

Article

Corporate Sustainability and Financial Performance: The Moderating Effect of CEO Characteristics

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Abstract: This study aimed to investigate the effect of corporate sustainability on financial performance as well as examine whether CEO characteristics influence the association between corporate sustainability and the financial performance of listed firms in the Saudi Stock Exchange. In this vein, this study is the first to utilize multiple CEO characteristics as a moderating role influencing the association between corporate sustainability and financial performance. In addition, the study focuses on the developing country of Saudi Arabia, which is one of the top oil producers in the world and is targeting to invest billions of dollars in renewable and sustainable energy projects according to Saudi Vision 2030. We primarily focused on ESG activities (environmental, social, and governance) and their impact on the return on assets and return on equity (employed as a proxy of financial performance). This study used the ordinary least squares (OLS) model to examine these associations as well as the system GMM to test for endogeneity problems. Using a sample of 1143 observations to represent the non-financial firms listed on the Tadawul All Share Index (TASI) for 9 years from 2014 to 2022, we found a negative and significant relationship between the activities of corporate sustainability and financial performance. Furthermore, we demonstrated that CEO characteristics (CEO busyness, CEO ownership, CEO education, CEO gender, and CEO tenure) exerted influence on the association between corporate sustainability and financial performance; that is, CEO busyness, CEO ownership, and CEO gender mitigated the negative influence of corporate sustainability on financial performance, whereas CEO education and CEO tenure made it worse. The results of this study have implications for regulators, firms, and stakeholders.

Keywords: corporate sustainability; financial performance; corporate governance; CEO characteristics



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1. Introduction

Nowadays, the phenomenon of sustainable development is considered the concentration of several policymakers worldwide. The term sustainability always indicates a long-term vision or goal. For example, this can include achieving technological advancements, an effective governance system, and the use of renewable resources and recycled materials. That is, sustainability is a global notion that includes outcomes, economic, social, and environmental actions [1]. Khan et al. [2] argue that Sustainable development refers to a global policy that aims to achieve environmental protection, social well-being, environmental innovation, and maintenance of ecological integrity. However, most international organizations play an important role in meeting their responsibilities due to the global vision for sustainable development [3]. Regulators, financial experts, and shareholders have revealed concerns about the capacity of a traditional management group to combine sustainability into the corporation's strategy. Recently, the requirement for nonfinancial reports has increased as more awareness has cast a shadow over corporate sustainability, such as economic, environmental, and social responsibilities [4].

The notion of corporate sustainability has been employed mutually with the concept of corporate social responsibility (CSR) by academics and practitioners [5–9]. CSR is being employed by corporations to shape a sustainable link with their shareholders and obtain a

competitive edge. Accordingly, the theory of the triple bottom line, which concentrates on a search for environmental protection, social equity, and economic progress, has argued that achieving environmental, social, and financial objectives is a mutually interconnected supportive method. CSR is considered more important and dominant in industrialized nations, as its implementation is considered an essential activity in preserving the development of the environment, which has benefits for businesses. However, Firms have started to pay more attention assigning more resources to social and environmental activities [10]. A new statement on the purpose of a corporation was released by the Business Roundtable in August 2019 (Business Roundtable is a CEO association who is leading the top companies in the United States (US) to enhance the US economy and to provide more opportunities to all Americans.). This statement was signed by 181 Chief executive officers (CEOs) to lead their firms for the benefit of all stakeholders and add a larger contribution to society. A new standard was issued obligating CEOs to follow corporate responsibility policies when it is developed. Accordingly, the recent literature has concentrated on addressing the link between corporate sustainability and financial performance. Nevertheless, these studies found inconclusive results. That is, some studies showed the positive influence of financial performance on sustainability [11–14], whereas other studies have found an adverse or nonsignificant association [13–18].

Supporters of the positive impacts of corporate sustainability on performance argue that CSR improves the corporation's value and enhances the corporation's image, reputation, and brand positions, which, in turn, enhances business performance in the long term [19]. In addition to this, appropriate applications of economic, social, and governance (ESG) practices often mean higher business performance and returns [20]. The main point of this debate is that participating in the activity of sustainability reinforces a corporation's ethnic identity, leading to higher shareholder satisfaction and enhanced business performance [21]. Albarrak et al. [22] found that firms that disseminate environmental information via Twitter can achieve a lower cost of equity. On the other hand, some scholars have found an adverse association between CSR and performance. They argue that corporations always focus on managing their assets and resources, as well as engaging in projects that grow profits. Corporations that are involved in sustainability activities incur higher costs, resulting in reduced financial returns [23]. According to the hypothesis of management opportunism suggested by [24], CSR has an adverse effect on financial performance. They argued that when a corporation had good financial results, managers reduced their social spending in order to increase their personal wealth. By contrast, when financial results are poor, managers might increase their participation in costly social activities.

