



Breaking barriers and building sustainability: The importance of board feminization in ESG disclosures

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Abstract

This research examines the nexus between board feminization and environmental, social, and governance (ESG) disclosures in listed Kenyan firms. The positivist paradigm informed the study's research design. The dynamic generalized method of moments (GMM) was applied to eliminate endogeneity bias, omitted variables bias, measurement error, and firm-specific heterogeneity. Panel data regressions were applied on 467 firm-year observations from 36 firms listed on the Nairobi Securities Exchange (NSE) from 2006–2019. The results showed that board feminization positively affects firms' overall ESG disclosure measures. However, a component-level analysis revealed substantial heterogeneity in the findings among the different ESG pillars. This research attempts to address a gap in the existing knowledge by examining the relationship between female board presence and ESG reporting in emerging economies. The research supports regulators' efforts to enforce women's participation on boards and sustainable performance. This paper is among the first to provide in-depth empirical evidence on the link between board feminization on overall ESG disclosure and the different ESG pillars in Kenya. This research also adds to the expanding literature on ESG disclosure and board feminization in developing markets.

Keywords:

Board feminization
Corporate governance
ESG disclosure
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1. Introduction

Driven by the rising pressure on their social and environmental responsibilities in the new global economy, corporate environmental, social, and governance (ESG) performance has received much interest recently from both financial markets and regulatory authorities. De Masi, Słomka-Gołębiowska, Becagli, and Paci (2021) define ESG as a measurable indicator of corporate social responsibility (CSR), consisting of three components: environmental impact, social policies and initiatives, and governance aligned with stakeholders.

Recent research has indicated that businesses with gender-diverse boards and executive teams demonstrate better financial and non-financial performance, which boosts profitability and ESG performance measures. However, despite the apparent advantages, women still need to be represented, and their advancement could be more active. Research conducted in 2021 found that women only make up 19.7% of board members, 6.7% of board chairs, 5% of chief executive officers, and 15.7% of chief financial officers (IFC, 2022; UN SSE, 2021).

Corporate stakeholders have recently advocated for more ESG disclosure openness (Yadav & Prashar, 2022). To this end, organizations such as the United Nations (UN), the European Union (EU), and the

Organization for Economic Co-operation and Development (OECD) have issued guidelines and directives on nonfinancial disclosures that include ESG issues (Wasiuzzaman & Wan Mohammad, 2020). Given the frequency of financial scandals, firms are recommended to oversee their corporate governance systems by following social and environmental norms and promoting sustainable development. Corporate social performance is a competitive advantage for businesses (Byron & Post, 2016). Research has shown that enhanced ESG disclosure enhances company value (Qureshi, Kirkerud, & Theresa, 2020). Among the proposals for enhancing ESG performance is increasing the representation of female directors, with the premise that the expertise and values of female directors may favorably improve ESG disclosure and reputation (Byron & Post, 2016; Gurol & Lagasio, 2021). Thus, board feminization (BFEM) and its influence have garnered increased public and scholarly attention. Gender diversity in the boardroom has been linked to impacts on key performance metrics, including sustainability, innovation, value creation, staff retention and engagement levels (Farza, Ftiti, Hlioui, Louhichi, & Omri, 2022; Gomez & Bernet, 2019; Konadu, Ahinful, Boakye, & Elbardan, 2022). There is a broad consensus among various organizations and research that supports the economic benefits of having women in high-level leadership roles. These organizations include the International Finance Corporation, the International Monetary Fund, the World Bank, the International Labour Organization, McKinsey, the Organisation for Economic Co-operation and Development, and the European Union.

The significance of gender equality in promoting social transformation, driving economic growth, and enhancing corporate performance is emphasized in the 2030 Agenda for Sustainable Development. By enforcing statutory and voluntary measures, certain nations have begun to encourage the participation of female directors by encouraging inclusive leadership, requiring institutions to report on gender diversity, and implementing quota systems (Jizi & Nehme, 2017; Terjesen, Aguilera, & Lorenz, 2015). For instance, this strategy has proven to be effective in Spain (40%), Israel (50%), Finland (40%), Belgium (33%), India, Malaysia, Brazil, Germany, Sweden (25%), Iceland (40%), Italy (33%), and Norway (40%), where quotas for female directors of publicly traded firms and government-owned businesses have been adopted with tremendous success (Terjesen et al., 2015). Additionally, the United States and the United Kingdom effectively adopted voluntary objectives to encourage corporations to take gender diversity into account when forming their boards. Several African nations, such as Kenya (33%), Rwanda, Senegal and Uganda, have instituted quotas to increase women's political leadership. These initiatives have indirectly set the stage for women's equitable opportunity to participate in political structures beyond the political sphere by changing stereotypes and subliminal biases. However, despite these efforts, women remain underrepresented on boards worldwide (Muhoro, 2022).

Existing research has extensively investigated the relationship between gender diversity on boards and company performance and disclosure (Al Farooque, Dahawy, Shehata, & Soliman, 2022; Disli, Yilmaz, & Mohamed, 2022; Lavin & Montecinos-Pearce, 2021; Wasiuzzaman & Wan Mohammad, 2020; Yadav & Prashar, 2022). However, most studies have focused on industrialized countries, neglecting the importance of examining growing economies such as Kenya (Al Farooque et al., 2022). These economies require special attention due to their unique characteristics and potential for development. While previous studies argue that having more women on boards can positively impact firm performance, the influence of gender diversity on sustainability outcomes remains understudied. Specifically, the impact of board feminization on ESG performance requires further exploration. By addressing these gaps in the literature, this study aims to contribute to a more comprehensive understanding of the connections between gender diversity, ESG performance, and sustainability outcomes.

This study explores the relationship between board feminization and ESG disclosure in Kenya, an emerging country, based on the stakeholder theory. Kenya was selected due to its high representation of women in business leadership positions compared to other Sub-Saharan African nations. According to the KIM Board Diversity and Inclusion Report 2021, women's representation on publicly listed company boards in Kenya increased from 12% in 2012 to 36% in 2021, surpassing the global average of 23.3%.

