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# Moderating Role of Firm Age on The Effect of Board Gender Diversity on The Sustainability Disclosure of Listed Nigerian Manufacturing Firms

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**ABSTRACT**

Sustainability disclosure by Nigerian manufacturing firms listed on the stock exchange remains uneven, raising doubts about the effectiveness of board features in supporting transparent and reliable reporting. This study investigated the moderating role of firm age on the effect of board gender diversity on the sustainability disclosure of listed Nigerian manufacturing firms from 2013 to 2023. A purposive sampling approach was employed to select 18 of 34 documented manufacturing firms that issued sustainability reports regularly, from 2013 to 2023, to determine the adequacy and relevance of data; an ex post facto research design was adopted, and data were extracted from annual reports of the sampled firms. Panel-corrected standard errors and regression analysis to test the hypotheses were employed, and the results revealed that sustainability disclosures measured firm that disclose sustainability 1 otherwise 0 are positively and significantly affected by both gender diversity measure by proportion of number of female in the board to board size and firm age measured by number of years since incorporation. Further, the study establishes that firm age interacts with gender diversity, has a positive and significant effect on sustainability disclosure. In the conclusion section, the gender of the board of directors and the firm's age are identified as the two key factors determining sustainability management, with the assertion that firm age has a considerable moderating role on the effect of gender diversity on the board of directors in old-age firms. This study recommends that firms should increase gender diversity to improve sustainability reporting; older firms should be encouraged to improve sustainability as they are found to be more mature; targeted approaches to sustaining the effect of gender diversity on sustainability for different ages of firms should be established.

**Keywords:** Board Gender Diversity, Firm Age, Moderating Role, Sustainability Disclosure,

## I. INTRODUCTION

Sustainability disclosure (SD) has become an important part of corporate reporting that indicates the firm's dedication to environmental, social, and governance (ESG) factors. This is because it stresses accountability and provides solutions to many more rising stakeholder expectations of sustainability. SD also enhances firm reputation, attracts investors, and leads to firm corporate accountability in the long run (Ma et al., 2024). However, SD activities remain diverse across firms trying to adhere to SD practice since the application depends on the governance structures and the board features (Buallay & Alhalwachi, 2022). Though, in this context, gender diversity (GD) on corporate boards has been recognized as the critical factor influencing SD.

More than just the presence of women to boards, gender diversity positively influences board cognitive proximity and the capacity to improve oversight and achieve organizational sustainability goals. It is generally perceived that women directors are more ethical in their leadership, less risky than men directors, and have a better sense of CSR (Arora & Aliani, 2024). Research findings show the GD has a positive relationship with SD, with research evidencing that companies with gender-diverse boards enhance value on ESG disclosures (Khaireddine et al., 2020; Saha & Maji, 2024). Nevertheless, this connection's cross-sectional and geographical properties remain intact since most of the investigations are already in the banking, energy, or family firms, except in Nigeria (Choiriah, 2020; Buallay & Alhalwachi, 2022).

Although some research has been conducted on gender diversity and sustainability disclosure of Nigerian manufacturing firms, evidence has been mixed and in some instances contradictory in implication due to the richness of

the relationship. Most of these studies employed simple linear models with no controls for contextual and firm-level moderators that potentially affect the form and range of the relationship. Firm age is another of these factors that has the potential to impact the way boards with increased gender diversity impact a firm's sustainability reporting through disparities in experience, organizational culture, and resource availability. Therefore, this study is a contribution to the literature that incorporates firm age as a moderator, offering an even more enhanced understanding of the way board gender diversity is used to translate to sustainability disclosures across the Nigerian manufacturing industry (Abang'a & Tauringana, 2024).

Firm age as a moderator affects the GD-SD relationship greatly. Older firms would have structures of governance dealing with the implementation of sustainable development practices, besides possessing more resources and experience within institutions. On the other hand, young enterprises may be financially and operationally limited, legally shackled, and struggling to engage with different stakeholders; therefore, GD may have negligible impacts on SD (Githaiga & Kosgei, 2023). Although firm age might be vital in future research work, it has not been well analyzed in previous antecedent studies, as most of these studies concentrate on direct relationships without this moderating factor (Abang'a & Tauringana, 2024).