Another branch of the literature is focused on investigating the impacts of the characteristics of the chief executive officer (CEO) on CSR. These studies argue that the qualities and incentives of the CEO can clarify divergences in CSR reporting among corporations [25–30]. Based on the upper echelons theory, specific and noticeable personal features may prevent decision-making. CEOs are influential directors of a corporation's leadership team. They are able to make choices and direct the corporation's CSR efforts due to their power. Consequently, the qualities and characteristics of the CEO are clearly considered as identification of several parts that drive CSR.

This paper aimed to investigate the effect of corporate sustainability with respect to financial performance as well as how CEO characteristics affect the association between corporate sustainability and financial performance in the Saudi Stock Exchange. The Saudi Stock Exchange is considered the largest financial stock market in the Middle East and North Africa (MENA). Saudi Arabia is a member of the World Trade Organization (WTO), Group of Twenty (G20), and Organization of the Petroleum Exporting Countries (OPEC). Its economy ranks eighth among the ten top high-growth economies [31,32]. Saudi Arabia is considered one of the top energy producers, oil producer, and exporter worldwide. Nevertheless, the Saudi Vision 2030 shows that Saudi Arabia targets to invest in a number of renewable and sustainable energy projects during this decades. Accordingly, Saudi has invested billions of dollars to install a huge number of renewable and sustainable projects in

number of locations in the country, supported by a huge financing capability [33]. Moreover, according to a regional CSR survey report (2021), Saudi Arabia is the second country to integrate and adopt the principles of CSR. In addition, the Saudi corporate governance code emphasizes that all publicly listed corporations should provide non-financial information regarding their social, environmental, and governance policies in their reports [34].

Using a sample of 1143 observations representing the Tadawul All Share Index (TASI) for 9 years from 2014 to 2022, we found a negative and significant relationship between the activities of corporate sustainability and financial performance. Since we focused on five characteristics of CEOs: CEO busyness, CEO ownership, CEO education, CEO gender, and CEO tenure, we demonstrated that CEO characteristics impacted on the relationship between corporate sustainability and financial performance. Specifically, CEO busyness, CEO ownership, and CEO gender mitigated the negative influence of corporate sustainability on financial performance, whereas CEO education and CEO tenure made this worse.

This study contributes to the prior literature in several ways. First, we extend the previous studies which only examined the direct effect of CSR on firm performance [15,17,18] by considering the moderating role of CEOs characteristics on the association between corporate sustainability and financial performance. We also add to the previous literature studying the impacts of CEO characteristics on corporate performance [35,36]. Furthermore, To the best of our knowledge, there are only two studies that have examined the impact of CEO attributes on the association between CSR and financial performance. However, our study provides a more comprehensive picture of the CEO's role in affecting firm policy, such as sustainable decision-making. Unlike, the studies of [34,37] which focused only on two CEO attributes: such as CEO education and tenure, our study, however, aimed to fill this gap in the literature by employing five CEO characteristics that capture a different perspective of CEO behaviour. In particular, this paper sought to test whether CEOs' busyness, ownership, education level, gender, and tenure played roles as moderator functions in the mentioned relationship. Last but not least, the paper contributes to the previous literature by examining the mentioned relationship on developing country, Saudi Arabia. We targeted all the non-financial firms listed on the Saudi Stock Exchange for a period of 9 years (2014–2022). This study provided a clearer and more comprehensive picture of how CEO characteristics influenced the correlation between CSR and firm performance.

The remainder of this paper is organized as follows: Section 2 presents the development of the hypothesis and a review of the literature; Section 3 indicates the estimation models and data; and lastly, Section 4 explains the results of the study.

2. Review of the Literature and Hypothesis Development

2.1. Theoretical Applications of Sustainability

Sustainable development policy refers to a practice that presents the corporation's long-term performance with various stakeholders, as well as presenting a method for explaining the corporation's duty toward environmental, economic, and social performance. CSR theories discuss that firms can save the CSR-related production costs by reducing environmental risks and improving their partnership with key stakeholders when they adopt social and environmental practices. However, this can help firms to gain a competitive advantage and eventually enhance the firm's financial performance in the long-term run. Resources based view theory supports the relationship between corporate sustainability and financial performance. Firms can strategically exploit their resources to achieve a competitive advantage (e.g., possessing unique environmental capabilities) leading to an increase in their financial performance [38]. However, sustainability reporting is considered to be a critical factor that demonstrates the firm's outcomes regarding its corporate social responsibility policy. The literature provides several theories regarding corporate sustainability reporting, such as, the institutional theory, the stakeholder theory, and the legitimacy theory. The institutional theory concentrates on the interaction between stakeholders and their companies. Corporations are affected by their institutional environments, which

are influenced by social rationales and norms. Corporations' activity and behaviour are directed by laws. In this regard, the institutional theory generates the awareness of a new institutional space, leading to the need for the social, environmental, and economic elements in corporate social responsibility, and in turn influencing the firm's financial performance. Moreover, the requirement to mitigate the asymmetric information between managers and their stakeholders can be achieved through nonfinancial reporting [39].

