 FAGE_{it} + \beta_3 LEV_{it} + \epsilon_{it} \]

Where:

- \( Q_{it} \) = Tobin's Q ratio of firm i at time t.
- \( FDIR_{it} \) = Female Directors of firm i at time t.
- \( FAGE_{it} \) = Firm Age of firm i at time t.
- \( LEV_{it} \) = Leverage of firm i at time t.
- \( \epsilon_{it} \) = the error term which account for other possible factors that could influence \( Q_{it} \) that are not captured in the model.
- \( \beta \) = coefficient which represents the slope of variables.

Thus, in line with the study objectives, the following panel least square regression models would be constructed:

- **Model 1**
  \[ ENVSUS_{it} = \beta_0 + \beta_1 FEMD_{it} + \beta_2 LEV_{it} + \beta_3 FSIZE_{it} + \mu_{it} \]

- **Model 2**
  \[ SOSUS_{it} = \beta_0 + \beta_1 FEMD_{it} + \beta_2 LEV_{it} + \beta_3 FSIZE_{it} + \mu_{it} \]

- **Model 3**
  \[ ECOSUS_{it} = \beta_0 + \beta_1 FEMD_{it} + \beta_2 LEV_{it} + \beta_3 FSIZE_{it} + \mu_{it} \]

Where:

- \( \beta_0 \) = Constant term (intercept)
- \( \beta_i \) = Coefficients of Corporate Sustainability to be estimated for conglomerate i in period t
- \( \mu_{it} \) = Error term/unexplained variable(s) of conglomerate i in period t
- \( ENVSUS_{it} \) = Environmental Sustainability of conglomerate i in period t
- \( SOSUS_{it} \) = Social Sustainability of conglomerate i in period t
- \( ECOSUS_{it} \) = Economic Sustainability of conglomerate i in period t
- \( LEV_{it} \) = Leverage of conglomerate i in period t
- \( FSIZE_{it} \) = Firm Size of conglomerate i in period t

Presentation and Analysis of Data

Table 2: Pearson Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>ENVUS</th>
<th>SOSUS</th>
<th>ECOSUS</th>
<th>FEMD</th>
<th>LEV</th>
<th>FSIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVUS</td>
<td>1.0000</td>
<td>0.3884</td>
<td>-0.1524</td>
<td>0.4051</td>
<td>-0.1703</td>
<td>-0.6239</td>
</tr>
<tr>
<td>SOSUS</td>
<td>0.3884</td>
<td>1.0000</td>
<td>-0.0372</td>
<td>-0.0606</td>
<td>-0.2162</td>
<td>-0.0707</td>
</tr>
<tr>
<td>ECOSUS</td>
<td>-0.1524</td>
<td>-0.0372</td>
<td>1.0000</td>
<td>-0.2174</td>
<td>0.1398</td>
<td>0.1022</td>
</tr>
<tr>
<td>FEMD</td>
<td>0.4051</td>
<td>-0.0606</td>
<td>-0.2174</td>
<td>1.0000</td>
<td>0.1398</td>
<td>0.1022</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.1703</td>
<td>-0.2162</td>
<td>0.2906</td>
<td>0.1398</td>
<td>1.0000</td>
<td>0.3295</td>
</tr>
<tr>
<td>FSIZE</td>
<td>-0.6239</td>
<td>-0.0707</td>
<td>0.1922</td>
<td>0.1022</td>
<td>0.3295</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: E-Views 10.0 Output, 2021

The Pearson correlation result in table 2 shows that there is a positive relationship between ENVSUS and FEMD (0.4051); a negative relationship between SOSUS and FEMD (-0.0606); a negative relationship between ECOSUS and FEMD (-0.2174).

Table 3: Multicollinearity Test

<table>
<thead>
<tr>
<th></th>
<th>ENVUS</th>
<th>SOSUS</th>
<th>ECOSUS</th>
<th>FEMD</th>
<th>LEV</th>
<th>FSIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>10/30/21</td>
<td>Time: 07:37</td>
<td>Sample: 2006 2020</td>
<td>Included observations: 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Coefficient

Uncentered

Centered

Variable  Variance  VIF  VIF

C  0.095969  89.65725  NA
FEMD  3.176912  6.945071  1.023623
LEV  0.000538  8.672965  1.136336
FSIZE  0.001154  98.00895  1.125895

Source: E-Views Output, 2021

The general rule of thumb is that VIFs exceeding 10 are signs of serious multicollinearity requiring correction. But from the resulting output in table 3, it is observed that the Centered VIF for the study variables are all less than 10.