Corporate governance needs Sustainability disclosure (SD) since it improves transparency while ensuring economic, social, and environmental sustainability. Some firms in Nigeria, like Vitaform Plc. and Beta Glass, still exhibit low or the absence of sustainability disclosure (Temitope et al., 2023). The implementation of mandatory detailed sustainability reporting establishes stakeholder trust while holding firms accountable because non-reporting businesses lose their business advantages as they fail to attract investments (Githaiga & Kosgei, 2023). Although regulations and international sustainability projects support complete disclosure reporting, some firms like International Breweries Plc, Mcnichols Plc, Multi-Trex Integrated Foods Plc [DWL],, and Nigerian Enamelware Plc. maintain incomplete sustainability reporting systems (Arora & Aliani, 2024).

The gender board diversity (BGD) is a primary influencing variable for corporate sustainability disclosure. Strong sustainability strategies develop in companies with more female directors because women bring diverse qualities and focus on moral principles (Buallay & Alhalwachi, 2022; Ma et al., 2024). Other factors can independently affect sustainability disclosure levels despite having gender-diverse boards, so this relation cannot be proven according to Choiriah (2020). The established operational structures and corporate cultures within mature firms constrain the ability of gender diversity to affect sustainability disclosure, according to Saha & Maji (2024).

Though earlier sustainability disclosure research studies had hitherto been largely concentrated in developed economies (Arora & Aliani, 2024), empirical evidence from recent times, including emergent economies like Nigeria, broadened the field. However, the majority of these Nigerian studies have failed to consider important moderating factors like the age of the firm, which could influence the gender diversity-sustainability disclosure nexus (Ma et al., 2024) and Githaiga & Kosgei (2023), creating a knowledge gap. In addition, the findings derived from small sampling datasets and industry-specific biases create a sampling gap (Temitope et al., 2023; Khaireddine et al., 2020).

This study addresses these knowledge gaps by examining the moderating effect of firm age on the relationship between board gender diversity and sustainability disclosure practices of Nigerian manufacturing firms from 2013 to 2023. This paper hypothesized that:

$H_{01}$: Board gender diversity has no significant effect on the sustainability disclosure of listed manufacturing firms in Nigeria.

$H_{02}$: There is no significant effect of firm age on the sustainability disclosure of listed manufacturing firms in Nigeria.

$H_{03}$: Firm age has no significant moderating role on the effect of gender diversity on the sustainability disclosure of listed manufacturing firms in Nigeria.

This study has significant relevance to researchers due to its potential to enhance an understanding of how gender diversity in corporate boards interacts with firm age and their influences on the sustainability disclosure practice in Nigerian manufacturing firms. For practitioners, acknowledging the benefits of board gender diversity and firm age in sustainability reporting increases firm transparency and stakeholder satisfaction. In addition, this study gives policy implications aimed at enhancing general corporate management, promoting sustainable development, and filling gaps in disclosure systems in developing countries.

The annual reports of firms for 11 years from 2013 to 2023 were considered to ensure that recent data were utilized and firm age is used as a moderating variable since older firms have more

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established constructs, stakeholder expectations, and reputation concerns, which can influence to what extent and intensity their practices of sustainability disclosure are. Board gender diversity as the independent variable is deliberately chosen due to the importance of women being in the boardroom, and sustainability disclosure as the dependent variable. Furthermore, listed manufacturing firms in Nigeria serve as the study domain because of their importance to the Nigerian economy. This study considers consumer and industrial goods firms only due to the role they played in the manufacturing sector.

## II. Literature Review

The conceptual review of this study would serve as an important foundation, aiming to create ideas and vivid explanations about the variables. In this section, an in-depth discussion of the major constructs concerning sustainability disclosure as an independent variable, board gender diversity as a dependent variable, firm age as a moderating variable, and firm size as a control variable is depicted in the following figure:

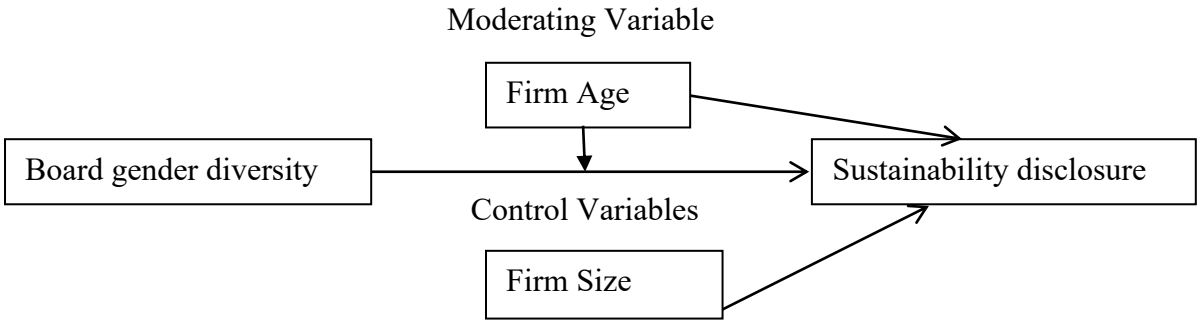


Fig 1: Conceptual Framework

Source: Field Survey, 2024

The concept of sustainability disclosure, as opined by Abang'a, and Tauringana (2024), is an application of corporate social responsibility and sustainable development principles in investment decisions. The sustainability disclosure-related investment decision can focus on social issues, environmental issues, ethical issues, or a combination of the three approaches. It is the practice of making investment decisions based on both financial and social performance (Temitope et al., 2023).

As it currently exists, there are no standard definitions or agreement about what sustainability disclosure is. Social and environmental disclosure as defined by Uwuigbe et al. Climate-related risk disclosures are a qualified series of disclosure items that can be categorised into social and environmental disclosure, energy consumption disclosure, research and development activities disclosure, employee health and safety disclosure, and community involvement disclosure. As is mentioned by Kholod et al. (2023), the absence of standardized social and environmental data has prompted numerous initiatives to foster a unified approach to social accounting and environmental disclosure, including the Global Reporting Initiative (GRI) and Accountability Assurance Standards. GRI's vision is a sustainable, peaceful world, free of poverty and ecological degradation. GRI's mission is to help this world become transparent and sustainable by developing universal frameworks for sustainability reporting, enabling all organizational entities to be transparently reported—and thus held accountable—on their contributions to the societal, environmental, and economic well-being of this world. The work explores sustainability disclosure as the complete and accurate disclosure of a company's environmental, social, and governance (ESG) practices and impacts to support stakeholders' assessment of its commitment to sustainable development.

Corporate gender diversity can be interpreted as having directors of varying genders on the board; it is essential in preventing the board from becoming overly homogeneous and therefore coming up with a broader solution to problems (Post & Byron, 2019). Lückerath-Rovers (2021) describes gender diversity as the male and female directors who are nominated and included in the corporate boards since the board will be a necessity of various experiences and different perspectives; thus, enhancing the functioning of the board. This definition is centred on the choice of emphasizing gender diversity's contribution to the board in terms of diversity of experience and view. However, it could be criticized for failure to address some of the issues of diversity, such as how issues of diversity can be a challenge in boards while presenting

discussions. Diversity, in particular, increased representation of female directors on previously all-male boards, has been demonstrated to enhance corporate governance and ethical disclosure overall (Bear et al., 2020). For the benefits of gender diversity, he gave an equal view that can be enhanced to show how such different ideas and opinions may be coordinated and ironed out in case of differences of opinion. To this study, gender diversity refers to the proportion of females on the board to the board size.

The size of the firm reflects the size or scope of the operations of a firm and, in certain circumstances, is measured through total assets, revenues, or workers. Larger firms in SD, in most instances, undergo more public oversight, stakeholder pressure, and regulatory pressure, prompting them to engage in larger disclosure practices (Healy & Palepu, 2003). Larger firms are theoretically richer and have higher incentives to present sustainability information as a means of bolstering legitimacy and stakeholder trust (Cormier & Magnan, 2003).

Firm size needs to be included as a control variable in this research due to its potential effect on sustainability disclosure that would make the estimated effect of gender diversity and the firm age's moderating effect biased unless controlled for. Firm size control enables the model to control for visibility and resource firm-level factors working in isolation that affect sustainability disclosure, enhancing the internal validity and robustness of the study (Elamer et al., 2018).

Resource Dependence Theory (RDT), which is used to anchor this study, is a foundational concept in organizational studies, originally developed by Jeffrey Pfeffer and Gerald R. Salancik in their seminal work "The External Control of Organizations: “Management and Organization: A Resource Dependence Perspective” (Pfeffer & Salancik, 1978). Within this framework, it’s generally assumed that organizations are dependent on the external environment for the resources they require to hopefully survive and thrive. External actors—other organizations, regulators, funders, etc.—hold the key resources, and organizations do what they can to limit their dependence on these actors and to shape the interaction space to increase dependence on the resource holders. Supply chain dependencies and the need to obtain resources are well managed according to RDT by the composition and structure of the firm’s board of directors.