The stakeholder theory illustrates how firms should meet the interests of their stakeholders. One of the most important stakeholders' interests is the commitment to achieve a sustainable development strategy and participate in economic growth, environmental and social activities. Thus, the stakeholder theory supports achieving stakeholder satisfaction (e.g., assuring environmental and social activities), which eventually enhances financial performance. Firms should present sustainability reports, which provide an indication of the behaviour of corporations toward the competing interests of both stakeholders and corporations. In addition to this, this report could help stakeholders to figure out whether the organization is working to achieve the desired goals [40]. The legitimacy theory argues that corporations work under social contracts that are targeted at maintaining and gaining social approval. This way assists in understanding the request for organisations to provide sustainability reporting, which attempts to explain the legality of their firm's activity. This theory, therefore, explains why nonfinancial reports have developed into a moral requirement [41].

2.2. Corporate Sustainability and Financial Performance

Prior examples in the literature have discussed the link between corporate sustainability and financial performance. Nevertheless, their conclusions are not conclusive due to the different results they provide. On the one hand, some researchers have found a positive association between the above-mentioned variables. They justify their findings as corporate sustainability improves corporation value and enhances the corporation's image, reputation, and brand position, which, in turn, enhances business performance in the long term [19]. In addition to this, the appropriate applications of economic, social, and governance (ESG) practices mean higher business performance and returns [20]. The main point of this debate is that participation in the activities of sustainability reinforces a corporation's ethnic identity, leading to higher shareholder satisfaction and enhanced business performance [21]. In addition, the commitment of corporations toward implementing the practices of sustainability has been found to reduce risks and enhance operating performance [42].

Examples of empirical studies have found a positive link between CSR and corporate performance is the study of [18], which examined the association between CSR and corporate performance in Indian companies. They found a positive impact of CSR on corporate performance. In the same line, Hussain et al. [17] showed Indian banks that concentrated on CSR activities and performed better in financial performance. In addition to this, the paper [43] examined the influence of CSR practices on the financial performance of 154 banks in 22 countries between 2005 and 2010. Their findings showed that banks with better corporate responsibility had better business performance. Furthermore, studying CSR activity and financial performance relationships in 116 companies [11] indicated that CSR was positively and significantly related to performance. The study of [44] also found that corporations that focused on sustainable activities had a better cash flow from operating activities, profit before tax, and return on assets. From 2005 to 2015, Rahim [45] found a positive correlation between CSR practices and the financial performance of 226 Malaysian corporations.

On the other hand, there is a possibility that firms may encounter some challenges in adopting a sustainable policy. In particular, firms may need a huge capital and resources to practice some sustainable activities, which is related to uncertain results [46]. This can have a negative impact on the firms' performance due to the costs related to such activities. Some studies have shown the adverse impact of corporate sustainability and financial

performance. They argued that corporations always focus on managing their assets and resources, as well as engaging in projects that grow profits. Corporations that were involved in sustainability activities incurred higher costs, resulting in reduced financial returns [23]. Furthermore, corporations that adopted CSR were harming their stakeholders because they should employ their resources to maximize incomes; otherwise, their performance could be reduced [47,48]. The activities of CSR, such as education initiatives, support for social projects, and charity contributions, were considered a considerable cost component for corporations that might turn resources away from more profitable economic uses. Based on [49], corporation managers that targeted and focused on sustainability activities prevented maximizing the business value.

Some empirical studies have supported the negative link between CSR and corporate performance, such as [18], which used a sample of Maldives' public corporations between 2014 and 2018. They found an adverse relationship between CSR and business performance. In addition, the study in [15] employed 40 restaurant corporations in the U.S. between 2000 and 2011 to evaluate the association between CSR and the value of corporations. Their results showed a negative correlation between CSR and the performance of restaurant corporations. Moreover, the paper of [16] used corporations listed on the Ghana Stock Exchange and showed a negative and significant link between CSR and business performance. In addition to this, the study of [50] found that CSR could be adversely related to profitability, especially in the short term. Furthermore, by investigating the association between CSR and the company performance of 110 corporations listed in Dow Jones, Nunes et al. [50] found a negative association between CSR and financial performance. Nevertheless, some studies found no relationship between CSR and corporate performance, such as [13,17,21,47]. Based on the above debate, this paper expected the following hypotheses:

H1: *There is a significant association between CSR and the financial performance.*

