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# The Influence of Women's Leadership on Organizational Alignment with Sustainable Development Goals: A Discriminant Analysis Approach

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**A B S T R A C T**

*Although it seems that the roles of leaders in sustainable development are extremely important, it is not entirely clear whether the obstacles for women leaders in this context have really changed and to what extent there is still gender discrimination in this domain. In line with this, the study investigates the relationship between the gender of the leaders and the alignment of organizations*

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*with the 17 Sustainable Development Goals (SDGs) set by the United Nations. With the growing emphasis on sustainability in business practices, understanding how leadership, particularly CEO gender, influences corporate sustainability initiatives is crucial. The research adopts a quantitative approach to analyze data from organizations led by both male and female CEOs across various industries. By considering the 17 SDGs as independent variables, the study aims to discern whether organizations led by female CEOs exhibit a stronger commitment to specific sustainability goals compared to those led by male CEOs. The analysis seeks to uncover patterns in goal prioritization and explore whether gendered leadership affects sustainability outcomes. The findings are expected to provide insights into how leadership characteristics impact an organization's sustainability strategies and could suggest future policies and practices aimed at enhancing gender diversity in leadership roles.*

**KEYWORDS:** *female leaders, organization, gender equality, sustainable development goals, alignment, strategy*

## Introduction

Examining gender's influence on sustainability is crucial for both theoretical and practical reasons, yet it often remains underexplored. Namely, gender considerations are often overlooked due to a lack of awareness, insufficient data, and traditional biases in research and policy-making (Widegren & Sand, 2021). For these reasons, women continue to be dissatisfied with the stigma and many restrictions they face (Radović Marković, 2007), although they gradually improved their rights over time. Namely, according to the UN Economic and Social Council (2017), as many as 49 countries lack laws that protect women from all forms of discrimination. This affects gender equality and further limits women's rights in their inclusion in society and achieving the United Nation's Sustainable Development Goals (SDGs). Integrating gender perspectives is essential for achieving these global goals. Therefore, their greater inclusion in society and the achievement of the Sustainable Development Goals (SDGs) represent one of the biggest challenges facing the modern world. Especially, violence against women and girls, and low participation of women in decision-making or leadership positions are the main challenges. This violence can take many forms, including physical, sexual, and psychological abuse, and it has far-reaching impacts on the health and well-being of women and girls. In the economic sense, it most often refers to limiting access to financial resources, education or employment

opportunities. Increasing women's participation in leadership roles is not only a matter of equity but also leads to better organizational performance and innovation. Namely, they bring different viewpoints and approaches to problem-solving, which can lead to more innovative solutions (Novotney, 2023). In addition, according to Novotney (2023), numerous studies show that women leaders help increase productivity, support collaboration, inspire organizational dedication, and improve fairness. In addition, organizations led by women may implement more comprehensive policies and practices that support the SDGs. Furthermore, female leaders are more likely to prioritize ethical standards and stakeholder engagement, which are crucial for sustainable business practices (Ricci et al., 2023).

Despite this fact, organizations do not sufficiently address policies and practices that take into account the mismatch between how women are viewed and the qualities and experiences required for leadership positions (Ibarra et al., 2013). For example, leadership qualities are often associated with masculine traits, which can disadvantage women (AAUW, 2016). Research by Zheng, Kark, and Meister (2018) highlights the paradoxes women leaders face, such as the need to be competent, which are often seen as opposing qualities. In this context, leadership qualities such as assertiveness, decisiveness, and confidence are often stereotypically viewed as masculine traits. When women exhibit these qualities, they can face negative biases and perceptions. This phenomenon is known as the "double bind" where women are often judged harshly for displaying traditionally masculine traits, yet they may also be seen as less competent. On one hand, if they follow a masculine leadership style, their male subordinates will dislike them. On the other hand, if they adopt a feminine style, they will be more liked, but not respected (Radović-Marković et al., 2021). At the same time, the women leaders' "unique" leadership style also has its dangers, as it could strengthen gender stereotypes (Rosner, 2011). Therefore, female inequality in the workforce continues to be a concern worldwide and the interest in finding a solution to this problem has never stopped. In this context, it is necessary in current organizations to support the motivation of women to set themselves up as leaders, but also to increase the likelihood that others will recognize their efforts and qualities (Ibarra et al., 2013). Addressing these gaps requires concerted efforts to integrate gender analysis into sustainability research and practice. This can lead to more inclusive and resilient organizations and societies.

Drawing on existing literature on gender and leadership, as well as sustainability in business, this study adopts a quantitative approach to examine data from diverse industries. Based on suggestions that female executives are more likely than their male counterparts to engage in sustainable business practices (e.g., Manner, 2010), we investigate the impact of gender diversity in leadership by exploring how it may influence corporate sustainability strategies, offering valuable insights for both scholars and practitioners.