Similarly, in their reporting trends of women on boards, the African Development Bank found that Kenya had the most significant proportion of female board directors (19.8%) (African Development Bank, 2015). This is a result of the Kenyan government's initiative and progressive constitution to eliminate gender inequality by upholding Article 27's mandate that no more than two-thirds of elected and appointed offices should be held by one gender (Republic of Kenya, 2010). South Africa, Botswana, and Zambia follow with above-average percentages of 17.4%, 16.9%, 15.9%, and 15.7%, respectively (African Development Bank, 2015). Further, the Nairobi Securities Exchange (NSE) is committed to helping listed firms leverage diversity as a competitive advantage as a signatory in the United Nations Sustainable Stock Exchanges Initiative and UN Global Compact. Kenya has always advocated for the inclusivity and diversity of listed firms to foster business development and sustainability by promoting gender equality and women's economic resilience in Kenyan corporate enterprises (Owino, 2021). Second, the NSE, in partnership with Global Reporting Initiative, introduced the ESG Disclosures Guidance Manual 2021 to strengthen and harmonize disclosures, champion reporting excellence through ESG disclosures, accelerate diversity and inclusion, uphold corporate governance, and promote green finance by listed companies in Kenya. The NSE's strategy for sustainability reporting is organized around three major themes: environmental, social, and governance (NSE, 2021a, 2021b). This reflects Kenya's efforts to enhance sustainability reporting by corporations. However, a recent report by Business Daily revealed that ESG

reporting had lagged at 10% of firms listed on the NSE over six months after the firms were obliged to submit disclosures owing to a lack of enforcement action (Guguyu, 2022).

Data from 36 companies listed on the NSE were collected from the MachameRatios Database®, resulting in 467 firm-year observations over 14 years (2006 to 2019). The findings showed that the relationship between board feminization (BFEM) and ESG disclosure was highly significant at the 1% significance level. This strongly indicates that BFEM enhances ESG disclosure among the Kenyan listed firms, corroborating previous research on the role of women on boards regarding ESG disclosure practices (Arayssi, Jizi, & Tabaja, 2020; Gurol & Lagasio, 2021; Kamaludin, Ibrahim, Sundarasan, & Faizal, 2022; Lee, Heryana, & Hendriyeni, 2022; Shakil, Tasnia, & Mostafiz, 2020). The relationship between individual ESG components and BFEM was only significant for the governance component at the 1% significance level. The impact of BFEM was insignificant for environmental and social disclosure components.

Given the significant gaps in prior research, this study provides several theoretical and practical insights. First, the study extends prior research on board feminization and ESG reporting in the emerging market. Second, the research adds to board diversity and governance literature by studying BFEM's influence on ESG disclosure via stakeholder theory (Manita, Bruna, Dang, & Houanti, 2018). Third, to our knowledge, this is the first research to assess BFEM's impact on all ESG dimensions for firms listed on the NSE from 2006 to 2019. Fourth, unlike previous research, which mainly focused on one ESG component, this study examined the effect of BFEM on ESG scores and all three of its components to determine the primary factor influencing the performance of companies listed on the NSE. Fifth, from an empirical standpoint, the GMM estimation method was utilized to solve all endogeneity issues in the interaction between BFEM and ESG disclosure due to unobservable firm differences or reverse causality (Jagannathan, Skoulakis, & Wang, 2002; Stock, Wright, & Yogo, 2002). Last, our results direct policymakers' attention to the increasing relevance of sustainability practices and promoting board feminization in companies, which may contribute to the achievement of sustainable development goals (SDGs).

This paper is structured as follows: Section 2 presents the literature review; Section 3 explains the study methodology; Section 4 comprises the results and discussion; and Section 5 contains the conclusion, limitations, and recommendations for future research.

2. Theoretical Framework and Hypothesis Development

2.1. Theoretical Background

There is yet to be a universally accepted theoretical framework for sustainability accounting. Several theoretical frameworks (such as agency, legitimacy, voluntary disclosure, critical mass and stakeholder theories) dominate the theoretical considerations of sustainability/ESG information disclosure (Manita et al., 2018; Mion & Aduai, 2020; Suchman, 1995). The literature agrees that the theories above are comparable or intertwined. The dual viewpoint of stakeholder and resource dependency theory, which represent two complimentary frameworks, are applied and extended in this study to examine the role that board feminization plays in enhancing corporate governance mechanisms and encouraging increased ESG disclosure (Kamaludin et al., 2022; Manita et al., 2018; Velte, 2016; Wasiuzzaman & Wan Mohammad, 2020).

The stakeholders' viewpoint hypothesizes that a firm's achievements relate to meeting the requirements of its many stakeholders, sustaining strong connections with the community, and exhibiting high morals and ideals in its activities (Freeman, 2010; Gurol & Lagasio, 2021; Manita et al., 2018) to fulfil society's expectations and legitimize their actions by committing to environmentally responsible actions, including enhanced disclosure (Menicucci & Paolucci, 2022). Accordingly, increased sustainability reporting may enhance corporate legitimacy by sustaining relations with, and gaining the support of, key stakeholders (Albitar, Hussainey, Kolade, & Gerged, 2020).

2.2. Hypothesis Development

2.2.1. Board Feminization and ESG Disclosure

Boardroom feminization refers to the heterogeneity of gender among board members. The feminization of a corporate board, measured by gender and the incorporation of women, has been shown to substantially impact the efficiency and effectiveness of leadership (Benkraiem, Boubaker, Brinette, & Khemiri, 2021; Manita et al., 2018). Theoretically, from the stakeholder and resource-based perspectives, increased board gender diversity promotes leadership by bringing new ideas, perspectives, abilities, and experiences to the boardroom and strengthening board independence (Benkraiem et al., 2021; IFC, 2022; Menicucci & Paolucci, 2022; Yadav & Prashar, 2022). In addition, female directors are more inclined to support ESG efforts than their male colleagues owing to many distinguishing traits (Dobija, Arena, Krasodomska, & Godawska, 2022; Villiers & De Dimes, 2021; Wasiuzzaman & Wan Mohammad, 2020).