2.3. CEO Attributes, Corporate Sustainability and Financial Performance

CEOs' decision to invest in CSR projects is influenced by several factors. In general, CEOs may engage in CSR activities to mitigate risks that relate to other stakeholders [51]. On the other hand, other CEOs might use CSR to enhance their trading relationship with business partners and reduce firms' operational risks that relate to investors' perception. Aljughaiman et al. [52] found that firms that invest more in renewable energy to reduce their gas emissions are more likely to secure investors' goodwill and thus reducing the firms' risks. However, CEOs' characteristics might influence the way they take investment decisions. The different characteristics that CEOs have can cause them to underestimate or overestimate the risks associated with strategic investment decisions [53], corporate policies [54], and financial reporting choices [55]. You and Chen [56] discuss that firm's social responsibility activities could be a reason to maximize the firm's profit. Therefore, CEOs may consider the firms' CSR spending as detrimental to firm performance.

Prior studies have discussed how CEO characteristics affect both CSR activities and the financial performance of corporations. We primarily focus on five attitudes of CEOs (CEO busyness, CEO ownership, CEO education, CEO gender, and CEO tenure) to investigate the moderating role of these attitudes on the relationship between corporate sustainability and financial performance.

2.3.1. CEO Busyness, Corporate Sustainability and Financial Performance

CEOs play a vital role in driving and guiding the company's success. The literature has focused on two schools regarding CEOs holding more than one position in firms. The first school was related to the reputation, human capital, and expertise of CEOs. The officers who hold outside board seats could indicate that they had an excellent reputation [47]. Thus, they have a greater chance of obtaining more positions in other firms. In addition, prior studies have shown that CEOs with more expertise and experience in firm management are more favoured by stockholders. For instance, Fich and Shivdasani [57] indicated that investors reacted positively when outside expertise officers were appointed as the corporate

was assumed to benefit from their experience and expertise. Previous studies have also debated that firm CEOs with broad professional and social networks assist firms in forming partnerships and dealing with new regulations [58–60].

On the other hand, the second school is related to the busyness of CEOs. It argues that a busy CEO usually has no time to concentrate on the firm's tasks and duties. Thus, the activity of the firm may be disrupted, which could decrease its performance. This argument is consistent with existing studies on busy officers [57]. For instance, Ferris and Jagannathan [61] observed that busy officers imposed extreme limitations on themselves, therefore, decreasing the effort and time they dedicate to managing the firm. Further, Core et al. [62] indicated that busy officers had no time to perform their duties. Jiraporn et al. [63] also found that busy officers were more likely to miss board meetings. Moreover, the effectiveness of an officer's busyness in managing their firm was less than none-busy directors [64]. Empirically, Harymawan et al. [65] found that busy CEOs were related to a reduction in firm performance in the Indonesia Stock Exchange between 2014 and 2017. In addition, a busy CEO was found to have a negative coloration with corporate sustainability [66]. They justified their finding as a busy CEO could intervene with corporate activities since he/she could not control the firm completely due to his/her limited time. In addition, both [65,67] argued that the effectiveness of a CEO in controlling the corporation and drawing up strategies could be obstructed when the CEO is busy. Based on the above debate, this paper formed the following hypothesis:

H2: *The CEO's busyness has a significant influence on the association between corporate sustainability and financial performance.*

2.3.2. CEO Compensation, Corporate Sustainability and Financial Performance

Based on [68], the agency theory indicates that CEO compensation can be related to financial performance since it solves the problems of moral hazard, which is associated with information asymmetry between stockholders and managers. Jensen and Meckling [69] argued that CEO compensation packages could reduce the agency problem and mitigate agency costs. CEOs could be self-interested and might exploit the wealth of the firm at the expense of stockholders' interests. Thus, the board of directors was assumed to mitigate the CEO's opportunism and align their interests with stockholders by better controlling through designing effective pay contracts for CEOs and linking CEOs' compensation with corporate performance [26]. Moreover, CEO compensations have been seen as a vital mechanism in reducing the potential conflicts of interest between officers and stockholders in companies since these compensations could motivate CEOs to work for the firm's success [70]. Additionally, Leventis and Dimitropoulos [71] found that CEOs gained greater allowances when they worked in a weak corporate governance environment since these firms mostly suffered from greater agency problems and, hence, lower performance. With regard to the association between CEO compensation and CSR, Jian and Lee [72] indicated that CEO incentives had a positive relationship with normal CSR, indicating that CEO was recompensed for concentrating on the optimum level of CSR. This positive correlation was stronger for corporations that were characterised as having effective corporate governance. Based on the above debate, this paper formed the following hypothesis:

H3: *CEO compensation has a significant influence on the association between corporate sustainability and financial performance.*