## Literature Review

The relationship between leadership and organizational outcomes has been extensively studied, with a growing focus on how different leadership attributes, including gender, affect various aspects of corporate strategy and performance. Several studies deal with the limitations that women face when advancing to leadership positions. Key issues include difficulties in adapting to the organizational culture of men, as well as stereotypes related to career and family problems and responsibilities (Agasalim, 2021).

The need to promote women to leadership positions in organizations is determined by numerous reasons (Mokhov, 2021). In line with this, some research indicates that gender diversity in leadership can lead to more innovative and inclusive decision-making processes (Catalyst, 2020). In addition, women in leadership roles have been associated with greater emphasis on social responsibility and ethical practices (Eagly & Carli, 2003). For instance, studies show that female leaders often prioritize social and environmental issues, which can influence organizational policies and practices (Adams & Ferreira, 2009). Also, female leaders must be effective communicators, as they are responsible for ensuring that everyone in the organization understands the company's culture and works together to achieve its goals (Radović Marković, 2023).

According to Kamath (2022), a few studies argue for the empowerment of women in order to achieve gender equality not only at the top management and leadership levels, but also for gender inclusiveness at the middle and general levels in certain firms. Namely, the empowerment of women is fundamental for the achievement of equality and corporate sustainability (Kumar Basantia & Rameshwari Devi, 2022). In line with this, the impact of CEO gender on corporate sustainability is an emerging area of research. Female CEOs have been found to have different

sustainability priorities compared to their male counterparts. According to Post and Byron (2015), female executives are more likely to integrate sustainability into their corporate strategies. This may be attributed to gendered perspectives on risk and responsibility, where women are generally perceived to have a stronger orientation towards social and environmental concerns (Kirkpatrick & Locke, 1991; Radović-Marković, 2018). Research by Bear, Rahman, and Post (2010) supports this view, indicating that companies with female board members or executives are more likely to adopt sustainable practices. The rationale behind this trend includes women's greater sensitivity to stakeholder concerns and a more collaborative leadership style (Nielsen & Huse, 2010). This sensitivity can translate into stronger commitments to the Sustainable Development Goals (SDGs), which address global challenges such as inequality, climate change, and sustainable development. Such commitment includes the intensity, direction and persistence displayed in achieving those goals. In addition, motivation is the process that accounts for an effort made to attain a given Sustainable Development Goals (SDGs) (Radovic-Marković et al., 2021).

The SDGs, established by the United Nations in 2015, represent a universal agenda for addressing key global challenges. Organizations across various sectors are increasingly aligning their strategies with these goals (UN, 2015). Studies suggest that corporate engagement with SDGs varies significantly based on leadership characteristics (Grosser & Moon, 2019). Female leaders, due to their inherent tendencies towards collaborative and ethical practices, may exhibit greater alignment with specific SDGs, particularly those related to gender equality (Goal 5), climate action (Goal 13), and reduced inequalities (Goal 10) (Seierstad, 2016).

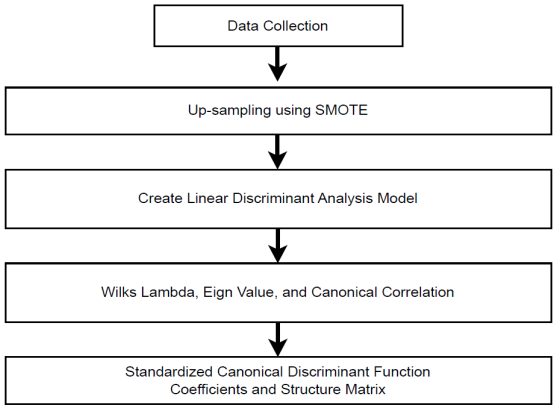
Most of the empirical studies focusing on the alignment of corporate practices with SDGs in relation to CEO gender are limited but growing. For example, a study by Terjesen, Sealy, and Singh (2009) highlights that gender diversity in senior management correlates with higher corporate social responsibility (CSR) scores, which often encompass elements of the SDGs. This correlation suggests that female CEOs might be more proactive in integrating SDG-related practices into their organizational strategies. Further, research by Madsen and Bell (2014) indicates that female-led firms are more likely to engage in practices that support sustainable development, though the specific impact on each SDG needs more detailed exploration. The diversity in sustainability goals prioritization observed in female-led

firms could provide a nuanced understanding of how CEO gender influences organizational alignment with the SDGs.

## Methodology

Machine learning aims to find a relationship between independent and dependent variables. In this study, the objective is to examine the impact of a leader`s gender on achieving Sustainable Development Goals. Since gender is a demographical variable, it is not advised to use it as a dependent variable for classification. In this study Linear Discriminant Analysis (LDA) (Blei et al., 2003) a supervised learning technique that searches for variables which best discriminate among classes is applied (Martinez & Kak, 2001). In the present study, LDA was used as supervised modeling for gender classification (Female or Male). There are many other studies where LDA is used for demographic variables (Hu et al., 2007; Schler et al., 2006). Figure 1 illustrates the methodology adopted for the research.