Research on the relationship between board feminization and ESG disclosures is mixed. Some studies, including those by Gurol and Lagasio (2021), Kamaludin et al. (2022), Khemakhem, Arroyo, and Montecinos (2022), Muhammad, Zaman, and Saleem (2017), Qureshi et al. (2020) and Shakil et al. (2020), show a positive link between the number of women on a board and ESG disclosures, while others, such as those by Cucari, Esposito de Falco, and Orlando (2018), Husted and De Sousa-Filho (2019) and Ismail and Latiff (2019), show

insignificant effects. [Muhammad et al. \(2017\)](#) found a strong relationship between corporate sustainability practices and the number of women on corporate boards, while [Qureshi et al. \(2020\)](#) found that increased female board involvement in companies leads to better ESG performance. However, [Birindelli, Dell'Atti, Iannuzzi, and Savioli \(2018\)](#) showed a non-linear relationship between women on boards and ESG performance in the banking sector, suggesting that only gender-balanced boards improve a bank's sustainability performance. Notwithstanding the mixed results, considerable evidence suggests that having more women on boards will enhance the extent of ESG disclosures. Based on theoretical and empirical evidence, we hypothesize that:

H1: Board feminization is positively related to ESG disclosure.

2.2.2. Board Feminization and Environmental Disclosure

The stakeholder approach contends that female directors are often more impartial than their male counterparts and, as a result, are likely to have higher incentives for improved transparency and responsibility to the public. This might have a favorable effect on environmental disclosures. The stakeholder perspective suggests that female directors are usually entrusted to address the needs and expectations and safeguard the interests of various actors ([Albitar, Abdoush, & Hussainey, 2022](#); [Birindelli et al., 2018](#); [Menicucci & Paolucci, 2022](#)) and, as a result, will exert increasing demands on their entities to enhance their environmental reporting to comply with the standards and anticipations of society. Similarly, the resource dependence theory ([Gerged, Chijoke-Mgbame, Konadu, & Cowton, 2022](#); [Hillman, Cannella, & Paetzold, 2000](#)) also suggests that good governance, which is regularly related to more extensive, independent, and diversified boards, can enhance corporate image and credibility by fostering closer ties with influential stakeholders to garner accessibility to essential inputs. Consequently, and premised on stakeholder and resource dependency theories, effective governance structures can put pressure on firms to engage in greener initiatives to meet the demands of their stakeholders ([Baalouch, Ayadi, & Hussainey, 2019](#); [Khemakhem et al., 2022](#); [Nuber & Velte, 2021](#)).

The general environmental concerns were significantly positively influenced by female directors in terms of environmental disclosure issues ([Baalouch et al., 2019](#); [Buallay & Alhalwachi, 2022](#); [Muhammad & Migliori, 2022](#); [Peng, Song, & Yeung, 2022](#); [Raimo, De Nuccio, & Vitolla, 2022](#)), biodiversity ([Carvajal, Nadeem, & Zaman, 2022](#)), greenhouse gas (GHG) emissions ([Nuber & Velte, 2021](#); [Tingbani, Chithambo, Tauringana, & Papanikolaou, 2020](#)), environmental innovation ([He & Jiang, 2019](#); [Nadeem, Bahadar, Gull, & Iqbal, 2020](#)) and carbon performance ([Nuber & Velte, 2021](#)). [Nuber and Velte \(2021\)](#) found a positive association between board gender diversity and carbon performance in 3,123 firms listed in the European STOXX600 index between 2009 and 2018, utilizing two-stage least squares regressions with an instrumental variable and a two-step GMM method. [Peng, Song, et al. \(2022\)](#) investigated the connection between gender diversity on boards and multinational corporations' environmental disclosure, as well as the moderating influence of national culture, using a sample of 150 multinational corporations from Japan, China, the United States, and the United Kingdom. The results showed that board gender diversity promotes multinational firms' environmental reporting.

Similarly, [Carvajal et al. \(2022\)](#) studied the nexus between board gender diversity and businesses' biodiversity activities for the rehabilitation and restoration of degraded ecosystems or to reduce environmental effects for 2,406 US enterprises in the ASSET4 database from 2002–2018. The study's findings revealed a positive link between board gender diversity and initiatives toward biodiversity restoration and impact reduction consistent with the upper echelon and gender socialization theories. However, it should be noted that the study focuses only on US enterprises and may not be generalizable to other regions or countries. Using a sample of 129 international companies, [Raimo et al. \(2022\)](#) examined the influence of corporate governance mechanisms on the level of environmental reporting included in integrated reports. A manual content analysis based on a 30-item environmental disclosure index was conducted to assess the extent of environmental information. Board size, gender diversity, and a CSR committee were found to significantly improve environmental disclosure.

However, evidence suggests that female involvement on corporate boards is insignificant ([Nguyen, Elmagrhi, Ntim, & Wu, 2021](#); [Yadav & Prashar, 2022](#)) or negatively influences environmental disclosure ([Macchioni, Prisco, Santonastaso, & Zagaria, 2022](#)). For instance, using data from firms on the Standard & Poor's 500 index from 2002 to 2018, a statistically significant negative link was found between board gender diversity and carbon emissions.

Based on the preceding discussion, having women on corporate boards will facilitate companies to prioritize environmental practices and transparency. Hence, we hypothesize that:

H2: Board feminization is positively related to environmental disclosure.

2.2.3. Board Feminization and Social Disclosure

Corporate social disclosure refers to disseminating information regarding an organization's social policies, initiatives, and performance (people relationships, customer satisfaction, data protection and privacy, gender and diversity, employee engagement, community relations, human rights and labor standards) to external parties. It conveys the social impacts of a company's economic actions to society ([Anwar, 2020](#); [Kamaliah, 2020](#)). The stakeholder theory argues that board gender diversity influences corporate social disclosure, which strengthens the relationship between firms and their stakeholders and generates a positive corporate reputation for firms

through social information disclosures because female directors may monitor corporate social issues and provide varied viewpoints (Naveed, Voinea, & Roijakkers, 2022; Peng, Qi, & Wang, 2022).