2.3.3. CEO Education Level, Corporate Sustainability and Financial Performance

The education level is a vital tool to consider for employees' remuneration and promotion. A high education level has an indication of increasing the CEOs' prestige, thus enabling them to make an ideal decision [73]. Although Gottesman and Morey [74] found no association between CEO education level and firm performance, several findings from previous studies showed the significance of CEOs' education and their ability to manage staff. For instance, Rajagopalan and Datta [75] found that the level of CEO education was

positively associated with firm performance in the US. Kokeno and Muturi [76] also indicated that CEO education had a positive impact on firm performance in the Nairobi Stock Market. Darmadi [77] investigated the relationship between the educational qualifications of the CEO and the performance of Indonesian companies. This study reported that a CEO who obtained a degree from a local university performed better than those holding foreign degrees. Koyuncu et al. [78] indicated that corporations who were managed by CEOs with educational degrees in operation-related background experienced better corporate performance than firms managed by CEOs with other educational degrees in the S&P 500 between 1992 and 2005. The level of CEO education could also influence the firm's CSR engagement. An executive background could reflect the environmental consciousness level. Based on [61], the level of executives' education affected their decision-making processes, views, and values. Their behaviours differed when relying on their level of education because of their knowledge acquired, skills, and diversity. In this regard, the study of [67] showed that CEOs that had a higher education level were more associated with acting in a socially and environmentally accountable manner. Based on the above debate, this paper formed the following hypothesis:

H4: *The CEO education level has a significant influence on the association between corporate sustainability and financial performance.*

2.3.4. CEO Gender Diversity, Corporate Sustainability and Financial Performance

Based on the agency theory, the representation of females on boards has numerous benefits, such as bringing new ideas and suggestions to eliminate problems that are related to the development of a new strategy or solving issues [49]. Female members are also seen as an effective mechanism of corporate governance since they are considered to be more efficient than other directors on the board [50]. They are mostly seen as the most morally principled members by concentrating on questions associated with unethical behaviours [57]. In addition, boards with gender diversity demonstrate a participative leadership style and teamwork effectiveness [58], as well as handling matters that are related to CSR [59], resulting in an improvement in corporate performance.

Sial et al. [79] indicated that a board with gender diversity had a positive and significantly correlated effect on the financial performance of firms. They also found that CSR fully mediated the association between gender diversity and financial performance. Liu [80] showed that corporations with a lower representation of women on board experienced notably more environmental lawsuits. In addition to this, female CEOs were linked with fewer environmental lawsuits in corporations that had low or no gender diversity. Moreover, Boukattaya and Omri [81] found a positive link between gender diversity at boards and CSR in French. Based on the above debate, this paper formed the following hypothesis:

H5: *CEO gender has a significant influence on the association between corporate sustainability and financial performance.*

2.3.5. CEO Tenure, Corporate Sustainability and Financial Performance

The tenure of CEOs can be considered a vital characteristic due to its influence on a corporation's business options and performance [72]. CEOs with long time serving in corporations might have more power to make the right decisions and efficient tactics that could assist the corporate to perform better. They can also acquire increasing quantities of corporate-specific expertise and skills in addition to obtaining an in-depth awareness of the corporate's capabilities, management, and culture. This, in turn, can lead to embracing the corporation's strategy and aims, as well as incorporating stakeholders to obtain access to chances in the external environment [73]. Long-time serving in corporations can also assist CEOs to engage more in the activities of CSR and construct more social bonds [74].

Supporting the above arguments, Chen et al. [25] found that the performance of corporations' CSR was notably lower in CEOs' later tenure than in their early tenure.

In addition, they also showed that the link between the tenure of the CEO and CSR performance was more significant when the CEO experienced longer time serving at a corporation; the board was independent. Moreover, Ghardallou [34] found that CEO tenure acted as a positive moderator between CSR and financial performance. Based on the above debate, this paper formed the following hypothesis:

H6: *CEO Tenure has a significant influence on the association between corporate sustainability and financial performance.*

3. Data and Methodology

3.1. Data Sample

This study was conducted on the Saudi Stock Exchange, and the sample comprised the non-financial companies of the Tadawul All Share Index (TASI) over a nine-year period between 2014 and 2022. The initial sample included 195 corporations. However, this paper excluded financial corporations since their regulatory environments; operations were different from those of non-financial corporations. Hence, corporations from the financial industry were excluded (40 corporations). This reduced the sample to 155 corporations. Moreover, corporations with missing CEO characteristics or that were missing corporate sustainability data for at least 3 consecutive years were dropped from the sample (28 corporations) [31]. The final sample with an unbalanced panel of 127 non-financial corporations (e.g., 1143 observations over time) is presented in Table 1.

Table 1. Industry classification of sample firms.