*Figure 1: A proposed methodology*




*Source: Authors*

## Source of Data

The data for the research work is taken from the open-source platform Kaggle.com (Kaggle: Your Home for Data Science, 2024), as well as from sustainability reports and ESG scores from ResponsibilityReports.com (Sustainalytics, 2024). The cleaned textual data of ESG reports of Standard

& Poor's 500 large companies listed on stock exchanges in the United States (Chopra, 2024) was used to identify the keywords related to the SDG goals. The sustainability reports were converted to text, and the SDGs were identified from the keywords in the text. The sustainability development goals were calculated from the text using the text2sdg package (Meier et al., 2021) in R Programming. The methods used for identifying the SDG goals from the ESG reports include the Aukland approach (Wang et al., 2023), SIRIS (Duran-Silva et al., 2019), Aurora Universities Network (Vanderfeesten et al., 2011), and Elsevier (Hellwig et al., 2019), all of which rely on Lucene-style Boolean queries. Additionally, the SDGO (Bautista-Puig & Mauleón E, 2019) and SDSN (Sachs et al., 2024) databases were also utilized for this purpose. Analysis of the data was done using the text2sdg (Wulff et al., 2021) package in R Programming (version 4.0.1) (Bunn et al., 2017). To create a balanced dataset, the SMOTE technique was applied using Python (Van Rossum, 2009) software and the PyCaret (Ali, 2020) package. This balanced data was then analyzed using IBM SPSS. For LDA, IBM SPSS version 28.0 (IBM.Corp & Released 2021, 2023) package was used.

### Variable of the Study

The dependent variable for the present study is the gender of the CEO of the organization, while the independent variables are the seventeen Sustainable Development Goals (SDG- 1 to SDG- 17), listed as follows: SDG-1 Eliminate Poverty, SDG-2 Erase Hunger, SDG-3 Establish Good Health and Well-Being, SDG-4 Provide Quality Education, SDG-5 Enforce Gender Equality, SDG-6 Improve Clean Water and Sanitation, SDG-7 Grow Affordable and Clean Energy, SDG-8 Create Decent Work and Economic Growth, SDG-9 Increase Industry, Innovation, and Infrastructure, SDG-10 Reduce Inequality, SDG-11 Mobilize Sustainable Cities and Communities, SDG-12 Influence Responsible Consumption and Production, SDG-13 Organize Climate Action, SDG-14 Develop Life Below Water, SDG-15 Advance Life On Land, SDG-16 Guarantee Peace, Justice, and Strong Institutions, SDG-17 Build Partnerships for the Goals.

## Data Analysis

Since the gender data, considered the dependent variable, is imbalanced due to the very low ratio of female CEOs, it poses challenges for analysis.

Using SMOTE (Fernandez et al., 2018) techniques the data was upscaled and then used for further analysis. With the advancements in machine learning, there are many algorithms available for classification. The most appropriate one for this study is LDA (Linear Discriminant Analysis). A total of 808 observations were collected for the CEOs of S and P 500 companies and their ESG reports from 2014 to 2023. Due to data cleaning, only 808 observations were used for analysis. Due to class imbalance, SMOTE is used to balance the data. There are many techniques which are used to solve the class imbalance problem, such as the **Synthetic Minority Oversampling Technique (**SMOTE) (Fernandez et al., 2018), Adaptive Synthetic Sampling (ADASYN) (He et al., 2008), SMOTE-ENN (Noorhalim et al., 2019), SMOTETomek (Batista et al., 2004; Wang et al., 2023) and so on. In this study, we used SMOTE Tomek for balancing the data. In SMOTE new data points are created for the minority class. The SMOTE technique was used, and the data was transformed to 1115 observations. This data was used for applying Linear Discriminant Analysis.

## Linear Discriminant Analysis

Linear Discriminant Analysis (Brown & Tinsley, 1983) is a method that helps researchers explore and explain the differences between two or more distinct groups by looking at several continuous variables at the same time. Although gender is a demographical variable, it is not advised to use it as a dependent variable for classification. In this study, Linear Discriminant Analysis (LDA) (Blei et al., 2003) a supervised learning technique that searches for variables which best discriminate among classes (Martinez & Kak, 2001) is being used. There are many other studies where LDA is used for demographic variables as dependent variables (Hu et al., 2007; Schler et al., 2006). With respect to the objective of the study, which is to find which SDGs discriminated the male and female leaders, LDA seems to be the most appropriate technique. Since our objective is to identify the independent variables rather than classify them, Linear Discriminant Analysis (LDA) is considered to be a better method for dimension reduction and feature selection. It is widely used by researchers across various domains (Habachi & Benbachir, 2019). In this research, LDA is used to identify features that discriminate gender based on the Sustainable Development Goals (SDGs).