Empirical studies examining the relationship between women on boards and corporate social performance and reporting have yielded inconsistent results (Alazzani, Hassanein, & Aljanadi, 2017; Arayakarnkul, Chatjuthamard, & Treepongkaruna, 2022; Bruna, Đang, Ammari, & Houanti, 2021; Cuadrado-Ballesteros, Martínez-Ferrero, & García-Sánchez, 2017; Gurol & Lagasio, 2021; Khan, Zahid, Saleem, & Sági, 2021; Majumder, Akter, & Li, 2017; Peng, Qi, et al., 2022; Peng, Yang, Shao, & Li, 2021; Wasiuzzaman & Wan Mohammad, 2020). For instance, Cuadrado-Ballesteros et al. (2017) found that board qualities, including independence, diversity, size, and activity, positively influenced corporate social performance in a study of 471 nonfinancial US companies from 2008 to 2010. Similarly, Alazzani et al. (2017) reported a positive relationship between board diversity and social responsibility disclosures in Malaysian firms. Gurol and Lagasio (2021) found a positive association between female board members and social disclosure in European banks. Peng, Qi, et al. (2022) showed that corporate social responsibility disclosures in multinational corporations in China, Japan, the United Kingdom and the US were positively influenced by board gender diversity.

Contrasting findings also exist. Wasiuzzaman and Wan Mohammad (2020) found no significant relationship between the presence of women on boards and social disclosure scores in a sample of Malaysian firms. Majumder et al. (2017) and Zaid, Wang, and Abuhijleh (2019) found an insignificant positive link. Muttakin and Khan (2015) reported a negative relationship between the number of women on the boards of Bangladeshi companies and sustainability. Khan et al. (2021) found a negative link between board gender diversity and social and environmental accountability in Chinese enterprises. Some studies suggest a non-linear relationship between board diversity and social performance. Bruna et al. (2021) discovered a non-linear "threshold effect" in the influence of board feminization on corporate social performance among S&P 500-indexed companies from 2004 to 2015. Females are less inclined than males to compromise their lifestyle for monetary gain since they are more conscious of environmental and social concerns.

Consequently, the presence of women on a company's board of directors is likely to impact its social and environmental practices. Hence, it is anticipated that female-dominated boards are expected to report more effectively on a company's social and environmental commitments. Therefore, in light of the literature review, we hypothesize that:

H3: Board feminization is positively related to social disclosure.

2.2.4. Board Feminization and Governance Disclosure

Governance refers to a company's openness and responsiveness to shareholders' expectations, including clear and accurate accounting systems, executive compensation limitations, and protection of property rights (De Masi et al., 2021; Yawika & Handayani, 2019). Previous studies have linked board gender diversity to higher corporate governance standards (Kamaludin et al., 2022; Nicolò, Zampone, Sannino, & De Iorio, 2021). Kamaludin et al. (2022) examined a sample of 91 firms listed on Bursa Malaysia and found a significant positive relationship between board gender diversity and governance disclosure. De Masi et al. (2021) discovered that a critical mass of female board members positively influenced all dimensions of the ESG score, significantly contributing to the governance score. Similarly, Wasiuzzaman and Wan Mohammad (2020) studied 78 firms listed on Bursa Malaysia from 2005 to 2016, found a significant association between board gender diversity and the governance disclosure scores (De Masi et al., 2021).

Conversely, Yadav and Prashar (2022) used a sample of Nifty 100 companies in India and found that the number of female directors had an insignificant effect on corporations' ESG reporting. Despite mixed findings, women on corporate boards are believed to enhance governance disclosures. Following the stakeholder theory, we hypothesize a positive association between board feminization and governance reporting in NSE-listed corporations. Therefore, it is hypothesized that:

H4: Board feminization is positively associated with governance disclosure.

3. Research Methodology

3.1. Data Description and Sample Selection

This paper examined the impacts of board feminization on the ESG reporting of companies listed on the Nairobi Securities Exchange (NSE) from 2006–2019. The rationale for selecting the sample is that the NSE is a well-diversified exchange representing significant sectors of the Kenyan economy and rapidly growing economies in Sub-Saharan Africa (NSE, 2020). Furthermore, the NSE, in partnership with the Global Reporting Initiative, introduced the ESG Disclosures Guidance Manual aimed at improving and standardizing ESG information disclosure, championing reporting excellence through ESG disclosures, accelerating and fostering green financing, safeguarding corporate governance, and encouraging diversity and inclusion in listed companies in Kenya (Muigua, 2022).

ESG disclosure scores and other study variables were collected from MachameRatios Database® from 2006 to 2019. Environmental (E), Social (S), and Governance (G) constitute the ESG score based on 46 quantitative and qualitative metrics from firms' financial reports, integrated reports and internet disclosure. The disclosure

score ranges from 0 (no disclosure of ESG information) to 1 (full disclosure of ESG information). This score reflects the organization's commitment to sustainability transparency.

The research examined secondary financial data from 2006–2019. After eliminating businesses with inconsistent data and missing values, we created a panel dataset covering 14 years (2006–2019) with 467 firm-year observations. The initial number of firms included in the study was 63, drawn from 11 sectors. The final sample included 36 ESG-disclosing firms.

3.2. Model Specification and Measurement of Variables

The following equations were used to investigate the impact of board feminization on firms' ESG disclosure scores and its constituents (environment, social, and governance):

$$ESG_{it} = \beta_0 + \beta_1 BFEM_{it} + \beta_2 B_{SIZE}_{it} + \beta_3 B_{IND}_{it} + \beta_4 F_{SIZE}_{it} + \beta_5 LEV_{it} + \beta_5 ROE_{it} + \beta_5 GWT_{it} + \mu_i + \varepsilon_{it} \tag{1}$$

$$E_INDX_{it} = \beta_0 + \beta_1 BFEM_{it} + \beta_2 B_{SIZE}_{it} + \beta_3 B_{IND}_{it} + \beta_4 F_{SIZE}_{it} + \beta_5 LEV_{it} + \beta_5 ROE_{it} + \beta_5 GWT_{it} + \mu_i + \varepsilon_{it} \tag{2}$$

$$S_INDX_{it} = \beta_0 + \beta_1 BFEM_{it} + \beta_2 B_{SIZE}_{it} + \beta_3 B_{IND}_{it} + \beta_4 F_{SIZE}_{it} + \beta_5 LEV_{it} + \beta_5 ROE_{it} + \beta_5 GWT_{it} + \mu_i + \varepsilon_{it} \tag{3}$$

$$G_INDX_{it} = \beta_0 + \beta_1 BFEM_{it} + \beta_2 B_{SIZE}_{it} + \beta_3 B_{IND}_{it} + \beta_4 F_{SIZE}_{it} + \beta_5 LEV_{it} + \beta_5 ROE_{it} + \beta_5 GWT_{it} + \mu_i + \varepsilon_{it} \tag{4}$$