Table 4 Heteroscedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

| F-statistic  | 1.663035  |
| Obs*R-squared  | 4.680473  |
| Scaled explained SS  | 0.956372  |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 10/30/21  Time: 07:45
Sample: 2006 2020
Included observations: 15

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.015804</td>
<td>0.024305</td>
<td>0.650233</td>
<td>0.5289</td>
</tr>
<tr>
<td>FEMD</td>
<td>-0.184198</td>
<td>0.139842</td>
<td>-1.317186</td>
<td>0.2146</td>
</tr>
<tr>
<td>LEV</td>
<td>0.003521</td>
<td>0.001819</td>
<td>1.935200</td>
<td>0.0791</td>
</tr>
<tr>
<td>FSIZE</td>
<td>-0.000996</td>
<td>0.002665</td>
<td>-0.373601</td>
<td>0.7158</td>
</tr>
</tbody>
</table>

R-squared  | 0.312032  | Mean dependent var  | 0.011774  |
Adjusted R-squared  | 0.124404  | S.D. dependent var  | 0.010624  |
S.E. of regression  | 0.009942  | Akaike info criterion  | -6.161016  |
Sum squared resid  | 0.009942  | Schwarz criterion  | -5.972203  |
Log likelihood  | 50.20762  | Hannan-Quinn criter.  | -6.163027  |
F-statistic  | 1.663035  | Durbin-Watson stat  | 2.389653  |
Prob(F-statistic)  | 0.231942  |

Source: E-Views 10.0 Output, 2021

From table 4 it could be deuced that the t- t-Statistic for FEMD (0.2146), LEV (0.0791), and FSIZE (0.7158) with associated p-values more than 0.05 (5%), which is an indication of non-significant relationship. Furthermore, the
overall significant level; $\text{Prob}(F\text{-statistic}) = 0.231942 > 0.05$, is greater than 5% level of significance. This resulting output, suggest there is no presence of heteroscedsticity in the model, therefore fit to carry out a regression model.

**Test of Hypothesis I**

$H_0$: There is no significant relationship between Female Directors and Environmental Sustainability of quoted Conglomerates in Nigeria.

$H_1$: There is significant relationship between Female Directors and Environmental Sustainability of quoted Conglomerates in Nigeria.

**Table 5 Panel Least Square Regression analysis testing the relationship between FEMD and ENVSUS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.148263</td>
<td>0.321806</td>
<td>3.568178</td>
<td>0.0006</td>
</tr>
<tr>
<td>FEMD</td>
<td>1.636121</td>
<td>0.786348</td>
<td>2.080656</td>
<td>0.0404</td>
</tr>
<tr>
<td>LEV</td>
<td>-2.860571</td>
<td>1.293925</td>
<td>-2.210770</td>
<td>0.0297</td>
</tr>
<tr>
<td>FSIZE</td>
<td>-0.056132</td>
<td>0.032641</td>
<td>-1.719670</td>
<td>0.0891</td>
</tr>
</tbody>
</table>

R-squared: 0.252740  Mean dependent var: 0.538272  Adjusted R-squared: 0.219696  S.D. dependent var: 0.245633  S.E. of regression: 0.086649  Schwarz criterion: 0.164678  Log likelihood: 1.589098  Hannan-Quinn criter.: 0.098379  F-statistic: 3.238494  Durbin-Watson stat: 1.546511  Prob(F-statistic): 0.026055

Source: E-VIEWS 10.0 Regression Output, 2021

**Interpretation of Regression Analysis**

The resultant output in table 5 reveals that:

$$\text{ENVSUS} = 1.148263 + 1.636121 \text{FEMD} - 2.860571 \text{LEV} - 0.056132 \text{FSIZE}$$