## Wilks Lambda

The key statistic used to determine whether there is a relationship between the independent and dependent variables is the significance test for Wilks' lambda. Wilks' lambda is the proportion of the total variance in the discriminant scores that is not explained by differences among the groups.

*Table 1: Wilks' lambda Test*

| SDG | Gender | Mean | Standard Deviation | Wilks' Lambda | F | df1 | df2 | Significance |
|---|---|---|---|---|---|---|---|---|
| SDG_01 | Female | 10.9638 | 6.34619 | 0.946 | 64.093 | 1 | 1113 | 0 |
| | Male | 8.2457 | 4.98169 | | | | | |
| SDG_02 | Female | 6.8104 | 5.44884 | 0.975 | 29.02 | 1 | 1113 | 0 |
| | Male | 9.0278 | 7.60331 | | | | | |
| SDG_03 | Female | 19.1075 | 9.83347 | 0.977 | 26.131 | 1 | 1113 | 0 |
| | Male | 22.6043 | 12.20812 | | | | | |
| SDG_04 | Female | 13.2534 | 6.30059 | 0.994 | 7.134 | 1 | 1113 | 0.008 |
| | Male | 12.3369 | 5.13661 | | | | | |
| SDG_05 | Female | 10.9341 | 6.58054 | 0.993 | 7.911 | 1 | 1113 | 0.005 |
| | Male | 9.8717 | 5.95369 | | | | | |
| SDG_06 | Female | 14.9652 | 8.92826 | 0.995 | 5.684 | 1 | 1113 | 0.017 |
| | Male | 13.6028 | 9.75544 | | | | | |
| SDG_07 | Female | 30.377 | 16.94971 | 0.991 | 10.264 | 1 | 1113 | 0.001 |
| | Male | 27.4637 | 13.38701 | | | | | |
| SDG_08 | Female | 29.4591 | 7.81625 | 0.997 | 3.122 | 1 | 1113 | 0.078 |
| | Male | 28.6368 | 7.56107 | | | | | |
| SDG_09 | Female | 21.1087 | 4.76621 | 0.984 | 18.196 | 1 | 1113 | 0 |
| | Male | 19.8006 | 5.25117 | | | | | |
| SDG_10 | Female | 23.9608 | 7.06264 | 1 | 0.05 | 1 | 1113 | 0.824 |
| | Male | 23.8655 | 7.05038 | | | | | |
| SDG_11 | Female | 29.6534 | 4.96574 | 0.997 | 2.923 | 1 | 1113 | 0.088 |
| | Male | 30.4034 | 8.49765 | | | | | |
| SDG_12 | Female | 22.9488 | 7.70253 | 0.974 | 30.122 | 1 | 1113 | 0 |
| | Male | 25.7867 | 9.06671 | | | | | |

| SDG | Gender | Mean | Standard Deviation | Wilks' Lambda | F | df1 | df2 | Significance |
|---|---|---|---|---|---|---|---|---|
| SDG_13 | Female | 29.3872 | 8.52987 | 1 | 0.199 | 1 | 1113 | 0.655 |
| | Male | 29.6754 | 11.93635 | | | | | |
| SDG_14 | Female | 6.3729 | 4.08477 | 0.992 | 8.821 | 1 | 1113 | 0.003 |
| | Male | 5.5085 | 5.25064 | | | | | |
| SDG_15 | Female | 9.4146 | 5.60406 | 0.997 | 3.483 | 1 | 1113 | 0.062 |
| | Male | 10.1901 | 7.62163 | | | | | |
| SDG_16 | Female | 28.9953 | 8.89625 | 0.996 | 4.478 | 1 | 1113 | 0.035 |
| | Male | 27.8671 | 8.70612 | | | | | |
| SDG_17 | Female | 6.854 | 3.13618 | 0.997 | 3.908 | 1 | 1113 | 0.048 |
| | Male | 6.4482 | 3.55061 | | | | | |

*Source: Authors' calculation*

Based on the results of Wilks' Lambda, it's evident that the null hypothesis is rejected for SDG_01, SDG_02, SDG_03, SDG_09, SDG_12, SDG_07, SDG_14, SDG_05, SDG_04, SDG_06, SDG_16, and SDG_17. This means there is a significant difference in these SDGs between genders at the 5% significance level. Specifically, SDGs 1,4,5,6,7,12,14, and 16 favor female CEOs, while SDGs 2 and 3 are more favorable to male CEOs. The canonical correlation coefficient is 0.515 and the square of the canonical correlation is 0.265. This value measures the association between the discriminant score and the set of independent variables. The eigenvalue is 0.362, indicating that the discriminant function explains approximately 36.2% of the variance, which is quite low. Similarly, Wilks` lambda is 0.734, meaning 26.6% (1 - 0.734) of the variance is explained by the SDGs according to the discriminant function at a 5% significance level.