Where:

- ESG = ESG disclosure.
- E_INDIX = Environmental disclosure.
- S_INDIX = Social disclosure.
- G_INDIX = Governance disclosure.
- BFEM = Board feminization.
- BSIZE = Board size.
- BIND = Board independence.
- FSIZE = Firm size.
- LEV = Leverage.
- ROE = Profitability.
- GWT = Growth.
- ε = Error term.
- i = Firm.
- t = Period.

The fixed effects model examined the panel data while correcting for heteroscedasticity across firms. Since the redundancy and Hausman tests of random effects misspecification failed, the fixed effects model was chosen.

The measurement of each variable is shown in Table 1. Board feminization is the independent variable. The proportion of women on corporate boards was used as a measure for board feminization, which is supported by previous studies by Balina and Idasz-Balina (2018); Benkraiem et al. (2021) and Bruna et al. (2021). The dependent variables are ESG (the ESG disclosure score), E_INDIX (environmental disclosure score), S_INDIX (social disclosure score) and G_INDIX (governance disclosure score), for every firm *i*, at time *t*. Following previous empirical studies on ESG, some board-level characteristics, such as board size (Shakil et al., 2020; Velte, 2016), board independence (Birindelli et al., 2018), and firm-level variables including return on equity (Ellili, 2022a), growth (Alareeni & Hamdan, 2020; Wasiuzzaman, Ibrahim, & Kawi, 2022), leverage (El Khoury, Nasrallah, & Alareeni, 2023), and firm size (Ellili, 2022a; Ellili, 2022b; Shakil et al., 2020), were incorporated as control variables. Return on equity (ROE) measures a firm's profitability, whereas the natural logarithm of the total assets is used to measure FSIZE. LEV represents a firm's leverage and is measured as the total debt to the total assets. GWT reflects the company's growth, measured by the market capitalization to the book value of equity.

Table 1. Measurement of variables.

Variables	Measurement	Sources
Independent variables		
Board feminization (BFEM)	Percentage of women on the board	Balina and Idasz-Balina (2018); Benkraiem et al. (2021); Bruna et al. (2021) and Manita et al. (2018)
Control variables		
Board size (BSIZE)	Total number of directors on the company's board	Birindelli et al. (2018) and Yadav and Prashar (2022)
Board independence (BIND)	Percentage of independent directors on the board	Kamaludin et al. (2022); Wasiuzzaman et al. (2022) and Wasiuzzaman and Wan Mohammad (2020)
Firm size (FSIZE)	Natural logarithm of the firm's total assets	Ellili (2022b); Kamaludin et al. (2022) and Shakil et al. (2020)
Leverage (LEV)	Firm's total debt divided by its total assets	Arora and Sharma (2022) and El Khoury et al. (2023)

Variables	Measurement	Sources
Profitability/Return on Equity (ROE)	Firm's net income divided by shareholders' equity	Wasiuzzaman and Wan Mohammad (2020)
Growth (GWT)	Ratio of market capitalization to book value of equity	Sharma, Panday, and Dangwal (2020)
Dependent variables		
Environmental disclosure score(E_INDX); Social disclosure score (S_INDX); Governance disclosure score (G_INDX), and aggregate ESG disclosure scores (ESG)	A proprietary score was developed based on the level of a company's environmental, social, and governance disclosure, both singularly and as a composite score	Emeka-Nwokeji and Osisioma (2019); MachameRatios Database®

4. Results and Discussion

4.1. Descriptive Statistics and Trend Analysis

Table 2 presents the descriptive statistics of all the variables. The sampled firms' mean ESG disclosure score was 0.308, which is low. The lowest score was 0.020 and the highest was 0.710. The governance disclosure score was 0.487 with a standard deviation of 0.178, while the social disclosure score was 0.274 with a standard deviation of 0.168. The environmental disclosure score was 0.167, with a standard deviation of 0.202. The governance disclosure score was the highest of the three ESG components.

This could be due to Code of Corporate Governance Practices governing quoted firms in Kenya, as Karimi (2021) reported a high conformance level among Kenya's publicly traded corporations. According to Outa and Waweru (2016), Kenyan law mandates corporate directors to maintain a sound governance framework to safeguard shareholders. Good governance is crucial to business sustainability and investment decisions (Crifo, Escrig-Olmedo, & Mottis, 2019).

The mean percentage of female directors was 15.405, with a standard deviation of 12.410. However, the maximum reported female percentage was 66.67%, which indicates board feminization in some sampled firms, even though some boards had no female directors (minimum value = 0.0). The Kenyan Constitution's Article 27(8) stipulates that no more than two-thirds of any elected or appointed body members should be of one gender, which is substantially higher than the average of 15.405% (Institute of Directors of Kenya, 2014).

The sample firms' average board size was 9.570, with 78.641% being independent. This result conforms with the 2015 Kenyan Code of Corporate Governance Practices for Issuers of Securities to the public, which mandates that independent directors should make up at least one-third of the boards of Kenyan public companies. The average ROE was 15.71%, the firm size based on the natural logarithm of total assets was Ksh7.369 billion, and the mean LEV based on the percentage of debt to total assets was 41.844%. The average GWT of the firms based on current market capitalization to book equity value is 2.189.

Table 2. Descriptive statistics.