This model infers that holding other factors constant, a unit increase in FEMD will exert 1.636121 units increase in ENVSUS, while, a unit increase in LEV and FSIZE will cause ENVSUS to reduce by 2.860571 units and 0.056132 units respectively. Table 5 shows that there is a significant positive relationship between FEMD and ENVSUS of quoted conglomerates. This can be observed from the beta coefficient ($\beta_1$) of 1.636121 with p value of 0.0404 which is significant at 5%. This indicates that female directors have a positive influence on environmental sustainability of quoted conglomerates in Nigeria. Overall, the combined and the overall effect of the regressors – FEMD, LEV and FSIZE on ENVSUS of quoted conglomerates in Nigeria, is shown on the
model probability summary of the regression results; the F-statistic of 3.238494 with an associated Prob(F-statistic) of 0.026055 is statistically significant at 5%, which reveals that the model is well fitted, while the coefficient of determination adjusted $R^2$ of 0.219696, explains the individual variation of the dependent variable (ENVUS) as a result of the changes in the independent variables (FEMD, LEV and FSIZE). It can be said that FEMD, LEV and FSIZE have combined predictive power of 22% in affecting ENVUS of quoted conglomerates in Nigeria, while the remaining 78% is accounted for by other factors which are not captured in the model.

**Decision**

Since the P-value of the test $= 0.026055$ is less than 0.05 (5%), this study upholds that there is significant positive relationship between Female Directors and Environmental Sustainability of quoted Conglomerates in Nigeria at 5% level of significance.

**Test of Hypothesis II**

$H_0$: There is no significant relationship between Female Directors and Social Sustainability of quoted Conglomerates in Nigeria.

$H_1$: There is significant relationship between Female Directors and Social Sustainability of quoted Conglomerates in Nigeria.

**Table 6 Panel Least Square Regression analysis testing the relationship between FEMD and SOSUS**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.380348</td>
<td>0.364246</td>
<td>3.789601</td>
<td>0.0003</td>
</tr>
<tr>
<td>FEMD</td>
<td>0.089958</td>
<td>0.036946</td>
<td>2.434854</td>
<td>0.0170</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.018085</td>
<td>0.014007</td>
<td>-1.291170</td>
<td>0.2001</td>
</tr>
<tr>
<td>FSIZE</td>
<td>-0.115550</td>
<td>0.269771</td>
<td>-0.428327</td>
<td>0.6695</td>
</tr>
</tbody>
</table>

R-squared 0.090924 Mean dependent var 0.404699
Adjusted R-squared 0.059212 S.D. dependent var 0.283806
S.E. of regression 0.275275 Akaike info criterion 0.301336
Sum squared resid 6.516773 Schwarz criterion 0.412438
Log likelihood -9.560101 Hannan-Quinn criterion 0.346139
F-statistic 2.867189 Durbin-Watson stat 1.541042
Prob(F-statistic) 0.041208

Source: E-Views 10.0 Regression Output, 2021
Interpretation of Regression Analysis

The resultant output in table 6 reveals that:

\[
\text{SOSUS} = 1.380348 + 0.089958 \text{FEMD} - 0.018085 \text{LEV} - 0.115550 \text{FSIZE}
\]

This model infers that holding other factors constant, a unit increase in FEMD will exert 9% increase in SOSUS, while, a unit increase in LEV and FSIZE will cause SOSUS to reduce by 1.81% and 11.55% respectively. Table 4.6 shows that there is a significant positive relationship between FEMD and SOSUS of quoted conglomerates. This can be observed from the beta coefficient ($\beta_1$) of 0.089958 with p value of 0.0170 which is significant at 5%. This indicates that female directors have a positive influence on social sustainability of quoted conglomerates in Nigeria. Overall, the combined and the overall effect of the regressors – FEMD, LEV and FSIZE – on SOSUS of quoted conglomerates in Nigeria, is shown on the model probability summary of the regression results; the F-statistic of 2.867189 with an associated Prob(F-statistic) of 0.041208 is statistically significant at 5%, which reveals that the model is well fitted, while the coefficient of determination adjusted R$^2$ of 0.259212, explains the individual variation of the dependent variable (SOSUS) as a result of the changes in the independent variables (FEMD, LEV and FSIZE). It can be said that FEMD, LEV and FSIZE have combined predictive power of 25.92% in affecting SOSUS of quoted conglomerates in Nigeria, while the remaining 74.08% is accounted for by other factors which are not captured in the model.

Decision

Since the P-value of the test = 0.041208 is less than 0.05 (5%), this study upholds that there is significant positive relationship between Female Directors and Social Sustainability of quoted Conglomerates in Nigeria at 5% level of significance.

Test of Hypothesis III

H$_0$: There is no significant relationship between Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria.

H$_1$: There is significant relationship between Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria.