**Standardized Canonical Discriminant Function Coefficients**

The standardized canonical discriminant function coefficients indicate the relationship of the variable with the discriminant function. Higher values suggest that the variable contributes more strongly to differentiating by gender. The SDG, ranked by the magnitude of their coefficients indicating discriminatory power are as follows: SDG_01, SDG_10, SDG_03, SDG_02, SDG_07, SDG_12, SDG_06, SDG_05, SDG_04, SDG_14, SDG_11, SDG_13, SDG_09, SDG_16, SDG_15, SDG_17 and SDG_08. The

importance of each variable is indicated by the relative size of the absolute value of its coefficient, with more important variables having larger coefficients. The direction is indicated by the sign of the coefficients. Similarly, the structure matrix indicates each variable's correlation with the discriminant function, with higher values representing stronger correlations. Many authors consider the structure matrix a better measure than the standardized canonical discriminant function coefficient.

*Table 2: Standardized Canonical Discriminant Function Coefficients*

| DG | Standardized Canonical Discriminant Function Coefficients | Structure Matrix |
|---|---|---|
| SDG_01 | .797 | 0.399 |
| SDG_02 | -.435 | -0.269 |
| SDG_03 | -.457 | -0.255 |
| SDG_04 | .322 | 0.133 |
| SDG_05 | .331 | 0.14 |
| SDG_06 | .355 | 0.119 |
| SDG_07 | .424 | 0.16 |
| SDG_08 | .019 | 0.088 |
| SDG_09 | .175 | 0.213 |
| SDG_10 | -.477 | 0.011 |
| SDG_11 | -.300 | -0.085 |
| SDG_12 | -.372 | -0.274 |
| SDG_13 | -.228 | -0.022 |
| SDG_14 | .304 | 0.148 |
| SDG_15 | -.155 | -0.093 |
| SDG_16 | .173 | 0.105 |
| SDG_17 | .061 | 0.099 |

*Source: Authors' calculation*

The group centroid value is 0.706 for female CEOs and 0.511 for male CEOs. Based on the coefficients and their signs in the structure matrix, it seems that SDG's SDG_01, SDG_09, SDG_07, SDG_14, SDG_05, SDG_04, SDG_06, SDG_16, SDG_17, SDG_15, SDG_08, and SDG_10 favored by female CEOs and SDG_12, SDG_02, SDG_03, SDG_11 and SDG_13 are favored by male CEOs.

## Discussion

The discriminant analysis results reveal significant differences in the prioritization of Sustainable Development Goals (SDGs) based on the gender of the CEO, which aligns with existing literature on gendered leadership preferences in corporate strategy. Specifically, Wilks' Lambda results indicate that for SDGs 1 (No Poverty), 4 (Quality Education), 5 (Gender Equality), 6 (Clean Water and Sanitation), 7 (Affordable and Clean Energy), 12 (Responsible Consumption and Production), 14 (Life Below Water), and 16 (Peace, Justice, and Strong Institutions), female CEOs demonstrate stronger alignment compared to their male counterparts. These findings are consistent with prior research that suggests female leaders tend to emphasize social and environmental issues more prominently (Post & Byron, 2015; Adams & Ferreira, 2009).

Conversely, SDGs 2 (Zero Hunger) and 3 (Good Health and Well-being) are more strongly aligned with organizations led by male CEOs. This outcome might reflect traditional business priorities that are often emphasized in male-dominated leadership contexts, focusing more on immediate, measurable outcomes such as economic growth and productivity (Eagly & Carli, 2003). Such findings suggest that male and female CEOs may adopt differing perspectives on what constitutes sustainable business practices, potentially driven by underlying gendered differences in leadership values and decision-making styles (Bear et al., 2010).

The canonical correlation coefficient (0.515) and its squared value (0.265) indicate a moderate association between the discriminant scores and the set of SDGs. Although this relationship is significant, the relatively low eigenvalue (0.362) and Wilks' Lambda (0.734) suggest that the discriminant function explains only a limited portion of the variance (36.2%) in the data. This result highlights the complexity of sustainability priorities, which are likely influenced by multiple factors beyond CEO gender alone (Grosser & Moon, 2019).

The group centroid values for female (0.706) and male (-0.511) CEOs further illustrate the distinct differences in how these leaders approach SDG integration within their organizations. Female CEOs tend to favor SDGs related to social equity, environmental protection, and long-term sustainability goals, such as SDGs 1, 5, 6, 7, 14, and 16. These goals are inherently more aligned with the collaborative and stakeholder-inclusive leadership styles often associated with women in executive positions

(Nielsen & Huse, 2010). On the other hand, male CEOs are more aligned with goals like SDGs 2, 3, 11 (Sustainable Cities and Communities), and 13 (Climate Action), which are associated with tangible, growth-oriented outcomes. This observation aligns with research suggesting that male leaders may prioritize goals that demonstrate immediate business performance (Terjesen et al., 2009).