Industries	Number of Firms	Percentage of Firms in Each Industry
Telecommunication Services	4	3.15
Transportation	6	4.72
Energy	5	3.94
Food & Beverages	10	7.87
Food & Staples Retailing	6	4.72
Health Care Equipment & Svc	9	7.09
Materials	40	31.50
Media and Entertainment	3	2.36
Retailing	8	6.30
Commercial & Professional Svc	4	3.15
Consumer Durables & Apparel	6	4.72
Utilities	3	2.36
capital goods	11	8.66
consumer services	12	9.45
Total	127	100

For the dependent variables, financial performance (proxied by the return on assets and return on equity) was obtained from the Bloomberg database. Financial data (control variables) and corporate sustainability data were also obtained from the Bloomberg database. Finally, data on CEO characteristics were manually collected from the firm's websites and annual reports.

3.2. Measures

3.2.1. Financial Performance Variable

We followed prior studies in the literature and used the return on assets (ROA) and return on equity (ROE) as proxies for financial performance. Previous studies, such as [29], have argued that both ROA and ROE measure the corporation's accounting performance. ROA is measured by dividing the net income of total assets, and this explains how corporations use their resources to fulfil an adequate rate of return. ROE was measured by dividing the net income by total equity, which indicated the income as a percentage of the corporation's stock.

3.2.2. Corporate Sustainability Variables

This study employed the ESG score (ESG) with continents of three dimensions; these were: environmental disclosure (ENORO), social disclosure (SOCL), and governance disclosure (GOV) as proxies for corporate sustainability (CS). We also tested for the association using each index separately. These variables have been used by previous studies as a representative of CS [34,81]. These data were provided by the Bloomberg database, where each variable of the CSR took a score from 0 to 100.

3.2.3. CEO Characteristics Variables

This paper used CEO characteristics as a moderating factor for the relationship between corporate sustainability and financial performance. We employed five characteristics of the CEO (CEO busyness, CEO ownership, CEO education, CEO gender, and CEO tenure). CEO busyness (CEObusy) was measured by a dummy variable, which took the value of 1 if the CEO was busy and 0 otherwise [65]; CEO ownership (CEOowner) could be defined as the proportion of shares owned by the chief executive officer [82]; CEO education (CEOeduc) was measured by a dummy variable, which took the value of 1 if the CEO held a high degree (e.g., master's degree or Ph.D.) and 0 otherwise [75]; CEO gender (CEOgender) was measured by a dummy variable, which took the value of 1 if the CEO was female and 0 otherwise; CEO tenure (CEOtenure) was measured by the number of years since the CEO was first appointed [34].

3.2.4. Control Variables

Following the literature, several variables for the financial characteristics of firms were employed to investigate the association between corporate sustainability and financial performance: firm size, firm age, and financial leverage. Firm size (FSIZE) refers to the total assets of a firm. Firm age (FAGE) is the number of years since a corporation was established. Financial leverage (FLV) can be described as the percentage of total liabilities to total assets [83]. We also controlled for the exclusive effects of time factors and industry-level factors by employing dummy variables for the year and industry studied [84]. Table 2 provides the definitions and calculations of these variables. Table 2 illustrates the above-discussed variables.

3.3. Estimation Models

To examine the moderating effects of CEO characteristics on the association between corporate sustainability (CS) and corporate performance, we employed the pooled OLS regression with robust standard errors as a primary estimation model to control for heteroscedasticity. We also used the GMM estimation to control for endogeneity problems. Specifically, we used Generalised Methods of Moments (GMM) to control for all endogeneity problems such as reverse causality and omitted-variables bias. Equations (1) and (2) illustrate this above-mentioned association.

$$\begin{aligned} ROA_{it} = & \beta_0 + \beta_1 CS_{it} + \beta_2 CEO_{busy}_{it} + \beta_3 CEO_{owner}_{it} + \beta_4 CEO_{educ}_{it} + \beta_5 \\ & CEO_{gender}_{it} + \beta_6 CEO_{tenure}_{it} + \beta_7 (CEO_{busy} * CS)_{it} + \beta_8 (CEO_{owner} * CS)_{it} \\ & + \beta_9 (CEO_{educ} * CS)_{it} + \beta_{10} (CEO_{gender} * CS)_{it} + \beta_{11} (CEO_{tenure} * CS)_{it} + \beta_{12} \\ & FSIZE_{it} + \beta_{13} FAGE_{it} + \beta_{14} FLV_{it} + \epsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} ROE_{it} = & \beta_0 + \beta_1 CS_{it} + \beta_2 CEO_{busy}_{it} + \beta_3 CEO_{owner}_{it} + \beta_4 CEO_{educ}_{it} + \beta_5 \\ & CEO_{gender}_{it} + \beta_6 CEO_{tenure}_{it} + \beta_7 (CEO_{busy} * CS)_{it} + \beta_8 (CEO_{owner} * CS)_{it} \\ & + \beta_9 (CEO_{educ} * CS)_{it} + \beta_{10} (CEO_{gender} * CS)_{it} + \beta_{11} (CEO_{tenure} * CS)_{it} + \beta_{12} \\ & FSIZE_{it} + \beta_{13} FAGE_{it} + \beta_{14} FLV_{it} + \epsilon_{it} \end{aligned} \quad (2)$$