Variable	Obs.	Min.	Max.	Mean	Std. dev.
ESG_INDX	467	0.020	0.710	0.308	0.149
E_INDX	467	0.000	0.750	0.167	0.202
S_INDX	467	0.000	0.750	0.274	0.168
G_INDX	467	0.000	0.870	0.487	0.178
BFEM	467	0.000	66.670	15.405	12.410
BSIZE	467	5.000	25.000	9.570	2.642
BIND	467	37.500	100.000	78.641	12.592
FSIZE	467	5.400	8.950	7.369	0.795
LEV	467	4.510	99.770	41.844	25.698
ROE	467	-275.950	224.480	15.706	27.690
GWT	467	0.000	53.150	2.197	4.656

Figures 1 and 2 show increased ESG scores and women in boardrooms from 2006 to 2019. Environmental disclosure had the lowest average score, preceded by social and governance. Governance disclosure is high because it is necessary to disclose corporate governance information. The average number of female board directors has steadily increased, from 10.148 in 2006 to 23.857 in 2019, and the trend is especially apparent from 2013 to 2019.

This development is comparable to what the KIM Board Diversity and Inclusion Report and the African Development Bank noted in their reports regarding women on boards.

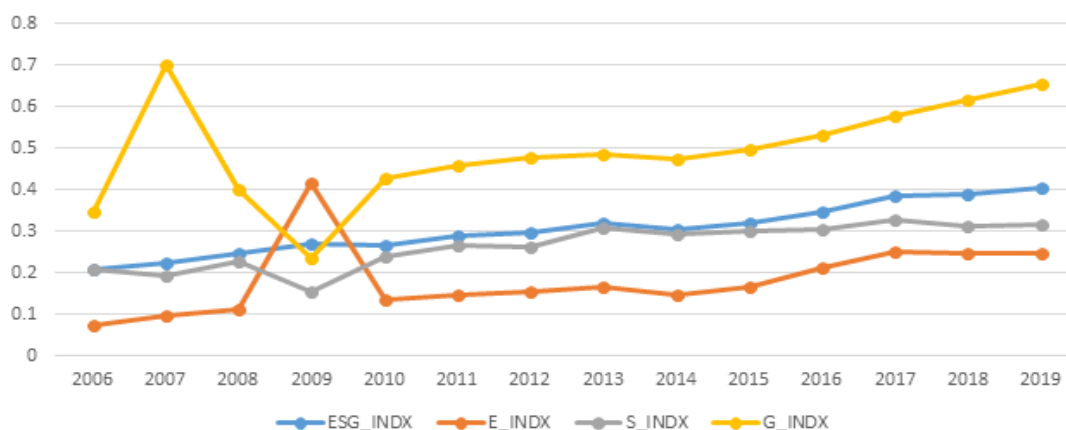


Figure 1. ESG disclosure trend.

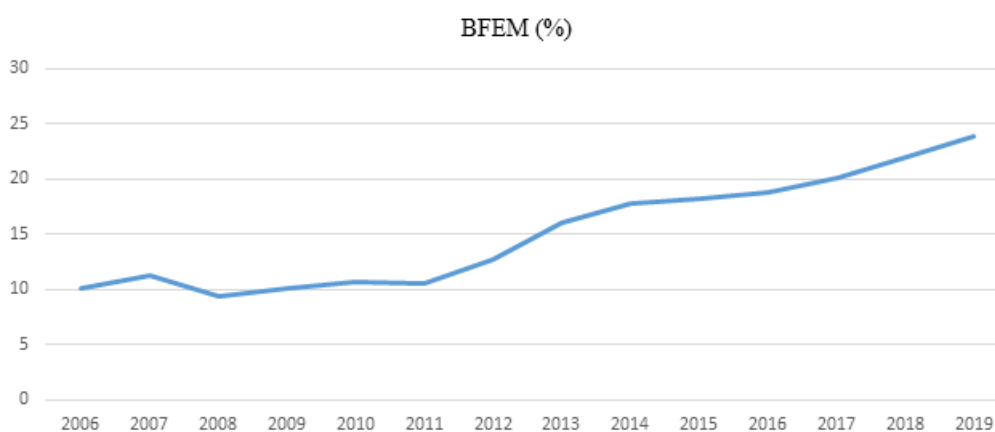


Figure 2. Mean percentage of female directors on boards.

Table 3 shows the dependent, independent, and control variables' Pearson correlation matrix. Strong correlations are seen between ESG and its components, which is to be anticipated given that the entire ESG score is generated using its components. The correlation study between BFEM and ESG, E_INDEX, S_INDEX, and G_INDEX reveals that every disclosure score positively correlates with BFEM. Multicollinearity was not a problem since the variables were treated as dependent variables in separate analyses. The correlation values were below 0.8, showing no multicollinearity issues (Gujarati & Porter, 2009). The variance inflation factor (VIF) values were below 10, indicating a lack of multicollinearity. Board size and firm size are positively associated with ESG, its dimensions, and board feminization. There is a greater willingness among larger companies to share sustainability performance.

The correlation between BFEM and ESG and its pillars was significant. Financial leverage is negatively associated with ESG scores and its components. Board feminization exhibited a positive correlation with board independence, ESG score, and governance disclosure.

4.2. Regression Results

The effect of the independent variable (board feminization) on the ESG disclosure score and its components (Equations 1 to 4) was analyzed via panel data regression using a fixed effects model to adjust for unobserved firm-specific heterogeneity. The Hausman test favors the fixed effects model over the random effects model (p-value < 0.05). The fixed effects model was used instead of the pooling OLS method (the cross-section F-statistic = 33.93; p-value = 0.01).

Tests for multicollinearity and heteroscedasticity were performed, and the problem of multicollinearity was not observed among the variables since the largest VIF was 3.638, which is far less than the criterion (VIF < 10) (Ott & Longnecker, 2015). We employed a cross-sectional or firm fixed effects control to account for company heterogeneity. Four statistically significant models describe the relationship between ESG scores and the explanatory variables at $p < 0.000$, with R^2 values of 40.3% (Model 1), 24.5% (Model 2), 38.4% (Model 3) and 24% (Model 4). Model 4 aligns with prior studies (Kamaludin et al., 2022; Nicolò et al., 2021; Wasiuzzaman & Wan Mohammad, 2020).