In this context, board gender diversity is quite influential and can also provide important assets such as knowledge, authority, and contacts with other companies (Johnson et al., 2013). Some of the scholars that have applied this theory are Kılıç and Dehati (2016) and García-Meca et al. (2015). Thus, the analysis of the moderating role of the firm age as applied to the Nigerian-listed manufacturing firms is significant. Fund acquisition and stakeholder management are relevant in the Nigerian context, where firms exist in a dynamic environment. Firm age can be useful in understanding this multiplex environment, improving sustainability, and meeting stakeholders’ expectations. Theory provides an adequate analytical framework to understand how board characteristics affect the reporting of sustainability data. The introduction of firm size as a moderating variable allows us to develop a better comprehension and identify how older boards can advance sustainable business.

Temitope et al. (2023) researched sustainable disclosures combined with board gender diversity along with firm age differences in Nigerian industrial goods businesses. Data collected from the twelve sample firms for eleven years, 2009–2019, was analysed using multiple regression analysis techniques. One of the most exciting findings of the study was this: Increased board gender diversity was positively and significantly related to increased sustainability disclosure. The main potential limitation of the present study is the relatively small convenience sample size employed. As such, obtaining generalized results may be a more difficult task to achieve. This study seeks to bridge this gap. by including a larger population of NMFs and a different timeline (2013-2023).

Choiriah (2020) studied environmental discretion, stakeholder power, gender diversity of the board, human capital, and board independence as moderators. From this study's research process and data collection, descriptive quantitative methods are used through secondary data with the population using the various manufacturing companies of the Indonesia Stock Exchange. Perhaps the most important finding from the study is the positive and significant relationship between the gender diversity of the board and environmental disclosure. As impressive and contemplative as the accompanying study may be, relying solely on data from one market created a notable gap in the population served. A systematic review of 16 NMFS throughout 2013–2023, with firm age as a moderator, bridged these gaps.

Khaireddine et al. (2020) studied data for 82 French firms from the SBF120 index using generalized least squares regression methodologies over the period 2012-2017. Board diversity was the key aspect of their study that focused on governance measures and environmental, social, and governance

(ESG) aspects of disclosure. When they dig deep, their findings suggest that gender in boards positively and significantly affects such disclosures to sustainability. Some biases do exist in this study because of the fact that sample firms were selected based on firms contained in the SBF120 index, therefore resulting in a population bias. This study fills that gap by specifically looking at NMFs.

In their random effects panel regression analysis of 7951 observations of 2116 non-OPEC bank institutions, researchers Buallay and Alhalwachi (2022) examined how these banks interacted with board diversity with advanced environmental disclosure measures during the years 2007-2016. Their findings lead them to conclude that ED has a significant adverse effect on female directors. Since the study is interested in the banking sector, not looking at non-OECD industries and their presumably bilateral transactions with each non-OECD country creates a sectoral gap. The study is one of the few to address that gap, limiting the research to NMFs under the moderation of firm age.

Githaiga and Kosgei (2023) explored the importance of board attributes in driving the CSR disclosure practices of 79 listed firms in East Africa during the years 2011-2020. The original sample size was N=1300, but the analysis only included a subset using fixed/random effects estimation/measurement. As predicted, the paper's most important contribution was discovering the very positive effect that gender diversity has upon sustainability reporting. Nevertheless, the fact that the study only focused on East Africa and utilized fixed- and random-effects analysis leaves a population and methodological gap for other African countries, including Nigeria. This study seeks to fill the gaps by analyzing NMFs employing Panel Corrections Standard Errors to estimate panel data.

Arora and Aliani (2024) employed the panel models to examine the relation of gender diversity (GD) with environmental disclosure (ED) of the Indian-listed firms from 2015 to 2021. They found positive and significant effects of female directors on ED, and these effects are detected when female directors are at least three in number on the board. However, the research has several implications in understanding the use of GD in adopting environmental practices, but it has a major drawback in the fact that it is conducted in the Indian setting, and there is no comparison with other geographical areas or segments. This study will therefore fill this gap by focusing on the effect of gender diversity on sustainability reporting of NMFs, with age as a moderating variable.

Ma et al. (2024), using energy sector firms data from China from 2012 to 2022, tested the audit committee as a moderator in the relationship between gender diversity and ESG disclosures. Using a recent but well-tested measurement of gender diversity based on Blau and Shannon indices, their study concluded that gender diversity positively influences the quality of ESG disclosure. Since the study's results heavily relied on the energy firm's reported data, the study's results can't be generalized beyond this industry. The shortcomings will be filled in this study on the context of NMFs, including expanding the empirical study to different sectors and examining other moderating factors, such as firm age, to get more comprehensive insights about the effects of the board characteristics on sustainability disclosure.