where Cs_{it} (Each equation will be examined four times since we employed each dimension of corporate sustainability separately (ESG disclosure, environmental disclosure, social disclosure, and governance disclosure) represents the corporate sustainability proxied

by the ESG score, which contains three dimensions: environmental disclosure, social disclosure, and governance disclosure, respectively. CEObusyit represents CEO busyness; CEOownerit represents CEO ownership; CEOeducit represents the level of the CEO's education; CEOgenderit represents the gender of the CEO; CEOtenureit represents the number of years since the CEO was appointed; (CEObusy*CS) represents the interaction terms between corporate sustainability and CEO busyness; (CEOowner*CS) represents the interaction terms between corporate sustainability and CEO ownership; (CEOeduc*CS) represents the interaction terms between corporate sustainability and the CEO's education level; (CEOgender*CS) represents the interaction terms between corporate sustainability and CEO gender; (CEOtenure*CS) represents the interaction terms between corporate sustainability and CEO tenure; FSIZEit represents the firm size; FAGEit represents the firm age; and FLVit represents the financial leverage.

Table 2. Variable definitions and calculations of financial performance, corporate sustainability, CEO characteristics, and control variables.

Variable	Definition	Data Source
Dependent variables		
Return on Assets (ROA)	It measured by dividing net income on total assets.	Bloomberg
Return on Equity (ROE)	It measured by dividing net income on total equity.	Bloomberg
Independent variables		
ESG disclosure (ESG)	It takes a score from 0 to 100.	Bloomberg
Environmental disclosure (ENVRO)	It takes a score from 0 to 100.	Bloomberg
Social disclosure (SOCL)	It takes a score from 0 to 100.	Bloomberg
Governance disclosure (GOV)	It takes a score from 0 to 100.	Bloomberg
Moderating variables		
CEO busyness (CEObusy)	CEO who holds more than one position in firms. Dummy variable, which takes 1 if the CEO is busy and 0 otherwise.	Annual reports & firm' websites
CEO ownership (CEOowner)	Proportion of shares owned by the chief executive officer.	Annual reports & firm' websites
CEO education (CEOeduc)	Dummy variable, which takes 1 if the CEO holds a high degree (e.g., master's degree or PhD) and 0 otherwise.	Annual reports & firm' websites
CEO gender (CEOgender)	Dummy variable, which takes 1 if the CEO is female and 0 otherwise.	Annual reports & firm' websites
CEO tenure (CEOtenure)	Number of years since the CEO was appointed.	Annual reports & firm' websites
Control variables		
Firm size (FSIZE)	It measured as the total assets of the AIM firm.	Bloomberg
Firm age (FAGE)	It measured as the number of years since the firm was first listed on the market.	Bloomberg
Financial leverage (FLV)	It measured by dividing proportion of total liabilities to total assets.	Bloomberg

4. Empirical Results

4.1. Descriptive Statistics and Correlations

Table 3 illustrates the descriptive statistics of corporate sustainability, financial performance, CEO characteristics, and financial variables. For the financial performance variables, the average value of ROA and ROE was 0.038 and 0.152, respectively. For the corporate sustainability variables, the average value of ESG, GOV, ENVRO, and SOCL was 20, 35, 19, and 27, respectively. While their minimum values were 0, their maximum values (ESG, GOV, ENVRO, and SOCL) were 50, 64, 47, and 52, respectively.

Table 3. Descriptive statistics.

Variable	Observation	Mean	SD	Min	Max
ROA	1143	0.038	0.273	−5.815	1.616
ROE	1143	0.152	2.648	−15.37	58.88
ESG	951	20.33	7.917	0.000	50.41
GOV	951	35.03	13.83	0.000	64.28
ENVRO	951	19.27	6.240	0.000	47.28
SOCL	951	27.68	8.411	0.000	52.63
CEObusy	951	0.526	0.499	0.000	1.000
CEOowner	984	0.037	0.122	0.000	0.931
CEOeduc	984	0.651	0.476	0.000	1.000
CEOgender	984	0.112	0.107	0.000	1.000
CEOtenure	951	3.998	3.642	1.000	11.00
FSIZE	1143	337.5	195.2	12.847	677.0
FAGE	1143	30.24	15.44	3.000	88.00
FLVE	1143	31.55	1.885	11.10	85.07