These findings contribute to the broader understanding of how gender diversity in leadership can impact organizational alignment with global sustainability frameworks. By emphasizing the differing priorities of male and female CEOs, this study highlights the importance of diverse leadership in fostering a holistic approach to sustainable development. Organizations aiming to enhance their contributions to the SDGs may benefit from fostering gender diversity at the executive level to ensure a balanced integration of social, environmental, and economic objectives.

## Conclusion

The importance of the study can be emphasized by the fact that there are very few studies that focus on the impact of gender diversity on the achievement of the Sustainable Development Goals (SDGs). Therefore, our study highlighted the promotion of women in leadership positions and the need to ensure gender diversity in decision-making. This would not only support the achievement of SDG 5 (gender equality), but also improve the business performance of organizations. Namely, this study highlights the important influence of the CEO's gender on the prioritization of the Sustainable Development Goals (SDGs) within organizations. It has been observed that female CEOs are more likely to prioritize goals related to gender equality (SDG 5), quality education (SDG 4) and good health and well-being (SDG 3). This is often attributed to their stronger commitment to the welfare of the community, as well as to the achievement of long-term social goals. The study, on the other hand, showed that male directors focus on goals related to economic growth and immediate business results. In short, women leaders often adopt a long-term perspective, focusing on sustainable growth rather than short-term gains. This approach is well aligned with the overarching goals of the SDGs, which relate to long-term global sustainability. These differences between women and men leaders highlight the importance of appreciating diverse leadership in achieving a balanced and comprehensive approach to sustainability.

In the end, it is stated that sustainable development policies that do not consider gender disparities and that do not have a holistic approach to the problem, will not be able to respond to the needs of all members of the community. Our recommendation is to ensure that women are represented in leadership positions across all sectors, including government, business, and civil society.

The study findings could have practical implications for businesses, policymakers, and sustainability advocates, emphasizing the importance of fostering gender-diverse leadership to promote sustainable development. In addition, the scientific sector is expected to provide important support to this action on a broader level in terms of achieving gender equality, through concerted efforts to integrate gender analysis into sustainability research and practice.

## Limitations and Future Scope of Research

This study has several limitations. First, it focuses solely on the gender of the CEO, without considering other potentially influential variables such as the CEO's experience, educational background, or cultural context. Additionally, the study relies on a quantitative approach, which limits the exploration of underlying motivations and decision-making processes. The sample size and diversity of industries represented in the study may also affect the generalizability of the results. Finally, the study assumes a linear relationship between CEO gender and SDG prioritization, which may overlook the complexity of leadership influences on sustainability strategies.

Future research can expand upon this study by exploring additional factors that influence organizational alignment with the SDGs beyond CEO gender. For example, examining the impact of industry type, organizational culture, and the presence of gender-diverse leadership teams could provide a more nuanced understanding of the relationship between leadership and sustainability. Longitudinal studies could also investigate how shifts in leadership impact changes in SDG prioritization over time. Additionally, qualitative research methods, such as case studies or interviews with CEOs, could yield deeper insights into the motivations and strategic choices that drive sustainability decisions. Expanding the sample to include organizations from various regions and sectors would enhance the generalizability of the findings.

## References


[1] **AAUW.** (2016). Barriers & Bias: The Status of Women in Leadership. Available at: Barriers & Bias: The Status of Women in Leadership – AAUW: Empowering Women Since 1881[accessed October 17, 2024].

[2] **Adams, R. B., & Ferreira, D.** (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, *94*(2), 291–309. https://doi.org/10.1016/j.jfineco.2008.10.007

[3] **Agasalim, A. A.** (2021). Importance and Role of Women within the Business Community of Azerbaijan. *Journal of Women's Entrepreneurship and Education*, (1-2), 84-108.

[4] **Ali, M.** (2020). PyCaret: An open source, low-code machine learning library in Python (PyCaret version 1.0.0). *PyCaret*. https://www.pycaret.org

[5] **Batista, G. E., Prati, R. C., & Monard, M. C.** (2004). A study of the behavior of several methods for balancing machine learning training data. *ACM SIGKDD explorations newsletter*, *6*(1), 20-29.

[6] **Bautista-Puig, N., & Mauleón, E.** (2019, July). Unveiling the path towards sustainability: Is there a research interest on sustainable goals? In *Proceedings of the 17th International Conference on Scientometrics & Informetrics*. https://doi.org/10.6084/m9.figshare.11106113.v1

[7] **Bear, S., Rahman, N., & Post, C.** (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics*, *97*(2), 207–221. https://doi.org/10.1007/s10551-010-0505-2

[8] **Blei, D. M., Ng, A. Y., & Jordan, M. I.** (2003). Latent Dirichlet allocation. *Journal of Machine Learning Research*, 3, 993–1022.