Saha and Maji (2024) employed panel data from 100 top Indian firms from 2016 to 2021 to investigate the relationship between board gender diversity and voluntary disclosure (VD), with an emphasis on family and non-family firms. Employing panel data models, Mashrukhil momenoz women entrepreneurs have established that BGD positively influences VD in both family and nonfamily firms. They employed fixed and random effects models for better results, as well as the three-stage least squares (3SLS) model to test the adjusted coefficient. However, this positive effect is negligible in the non-family firms. There is a limitation in the study as the research is conducted in the Indian context only, and includes only the comparison of family and non-family businesses. This study will fill this research gap by examining the effects of gender diversity on sustainability disclosure in NMFs and the moderating role of firm age.

Abang'a and Tauringana (2024) used a fixed-effects balanced panel data technique to establish the effect of board characteristics, especially gender, on the corporate social responsibility disclosures (CSRDs) by the Kenyan state-owned enterprises with a sample of only seven firms from 2015 to 2018. To reduce the risk of any spurious results, they used both the robust least squares and random effects regression estimators. The analysis showed that board gender diversity had a negative relationship with CSRD. The study examines only the disclosures in the annual reports and ignores the possible moderating factors, limiting its generalization. This study seeks to close these gaps by investigating how firm age moderates the relationship between board gender diversity and sustainability disclosure in NMFs.

Different empirical studies support a positive relationship between firm size and

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sustainability reporting. For instance, Nekhili et al. (2017) employed panel regression analysis of French-listed companies and reaffirmed that large firms disclosed more CSR information owing to greater reputation concerns. The study is, however, conducted in an emerging economy characterized by varying institutional and regulatory settings compared to those of developing nations like Nigeria. This study builds on this contextual deficit by focusing on Nigerian manufacturing firms, under which conditions for sustainability action are nascent.

Similarly, using multiple regression among Sub-Saharan African listed firms, Appiah et al. (2020) also determined firm size to be a valid predictor of sustainability reports. The cross-country reach is useful as it can be, but it does not capture nation-specific institutional effects to the desired degree. This study bridges this research gap by conducting nation-level analysis and consequently having a wider view into Nigeria's sustainability disclosure.

In Nigeria, Iredele and Adedayo (2020) subjected listed companies to regression analysis, whereby they posited the correlation of firms' size and measures of environmental and social disclosure as being positively significant and concluded that size affects transparency practices. Their study, however, failed to consider other firm-level characteristics such as the moderating influence of firm age. With the control of firm age as a moderator variable in this study, there is an integrated picture of the effect of firm size and organizational maturity on sustainability disclosure together.

## III. Methodology

The population for the study consists of 34 consumer goods and industrial goods firms, as shown in Appendix A. A Sample size of 16 firms was selected using purposive sampling, justified by the need to focus on firms that have consistently disclosed sustainability reports from 2013 to 2023, as shown in Appendix B. This study used an ex-post facto research design, which is appropriate because it allows for the investigation of the effect of board gender diversity on sustainability disclosure after the events have already occurred, minimizing researcher interference and ensuring natural observation of the variables. This study utilized the annual reports of these firms to gather necessary data, employed multiple regression techniques, and analyzed the data through STATA software. This study adapts the model specification of Umukoro et al. (2019) as:

$SRD_{it} = \beta 0 + \beta_1 Ede_{it} + \beta_2 Nede_{it} + \beta_3 EDU_{it} + \beta_4 \sum others_{it}$

Where: SDR = Sustainability reporting index, Ede = Executive Directors' Expertise, Nede = Non-executive Directors' Expertise, EDU = Directors' Education Level, Other: BM = Board Magnitude, MIN = Board Independence, Size = Firm size, $\beta_0$ = intercepts

On the basis of proxies for the different variables under study, the above equations have been modified as follows:

$SD_{it} = \beta_0 + \beta_1 BGD_{it} + \beta_2 FA_{it} + \beta_3 (BE*FA)_{it} + \beta_4 FS_{it} + \varepsilon_{it}$

Where: SD = Sustainability disclosure, BGD = Board gender diversity, FA = Firm age, FS = firm size, $\beta_0$ = intercepts, $\varepsilon$ = error terms, $\beta_1$ – $\beta_4$ = Coefficient, it = firm at time

The variables definitions and measurement of this study that include dependent Variable (sustainability disclosure), independent variable (Board gender diversity), moderator (Firm age), and control variables (firm size) are presented in appendix A.

## IV. RESULTS AND DISCUSSION

This presents the results and discussion of the data of this paper analyzed through STATA 13 software.