Table 3. Correlation matrix.

Variables	ESG	E_INDX	S_INDX	G_INDX	BFEM	BSIZE	BIND	FSIZE	LEV	ROE	GWT
ESG	1										
E_INDX	0.852***	1									
S_INDX	0.831***	0.601***	1								
G_INDX	0.776***	0.453***	0.476***	1							
BFEM	0.236***	0.113**	0.145**	0.331***	1						
BSIZE	0.457***	0.384***	0.393***	0.345***	0.253***	1					
BIND	0.138**	0.036	0.081	0.229***	-0.095**	0.159**	1				
FSIZE	0.630***	0.507***	0.623***	0.428***	0.200***	0.650***	0.225***	1			
LEV	-0.272***	-0.197***	-0.275***	-0.206***	-0.118**	-0.286***	-0.046	-0.518***	1		
ROE	0.062	0.078	0.043	0.027	-0.110**	0.166**	0.042	0.093**	-0.188***	1	
GWT	0.014	0.015	-0.060	0.073	0.126**	0.138**	0.022	-0.059	-0.240***	0.702***	1

Note: *** and ** indicate that correlation is significant at $p < 0.01$ and $p < 0.05$, respectively.

Table 5 shows the regression findings of board feminization with aggregate and individual ESG values. From the results, it was found that BFEM has positive influences on the overall ESG disclosure. ESG and G_INDX were both significantly influenced by BFEM at the 1% level, whereas E_INDX and S_INDX were not significantly impacted. With every 1% increase in the share of women on the board, the ESG disclosure score rises by 0.1%, the G_INDX score rises by 0.3%, the S_INDX score rises by 0.1%, and the E_INDX score falls by 0.007%. Thus, of the three ESG elements, BFEM has the most significant effect on G_INDX in terms of the magnitude of the coefficient, followed by S_INDX and E_INDX.

Model 1 of the research shows that B_FEM has a positive impact on the ESG disclosure score of companies, supporting the resource dependence theory. The beta coefficient between the ESG score and BFEM was positive, with a p-value < 0.1; hence, H1 is supported. This finding shows that the disclosure of more ESG is supported by the board's more significant representation of female directors. Stakeholder theory claims that having more female directors ensures that a board has higher dedication and diligence, which results in enhanced monitoring functions.

Additionally, having more women on the board of directors promotes representation of all stakeholder interests and ensures a higher interest in environmental issues. These factors contribute to the positive influence of women on the board on the extent of ESG disclosure. The findings corroborate prior studies on feminization and ESG disclosure (Gurol & Lagasio, 2021; Kamaludin et al., 2022; Khemakhem et al., 2022; Qureshi et al., 2020; Wasiuzzaman & Wan Mohammad, 2020). This aligns with listing authorities' and the Kenyan government's attempts to increase women's board involvement to at least 30%.

In Models 2 and 3, which include environmental and social pillar scores, H2 and H3 were not supported (p-value > 0.1). The number of female directors had no significant influence on environmental and social disclosure. These findings are supported by earlier studies (Majumder et al., 2017; Wasiuzzaman & Wan Mohammad, 2020; Yadav & Prashar, 2022).

Model 4 shows a statistically significant positive relationship between BFEM and G_INDX ($\beta = 0.003$, p-value < 0.1). Similar results were also achieved by De Masi et al. (2021); Kamaludin et al. (2022); Nicolò et al. (2021) and Wasiuzzaman and Wan Mohammad (2020). This outcome reinforces the commitment of female directors to responsible and open communication. From the stakeholder and resource dependency perspective, board feminization may enhance board performance through a diversity of ideas, viewpoints, expertise, and experience (Agyemang-Mintah & Schadewitz, 2019), leading to improved business reputation, corporate governance quality and a firm's earning ability by strengthening ties with influential stakeholders (Qureshi et al., 2020). This may strengthen management oversight and encourage businesses to partake in an increased level of sustainability disclosure (Nuber & Velte, 2021; Velte, 2016). Accordingly, the findings support H4.

Regarding the board characteristics' control variables, BIND significantly positively influences nearly all disclosure scores, except for E_INDX. BSIZE exhibited a negative but insignificant influence on ESG and its components. FSIZE significantly influenced all the disclosure scores at the 1% level, indicating a strong influence. LEV had a significant positive influence on E_INDX at a 5% level but an insignificant influence on ESG, S_INDX and G_INDX. ROE had no discernible impact on any of the disclosure scores. GWT was found to have a significant negative influence on E_INDX, but the significance is only at the 10% level, indicating a weak influence.

Table 4. Regression analysis results.

Dependent variable	Model 1	Model 2	Model 3	Model 4
	ESG	E_INDX	S_INDX	G_INDX
Independent variable				
BFEM	0.001 (3.06)***	-0.00007 (-0.09)	0.001 (1.44)	0.003 (5.57)***
Control variables				
BSIZE	-0.003 (-0.98)	-0.003 (-0.76)	-0.001 (-0.31)	-0.003 (-0.98)
BIND	0.001 (2.59)**	0.001 (0.65)	0.001 (2.03)**	0.002 (2.99)***
FSIZE	0.206 (12.60)***	0.229 (8.80)***	0.174 (7.96)***	0.221 (10.20)***
LEV	0.000 (1.25)	0.000 (2.01)**	0.000 (0.02)	0.000 (0.46)
ROE	0.000 (0.61)	-0.000 (-0.14)	0.000 (1.45)	0.000 (0.16)
GWT	-0.002 (-1.04)	-0.005 (-1.97)*	-0.001 (-0.50)	0.001 (0.36)
Constant	-1.306 (-10.57)***	-1.519 (-7.74)***	-1.114 (-6.75)***	-1.315 (-8.05)***
Firm fixed effects	Yes	Yes	Yes	Yes
R-squared	0.403	0.245	0.384	0.240
F statistics	33.93	14.27	13.38	29.84
P-value	0.000	0.000	0.000	0.000

Note: T statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

4.3. Robustness Test

The validity of the regression analysis results in Table 4 was assessed using the dynamic generalized method of moments (GMM). The GMM was selected because it overcomes the limitations of OLS and accounts

for endogeneity bias due to simultaneity bias, measurement error and model misspecification (Blundell, Bond, & Windmeijer, 2000). The models were re-run employing two-step GMM estimation methods, and the OLS regression findings were validated. Table 5 shows the GMM regression results for all four equations. The second difference's AR(2) values were insignificant, indicating no serial correlation.