[9] **Brown, M. T., & Tinsley, H. E. A.** (1983). Discriminant analysis. *Journal of Leisure Research*, *15*(4), 290–310. https://doi.org/10.1080/00222216.1983.11969564

[10] **Bunn, A. G., Helfield, J. M., Gerdts, J. R., Gleaves, D. A., Drake, D. C., & Sheppard, P. R.** (2017). A solvent-based extraction fails to remove mobile nitrogen from western redcedar (Thuja plicata). *Dendrochronologia*, *44*, 19-21.

[11] **Catalyst.** (2020). Women in leadership. *Catalyst*. https://www.catalyst.org/research/women-in-leadership/

[12] **Chopra, J.** (2024, June). ESG sustainability reports of S&P 500 companies. *Kaggle*. https://www.kaggle.com/datasets/jaidityachopra/esg-sustainability-reports-of-s-and-p-500-companies

[13] **Duran-Silva, N., Fuster, E., Massucci, F. A., & Quinquillà, A.** (2019). A controlled vocabulary defining the semantic perimeter of Sustainable Development Goals. *Zenodo*. https://doi.org/10.5281/zenodo.3567769

[14] **Eagly, A. H., & Carli, L. L.** (2003). The female leadership advantage: An evaluation of the evidence. *The Leadership Quarterly*, *14*(6), 807–834. https://doi.org/10.1016/j.leaqua.2003.09.004

[15] **Fernandez, A., Garcia, S., Herrera, F., & Chawla, N. V.** (2018). SMOTE for learning from imbalanced data: Progress and challenges, marking the 15-year anniversary. *Journal of Artificial Intelligence Research*, *61*, 863–905. https://doi.org/10.1613/jair.1.11192

[16] **Grosser, K., & Moon, J.** (2019). Sustainable Development Goals and the future of business. Routledge.

[17] **Habachi, M., & Benbachir, S.** (2019). Combination of linear discriminant analysis and expert opinion for the construction of credit rating models: The case of SMEs. *Cogent Business & Management*, *6*(1), 1685926.

[18] **Hellwig, J., Huggett, S., Siebert, M., & Jayabalasingham, B.** (2019). *Artificial Intelligence: How knowledge is created, transferred, and used*. https://doi.org/10.17632/7ydfs62gd6.2

[19] **Hu, J., Zeng, H.-J., Li, H., Niu, C., & Chen, Z.** (2007). Demographic prediction based on user's browsing behavior. In *Proceedings of the 16th International World Wide Web Conference (WWW2007)*. https://doi.org/10.1145/1242572.1242594

[20] **Ibarra, H., Ely, R., & Kolb, D.** (2013).Women Rising: The Unseen Barriers, Harvard Business Review. Available at: Women Rising: The Unseen Barriers (hbr.org) [accessed October 16, 2024].

[21] **IBM Corp. Released** (2021). IBM SPSS Statistics for Windows, Version 28.0. Armonk, NY: IBM Corp.

[22] **IBM Corp. Released** (2023). IBM SPSS Statistics for Windows, Version 29.0.2.0 Armonk, NY: IBM Corp

[23] **Kamath, B.** (2022). Board gender diversity and intellectual capital performance of firms in India. *Journal of Women's Entrepreneurship and Education*, (1-2), 97–116.

[24] **Kirkpatrick, S. A., & Locke, E. A.** (1991). Leadership: Do traits matter? *The Executive*, *5*(2), 48–60. https://doi.org/10.5465/ame.1991.4274679

[25] **Kumar Basantia, T., & Rameshwari Devi, Y.** (2022). Gender discrimination in higher education institutions of Northeast India. *Journal of Women's Entrepreneurship and Education*, (3-4), 68–102.

[26] **Madsen, S. R., & Bell, M. P.** (2014). Women and leadership: A contextual perspective. Routledge.

[27] **Manner, M.H.** (2010). The impact of CEO characteristics on corporate social performance. *Journal of Business Ethics*, *93*, 53-72

[28] **Martinez, A. M., & Kak, A. C.** (2001). PCA versus LDA. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *23*(2), 228–233. https://doi.org/10.1109/34.908974

[29] **Meier, D. S., Mata, R., & Wulff, D. U**. (2021). text2sdg: An open-source solution to monitoring sustainable development goals from text. arXiv. https://arxiv.org/abs/2110.05856

[30] **Mokhov, V.** (2021). "Glass Ceilings" in the System of Public Administration in the Russian Federation. *Journal of Women's Entrepreneurship and Education*, (1-2), 109-121.