Table 7 Panel Least Square Regression analysis testing the relationship between FEMD and SOSUS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.579295</td>
<td>0.102010</td>
<td>5.678796</td>
<td>0.0000</td>
</tr>
<tr>
<td>FEMD</td>
<td>0.437803</td>
<td>0.171730</td>
<td>2.549364</td>
<td>0.0126</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.028197</td>
<td>0.013955</td>
<td>-2.020583</td>
<td>0.0464</td>
</tr>
<tr>
<td>FSIZE</td>
<td>0.005117</td>
<td>0.023136</td>
<td>0.221150</td>
<td>0.8255</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.334713</td>
<td>Mean dependent var</td>
<td>0.148928</td>
<td></td>
</tr>
</tbody>
</table>
Adjusted R-squared | 0.301040 | S.D. dependent var | 0.172470 |
S.E. of regression | 0.172380 | Akaike info criterion | -0.634803 |
Sum squared resid | 2.555482 | Schwarz criterion | -0.523700 |
Log likelihood | 32.56613 | Hannan-Quinn criter. | -0.590000 |
F-statistic | 3.030970 | Durbin-Watson stat | 1.695357 |
Prob(F-statistic) | 0.033661 |

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Regression Analysis

The resultant output in table 7 reveals that:

ECOSUS = 0.579295 + 0.437803 FEMD - 0.028197 LEV + 0.005117 FSIZE

This model infers that holding other factors constant, a unit increase in FEMD and FSIZE will respectively exert 43.78% and 0.512% increase in ECOSUS, while, a unit increase in LEV will cause ECOSUS to reduce by 2.82%. Table 7 shows that there is a significant positive relationship between FEMD and ECOSUS of quoted conglomerates. This can be observed from the beta coefficient (\( \beta_1 \)) of 0.437803 with p value of 0.0126 which is significant at 5%. This indicates that female directors have a positive influence on economic sustainability of quoted conglomerates in Nigeria. Overall, the combined and the overall effect of the regressors – FEMD, LEV and FSIZE on ECOSUS of quoted conglomerates in Nigeria, is shown on the model probability summary of the regression results; the F-statistic of 3.030970 with an associated Prob(F-statistic) of 0.033661 is statistically significant at 5%, which reveals that the model is well fitted, while the coefficient of determination adjusted R\(^2\) of 0.301040, explains the individual variation of the dependent variable (ECOSUS) as a result of the changes in the independent variables (FEMD, LEV and FSIZE). It can be said that FEMD, LEV and FSIZE have combined predictive power of 30.10% in affecting ECOSUS of quoted conglomerates in Nigeria, while the remaining 69.90% is accounted for by other factors which are not captured in the model.

Decision

Since the P-value of the test = 0.033661 is less than 0.05 (5%), this study upholds that there is significant positive relationship between Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria at 5% level of significance.

Findings, Conclusion and Recommendations

Findings

Based on the analysis of data, the following findings emerged:

i. There is a significant and positive relationship between Female Directors and Environmental Sustainability of quoted Conglomerates in Nigeria at 5% level of significance.

ii. There is a significant and positive relationship between Female Directors and Social Sustainability of quoted Conglomerates in Nigeria at 5% level of significance.

iii. There is a significant and positive relationship between Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria at 5% level of significance.

Conclusion

This study assessed the nexus between female directors and corporate sustainability of quoted conglomerates in Nigeria. This study obtained data from annual reports and account and publications from Nigeria stock exchange for
the Conglomerates that operated during 2006-2020 periods. In addition, the nexus between specific sustainability measures such as environmental sustainability, social sustainability, economic sustainability and female directors were assessed. To determine the relationship that exists amongst the variables, Pearson correlation coefficient, multicollinearity test, heteroscedasticity test and Panel least square regression estimate were employed. This study revealed that there is a significant and positive relationship between Female Directors and Environmental Sustainability; Female Directors and Social Sustainability; Female Directors and Economic Sustainability of quoted Conglomerates in Nigeria. at 5% level of significance respectively.

Recommendations

The following recommendations were made in line with the findings and conclusion of this study:

i. Considering the fact that there is a positive relationship between female directors and environmental sustainability, the presence of female directors in firms should be increased to foster value creation and improvement of financial and environmental performance.

ii. Since the results showed that a larger proportion of female directors affects social sustainability, then gender diversity should be increased for an enhanced social performance.

iii. Consequent upon the fact that female directors on board significantly increases economic performance, this study thus recommends the recruitment of an ample number of females in the top-notch positions of the board to create a gender-diverse management team to reap the benefits of leadership styles of both genders.

References