**Table 1**
**Descriptive Statistics**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| Sd | 175 | .663 | .474 | 0 | 1 |
| Gd | 176 | .23 | .14 | 0 | .6 |
| Fa | 176 | 55 | 17.312 | 21 | 100 |
| Fs | 176 | 24.903 | 1.8 | 21.33 | 28.75 |

Sources: STATA Output, 2024

The basic characteristics of the variables employed in the research are highlighted in the descriptive Table. The sustainability disclosure (sd) measure has a mean of 0.663, which means that the firms report 66.3% of the sustainability information, and there is moderate variability (Std Dev = 0.474) with some firms not disclosing any information (Min = 0). An average of gender diversity (gd) amounts to 0.23, meaning, on average, 23% of the board members are women, to a maximum of 60%.

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It has a standard deviation of 0.14, implying a low gender diversity variation among firms. In addition, the average firm age (fa) is 55 years, confirming that the firms researched are too mature, with age varying between 21 to 100 years, with a wider variation of standard deviation of 17.312.

**Table 2**
**Regression Model Diagnostics Tests**

| | VIF | 1/VIF |
|---|---|---|
| FA | 1.019 | .981 |
| GD | 1.018 | .982 |
| FS | 1.002 | .998 |
| Mean VIF | 1.013 | . |
| | Model I | Model II |
| Hettest | 0.001 | 0.009 |
| Hausman Specification Test | 0.000 | 0.000 |

Source: STATA Output, 2024

The VIF tests and diagnostics of the regression models are displayed in Table 2 below. The mean VIF value of 1.013 is below the standard mark of 10, and its inverse of each variable is below the standard mark of 2, which equally implies no problem of multicollinearity. In addition, since the Hettest values in both models are less than 0.05, indicating the presence of a heteroskedasticity problem, which can be resolved through regression robust. However, Hausman specification test values in both models are 0.000; this implies that there is more preference for fixed effects models than random effects in the model constructs. But to take care of heteroskedasticity and autocorrelation, this study opts for panel correlation standard errors estimation for both models.

**Table 4**
**Regression Model Summary: Panel Corrections Standard Errors**

| | Model I | | | | Model II | | | |
|---|---|---|---|---|---|---|---|---|
| SD | Coef. | St.Err. | t-value | p-value | Coef. | St.Err. | t-value | p-value |
| GD | .608 | 0.213 | 2.85 | 0.004*** | 2.495 | 0.576 | 4.33 | 0.000*** |
| FA | .004 | 0.008 | 5.00 | 0.000*** | 0.012 | 0.002 | 5.07 | 0.000*** |
| GD_FA | | | | | -0.037 | 0.012 | -3.20 | 0.001*** |
| FS | .077 | 0.012 | 6.32 | 0.000*** | 0.052 | 0.014 | 6.02 | 0.000*** |
| Constant | -1.622 | 0.357 | -4.55 | 0.000*** | -2.124 | 0.393 | -5.41 | 0.000*** |
| R-squared | | 0.142 | | | R-squared | | 0.1714 | |
| Wald chi2 | | 48.48 | | | Wald chi2 | | 186.35 | |
| Number of obs | | 175 | | | Number of obs | | 175 | |
| Prob > F | | 0-000*** | | | Prob > F | | 0.000*** | |

*** *p<.01*, ** *p<.05*, * *p<.1*
Source: STATA Output, 2024

The result reveals that both models present high reliability and explanatory capability equal to 0.142 and 0.1714 of R-square, alongside a recognizable total model fit level of Prob > F equals 0.000 with Wald chi2 of 48.48 and 186.35, respectively. The study validates the hypothesis that gender diversity and firm age positively influence sustainability disclosure.

In both models, gender diversity (GD) has a positive and significant effect on sustainability disclosure (Model I: Coef. = 0.608, p = 0.004; Model II: Coef. = 2.495, p = 0.000). P-value for group P is less than 0.05; hence this study rejects H01. This shows that board gender has a positive influence on sustainability disclosure in the sampled firms. This support Resource Dependence Perspective (Pfeffer&Salancik, 1978), and vindicates the findings of Temitope et al. (2023), Choiriah (2020), Khaireddine et al. (2020), Buallay and Alhalwachi (2022), Githaiga and Kosgei (2023), Arora and Aliani (2024), Ma et al. (2024), and Saha and Maji (2024); but contrary to the study of Abang'a and Tauringana (2024).