[31] **Nielsen, S., & Huse, M.** (2010). The contribution of women on boards of directors: Going beyond the surface. *Corporate Governance. International Review*, *18*(2), 136–148. https://doi.org/10.1111/j.1467-8683.2010.00784.x

[32] **Noorhalim, N., Ali, A., Shamsuddin, S.M.** (2019). Handling Imbalanced Ratio for Class Imbalance Problem Using SMOTE. In: Kor, LK., Ahmad, AR., Idrus, Z., Mansor, K. (eds.) Proceedings of the Third International Conference on Computing, Mathematics and Statistics (iCMS2017). Springer, Singapore. https://doi.org/10.1007/978-981-13-7279-7_3

[33] **Novotney, A.** (2023). Women leaders make work better, APA. Available at: Women leaders make work better. Here's the science behind how to promote them (apa.org)

[34] **Post, C., & Byron, K.** (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, *58*(5), 1546–1571. https://doi.org/10.5465/amj.2013.0319

[35] **Radović Marković, M.** (2007). Women Leaders: Case Study of Serbia. In Radović Marković, M. (ed.), The Perspective of Women's Entrepreneurship in the Age of Globalization, IAP, Charlotte, SAD, pp. 87-95. Available from: https://www.researchgate.net/publication/357974706_WOMEN_IN_BUSINESS_AND_LEADERSHIP_CRITIQUES_AND_DISCUSSIONS [accessed October 17, 2024].

[36] **Radović Marković, M.** (2023). Principles of management and leadership in a global world. Silver and Smith.

[37] **Radović Marković, M., & Radulović, D., Đukanović, B., Kyaruzi Silver, I.** (2021). Flexibility and Adaptation – The New Post-Covid Era, Silver & Smith, United Kingdom, ISBN 978-1-80068-337-2.

[38] **Radović Marković, M., Salamzadeh, A., & Kawamorita-Kesim, H.** (2016). Barriers to the advancement of women into leadership positions: A cross-national study. *Proceedings of the International Scientific Conference on Leadership and Organization Development*, 287–294.

[39] **Radović-Marković, M**. (2018). Organisational resilience and business continuity: theoretical and conceptual framework. *Journal of Entrepreneurship and Business Resilience*, *1*(1), 5-11.

[40] **Ricci, F., Scafarto, V., & della Corte, G**. (2023). Board Gender Diversity, Female Leaders and Corporate Environmental Responsibility: A Structured Literature Review. In: Paoloni, P.,Lombardi, R. (eds.) When the Crisis

Becomes an Opportunity. SIDREA Series in Accounting and Business Administration. Springer, Cham. https://doi.org/10.1007/978-3-031-21932-0_28 [accessed October 17, 2024].

[41] **Rosener, J. B.** (2011). Ways women lead. In *Leadership, gender, and organization* (pp. 19-29). Dordrecht: Springer Netherlands.

[42] **Sachs, J. D., Lafortune, G., & Fuller, G.** (2024). The SDGs and the UN Summit of the Future. *Sustainable Development Report 2024*. SDSN. https://doi.org/10.25546/108572

[43] **Schler, J., Koppel, M., Argamon, S., & Pennebaker, J.** (2006). Effects of age and gender on blogging. *Journal of Computational Science Education*, 199–205.

[44] **Seierstad, C.** (2016). The contribution of women on boards to corporate social responsibility: Evidence from the European Union. *Journal of Business Ethics*, *139*(1), 57–71. https://doi.org/10.1007/s10551-015-2620-9

[45] **Terjesen, S., Sealy, R., & Singh, V.** (2009). Women directors on corporate boards: A review and research agenda. *Corporate Governance: International Review*, 17(3), 320–337. https://doi.org/10.1111/j.1467-8683.2009.00742.x

[46] **UN Economic and Social Council.** (2017). Progress towards the Sustainable Development Goals: Report of the Secretary-General (E/2017/66). [accessed October 17, 2024].

[47] **United Nations.** (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations. https://sdgs.un.org/2030agenda

[48] **Van Rossum, G., & Drake, F. L.** (2009). Python 3 reference manual. CreateSpace.

[49] **Vanderfeesten, I., Reijers, H. A., & Van der Aalst, W. M.** (2011). Product-based workflow support. *Information Systems*, *36*(2), 517-535.

[50] **Wang, W., Kang, W., & Mu, J.** (2023). Mapping research to the Sustainable Development Goals (SDGs). https://doi.org/10.21203/rs.3.rs-2544385/v2

[51] **Widegren, K., & Sand, J.** (2021). Gender and Sustainability: An International Research Review. The Swedish Secretariat for Gender Research, University of Gothenburg. Available at: GENDERACTION_Gender-and-Sustainability_An-International-Research-Review.pdf

[52] **Wulff, D. U., Mata, R., & Meier, D. S.** (2021). text2sdg: An open-source solution to monitoring sustainable development goals from text. *CoRR*, abs/2110.05856. https://arxiv.org/abs/2110.05856

[53] **Zheng, W., Kark, R., & Meister, A.** (2018). How women manage the gendered norms of leadership. *Harvard Business Review*, *28*. Available at: https://hbr.org/2018/11/how-women-manage-the-gendered-norms-of-leadership

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