Furthermore, the Sargan and Wald tests validated the results. The results reveal that the lagged values of ESG, E_INDX, S_INDX and G_INDX have a significant positive association with board feminization. These results corroborate the preceding tables and emphasize board feminization's role in increasing sustainability disclosure practices.

Table 5. Generalized method of moments (GMM) regression results.

Variables	Model 1	Model 2	Model 3	Model 4
	ESG	E_INDX	S_INDX	G_INDX
Dependent variables				
Lagged ESG_	0.844 (5.68)***	-	-	-
Lagged E_INDX	-	0.667 (5.46)***	-	-
Lagged S_INDX	-	-	0.344 (1.72)*	-
Lagged G_INDX	-	-	-	0.875 (4.81)***
Independent variable				
Board gender diversity	-0.0002 (-0.31)	-0.0003 (-0.42)	-0.00001 (-0.01)	0.0005 (0.64)
Control variables				
B_SIZE	0.001 (0.42)	0.006 (0.95)	0.004 (0.47)	0.004 (0.23)
B_IND	-0.004 (-0.72)	-0.001 (-0.39)	-0.006 (-0.91)	0.004 (1.04)
F_SIZE	0.031 (1.56)	0.042 (1.64)	0.095 (2.55)**	-0.022 (-0.22)
LEV	0.000 (-0.92)	0.000 (3.1)***	0.000 (-0.36)	0.000 (-0.75)
ROE	-0.0002 (-0.92)	0.000 (-1.44)	0.000 (-0.18)	-0.0001 (-0.38)
GWT	-0.0122 (-0.72)	-0.008 (-0.46)	-0.013 (-0.54)	0.002 (0.82)
Constant	0.138 (0.37)	-0.219 (-0.91)	-0.075 (-0.18)	-0.095 (-0.14)
AR (1) p-value	0.022	0.003	0.013	0.041
AR (2) p-value	0.365	0.399	0.870	0.217
Sargan p-value	0.758	0.782	0.118	0.896
Wald test p-value	0.259	0.560	0.144	0.670

Note: Z statistics are in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

5. Conclusion

This research explored the influence of board feminization on ESG disclosure using data from listed Kenyan firms from 2006 to 2019. The research sample consists of 467 observations from 36 publicly traded companies. It provides additional evidence on the role of board feminization on ESG disclosure in emerging economies, extending the limited existing research in the Sub-Saharan African region. Unlike earlier studies, which primarily focused on a single aspect of ESG, often on environmental or social disclosure, this study considers the impact of board feminization on the ESG framework's constituent dimensions and their association in a single context since ESG disclosure concerns are interrelated. The study incorporates resource-based and stakeholder theories to provide new insights into the relationship of interests.

From the results, several significant inferences may be drawn. First, the principal findings revealed that board feminization positively influenced the sample companies' overall ESG disclosure practices and governance disclosures. The results confirm that including female directors on corporate boards enhances ESG disclosure. This emphasizes the need for listed corporations in Kenya to prioritize increasing women's representation on their boards. Second, the findings indicated that ESG elements (E_INDX, S_INDX) provided varied outcomes. Environmental and social disclosure were shown to be insignificantly related to board feminization.

The findings have theoretical and practical implications for NSE-listed companies and legal and regulatory agencies. First, from a practical standpoint, this research gives NSE-listed firms a critical understanding of ESG disclosure, which improves transparency and compliance with best practices. Theoretically, the findings corroborate the stakeholder and resource-based perspectives and demonstrate a link between board feminization and ESG disclosure. Highly feminized corporate boards will likely engage in ESG and governance disclosure initiatives as female directors improve corporations' sustainability compliance. Therefore, businesses should advocate for gender-balanced boards (not tokenism) and diversify their ownership structures and boards of directors. This will aid corporations in disclosing more ESG information and implementing efficient corporate governance processes to promote ESG disclosure. Second, the results revealed that environmental disclosure scores were generally low, with governance considering social and environmental disclosure more. This is because regulatory agencies in Kenya, including the Capital Market Authority (CMA), have given corporate governance standards precedence above social and environmental issues for the sampled companies. Hence, the CMA and NSE should implement measures to strengthen environmental compliance and transparency standards by creating independent committees and board feminization to oversee the implementation and

disclosure of ESG practices and building a culture of sustainable development among diverse stakeholders while emphasizing the significance of information sharing via transparency accompanied by expanded ESG reporting requirements and increased regulatory oversight. Finally, although women's representation in Kenya's publicly listed companies' board rooms is increasing, the percentage still needs to be higher. Hence, the regulators need to enforce regulations forcing corporations to raise the number of female board directors to boost ESG disclosure as envisioned in Article 27 of the Kenyan Constitution.

This research has limitations, even though its results were not affected by endogeneity and hold when the GMM was used. First, owing to low ESG disclosure or unavailable data among listed Kenyan companies, only 36 out of 63 NSE-listed firms were considered in the research. Therefore, as data becomes available, future research can extend this investigation by incorporating additional firms. Second, the empirical results cannot be generalized across countries as they focused only on listed firms in a single country. Hence, future studies should explore the effects in other developing and emerging African countries due to variations in reporting standards, legislation, policies, and economic growth phases. Third, our research focuses on a specific aspect of board feminization, namely gender diversity (proportion of women on boards). Future studies could explore the effects of different characteristics related to board feminization, such as the qualifications, independence, professional background, and the nationality of female directors. Last, it should be noted that the quantitative methodology employed in this study may have limitations in providing comprehensive insights into firms' ESG performance. Hence, future studies should use a mixed method approach, integrating quantitative and qualitative methods, to enhance the quality of the research. This research serves as a valuable benchmark for future research in this area.

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