Firm age (FA) is positively and significantly associated with sustainability disclosure in both models (coefficient of determination). Model I, Coef. = 0.004, p = 0.000;

Model II Coef. = 0.012, p = 0.000. Since p-values are less than 0.05, this study also rejects H02. This establishes that the extent and manner of sustainability disclosure are significantly affected by firm age. This support Resource Dependence Perspective (Pfeffer&Salancik, 1978), and vindicates the findings of Temitope et al. (2023), Choiriah (2020), Khaireddine et al. (2020), Buallay and Alhalwachi (2022), Githaiga and Kosgei (2023), Arora and Aliani (2024), Ma et al. (2024), and Saha and Maji (2024); but contrary to the study of Abang'a and Tauringana (2024).

The coefficient estimate of the moderating variable (GD_FA) in Model II is -0.037, p = 0.001, which further confirms that firm age partially moderates the relationship between gender diversity and sustainability disclosure. Here, the p-value is less than 0.05, so this study rejects H03. This confirms that firm age moderates the effect of gender diversity on sustainability disclosure. This support Resource Dependence Perspective (Pfeffer&Salancik, 1978), and vindicates the findings of Temitope et al. (2023), Choiriah (2020), Khaireddine et al. (2020), Buallay and Alhalwachi (2022), Githaiga and Kosgei (2023), Arora and Aliani (2024), Ma et al. (2024), and Saha and Maji (2024); but contrary to the study of Abang'a and Tauringana (2024).

This study further affirms that heterogeneous boards can lead to greater degrees of accountability, which, as we discussed, is key in the growing evolution of stakeholder trust. It just means that a firm's age has a positive effect on sustainability disclosure, which means that older, well-established firms are more likely to adopt sustainable business practices as compared to younger firms.The moderating effect of firm age shows that the effect of gender diversity on sustainability disclosure reduces after firms reach a certain age, suggesting these strategies should be executed to retain the effects of gender diversity amongst mature organizations.

## V. CONCLUSION AND RECOMMENDATIONS

In conclusion, the results disclose that gender diversity and the age of the firm have a positive effect on sustainability disclosure. However, firm age plays a moderating role through which gender diversity significantly reduces the positive impact on sustainability disclosure.

Based on the conclusion, this study recommends that:

i Firms should hire more women for leadership positions so that they can help develop strategies that are sustainable and improve disclosure systems.

ii The older firms should therefore consider employing certain specific measures to maintain sustainability reporting by conducting periodic training for the board of directors and infusing new governance frameworks.

iii Firms should establish board policies that create inclusive cultures and address age-related issues, and they should ensure that gender diversity results in better sustainability disclosure.

## REFERENCES

[1]. Abang'a, A. O. G., & Tauringana, V. (2024). The impact of board characteristics on corporate social responsibility disclosures: evidence from state-owned enterprises in Kenya. *Journal of Accounting in Emerging Economies*, *14*(3), 612-638.

[2]. Appiah, K. O., Agyemang, O. S., & Yeboah, B. (2020). Board characteristics and sustainability reporting: Evidence from Sub-Saharan Africa. *Journal of African Business*, 21(3), 289–307. https://doi.org/10.1080/15228916.2020.1745822

[3]. Arora, N., & Dhar, U. (2017). Corporate governance and sustainability disclosures in India. Emerging Markets Review, 25, 29-45.

[4]. Bear, S., Rahman, N., & Post, C. (2020). The impact of board diversity on corporate social responsibility and firm reputation. *Journal of Business Ethics, 103*(3), 371-383.

[5]. Buallay, A., & Alhalwachi, L. (2022). Board gender diversity and environmental disclosure: evidence from the banking sector. *Journal of Chinese Economic and Foreign Trade Studies*, *15*(3), 350-371.

[6]. Choiriah, S. (2020). The Effect of Stakeholder Power, Board Gender Diversity and Human Capital on Environmental Disclosure with Board Independent as Moderation Variable. *Human resources*, *11*(12).

[7]. Dissanayake, D. M. R., Gunaratne, P. S. M., & Wijekoon, P. R. (2019). The impact of board characteristics on level of sustainability disclosure: evidence from listed companies of Sri Lanka. *Corporate Governance and Sustainability Review, 3*(2); 11-22.

[8]. Egbunike, C., Igbinovia, I., Oranefo, C., & Iyoha, A. (2022). Gender heterogeneity in the boardroom and corporate sustainability performance of quoted manufacturing firms

in Nigeria. *Asian Journal of Accounting Research, 8*(4); 334-347.

[9]. Elamer, A. A., Ntim, C. G., Abdou, H. A., & Pyke, C. (2018). Sharia supervisory boards, governance structures and operational risk disclosures: Evidence from Islamic banks in MENA countries. *International Review of Financial Analysis*, 59, 158–170. https://doi.org/10.1016/j.irfa.2018.07.007

[10]. García-Meca, E., García-Sánchez, I. M., & Martínez-Ferrero, J. (2015). Board diversity and its effects on bank performance: An international analysis. *Journal of Banking & Finance, 53,* 202-214.

[11]. Githaiga, P. N., & Kosgei, J. K. (2023). Board characteristics and sustainability reporting: a case of listed firms in East Africa. *Corporate Governance: The international journal of business in society*, *23*(1), 3-17.

[12]. Iredele, O. O., & Adedayo, T. S. (2020). Firm characteristics and sustainability reporting of listed firms in Nigeria. *International Journal of Business and Technopreneurship*, 10(1), 77–88.

[13]. Johnson, R. A., Schnatterly, K., & Hill, A. D. (2013). Board Composition Beyond Independence: Social Capital, Human Capital, and Demographics. *Journal of Management, 39*(1), 232-262.

[14]. Khaireddine, H., Salhi, B., Aljabr, J., & Jarboui, A. (2020). Impact of board characteristics on governance, environmental and ethical disclosure. *Society and Business Review*, *15*(3), 273-295.

[15]. Kholod, N., Akhtar, I., & Hassan, M. K. (2023). Board attributes and companies' choice of sustainability assurance providers. *Corporate Social Responsibility and Environmental Management, 30*(1); 72-85.

[16]. Kılıç, M., & Kuzey, C. (2016). The effect of board gender diversity on firm performance: evidence from Turkey. *Gender in Management: An International Journal, 31*(7), 434-455.

[17]. Lückerath-Rovers, M. (2021). The association between gender diversity on boards and firm performance. *Journal of Management & Governance, 25*(4), 1041-1069.

[18]. Ma, Y., Ahmad, M. I., & Torelli, R. (2024). Board gender diversity and ESG disclosure: The moderating role of audit committee. *Corporate Social Responsibility and Environmental Management*, 6(2).

[19]. Nekhili, M., Nagati, H., Chtioui, T., & Rebolledo, C. (2017). Corporate social responsibility disclosure and market value: Family versus nonfamily firms. *Journal of Business Research*, 77, 41–52. https://doi.org/10.1016/j.jbusres.2017.04.001

[20]. Noland, M., & Moran, T. (2022). The relationship between board gender diversity and firm performance. *World Development, 137*, 105-123.

[21]. Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper and Row.

[22]. Saha, R., & Maji, S. G. (2024). Board gender diversity and voluntary disclosure: moderation of family ownership in India. *International Journal of Accounting & Information Management*.

[23]. Temitope, A. M., Terungwa, N., Eniola, A. S., Ahmed, M. N., & Olumide, M. L. (2023). Board gender diversity and sustainability reporting: Moderating effect of firm age of Nigerian Industrial Goods Firms. *AJORMS, 3*(1), 63-78. https://doi.org/10.62244

[24]. Terjesen, S., Sealy, R., & Singh, V. (2018). Women directors on corporate boards: A review and research agenda. *Corporate Governance: An International Review, 26*(1), 20-37.

[25]. Uwuigbe, U., Egbide, B. C., & Ayokunle, P. M. (2018). Corporate governance and sustainability reporting in Nigerian banks. *The Journal of Accounting and Management, 8*(3), 52-60.

## APPENDIX A
## VARIABLES DEFINITION AND MEASUREMENT

| Variables | Definition | Measurement | Sources |
|---|---|---|---|
| *Dependent Variable* | | | |
| Sustainability Disclosure (SD) | Sustainability disclosure is the comprehensive and transparent reporting of a company's ESG practices. | Sustainability Disclosure 1, otherwise 0 | Githaiga and Kosgei (2023) |
| *Independent Variable* | | | |

| | | | |
|---|---|---|---|
| Board Gender Diversity (BGD) | Gender diversity is the representation of female directors on a company's board, aimed at enhancing diverse perspectives and improving governance effectiveness. | Proportion of number of female on the board to board size | Temitope (2023) |
| Moderating Variable | | | |
| Firm Age (FA) | Fage age is the number of years to date the firm has been incorporated. | Number of years since incorporation | Shamil et al. (2014) |
| Control Variable | | | |
| Firm Size | Firm size is the firms' total assets | Natural log of total assets | Umukoro et al. (2019) |