Note: ROA is return on assets; ROE is return on equity, ESG is ESG disclosure, GOV is government disclosure, ENVRO is environmental disclosure, SOCL is social disclosure, CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

With regard to the moderating variables, the standard deviation and average value of the busy CEO (CEObusy) were 0.499 and 0.526, respectively. In addition, CEO ownership (CEOowner) had an average percentage of 0.037%; the minimum percentage was 0%, and the maximum percentage was 0.931%. Moreover, CEO education (CEOeduc) had a standard deviation and an average value of 0.476 and 0.651, respectively. The average value of CEO gender (CEOgender) was 0.112, whereas the average value of the CEO tenure (CEOtenure) was 3.998 years with a minimum year of 1 and a maximum year of 11.00. Regarding these control variables, the average FSIZE was 337.5 million, with a standard deviation of 195.2. The average FAGE was 30.24 years. The minimum-maximum value of FLV was 11.10–85.07%.

In addition, we employed both the Pearson matrix and variance inflation factors to figure out whether our regressions had multicollinearity problems, as shown in Tables 4 and 5, respectively. With regard to the correlation matrix (The high correlation among corporate sustainability variables (ESG, GOV, ENVRO, and SOCL) did not affect the validity of our models since we examined these variables separately), the highest association among the explanatory variables was found between CEObusy and CEOeduc (46.2%); that is, CEOs with a higher education level were more likely to be busy (holding more than one position in firms). In addition, the association between CEObusy and FAGE was the second highest correlation at 27.7%, implying that busy CEOs mostly existed at older corporations. We could also note that CEO with a long tenure in these corporations (CEOtenure) had a high correlation with GOV, ENVRO, and COCL at 20%, 15%, and 15%, respectively. That is, CEOs with long time serving in corporations participated in increasing the involvement of their firm in sustainable activities. Based on Table 5 (VIF tests), our models have had no multicollinearity issues since all the values were less than 10 [76].

Table 4. Pearson correlation matrix for the relationship corporate sustainability, financial performance, and CEO characteristics.

	ROA	ROE	ESG	GOV	ENVRO	SOCL	CEObusy	CEOowner	CEOeduc	CEOgender	CEOtenure	FSIZE	FAGE	FLVE
ROA	1.000													
ROE	0.225 *	1.000												
ESG	0.007	−0.003	1.000											
GOV	0.002	0.005	0.903 *	1.000										
ENVRO	0.010	−0.005	0.935 *	0.704 *	1.000									
SOCL	0.007	−0.001	0.965 *	0.809 *	0.922 *	1.000								
CEObusy	−0.057	0.035	−0.036	−0.048	−0.024	−0.024	1.000							
CEOowner	−0.038	−0.035	−0.086 *	−0.099 *	−0.067	−0.067	0.017	1.000						
CEOeduc	0.017	−0.063	−0.073	−0.008	−0.112 *	−0.112 *	0.462 *	0.150 *	1.000					
CEOgender	0.003	0.008	0.031	0.035	0.023	0.023	0.008	0.018	0.047	1.000				
CEOtenure	0.020	0.034	0.102 *	0.207	0.155 *	0.155 *	0.065	0.085 *	0.146 *	0.065	1.000			
FSIZE	0.092 *	−0.018	0.017	0.030	−0.006	−0.006	−0.052	−0.035	0.029	−0.032	0.062	1.000		
FAGE	−0.023	−0.053	0.031	−0.013	0.072 *	0.072 *	0.277 *	−0.022	0.140 *	−0.055	0.110 *	0.074 *	1.000	
FLVE	0.152 *	−0.001	−0.008	0.015	−0.013	−0.013	0.012	0.044	0.053	−0.006	−0.053	−0.083 *	0.028	1.000

Note: * Indicates significance level at 5%. ROA is return on assets; ROE is return on equity, ESG is ESG disclosure, GOV is government disclosure, ENVRO is environmental disclosure, SOCL is social disclosure, CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

Table 5. Variance inflation factors.

Variable	Variance Inflation Factors (VIF)							
	ROA	ROA	ROA	ROA	ROE	ROE	ROE	ROE
ESG	1.03				1.03			
GOV		1.02				1.02		
ENVRO			1.05				1.05	
SOCL				1.03				1.03
CEObusy	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
CEOowner	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
CEOeduc	1.08	1.08	1.09	1.09	1.08	1.08	1.09	1.09
CEOgender	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
CEOtenure	1.05	1.05	1.06	1.05	1.05	1.05	1.06	1.05
FSIZE	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
FAGE	1.24	1.24	1.25	1.24	1.24	1.24	1.25	1.24
FLVE	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Mean VIF	1.09	1.08	1.09	1.09	1.09	1.08	1.09	1.09

Note: ROA is return on assets; ROE is return on equity, ESG is ESG disclosure, GOV is government disclosure, ENVRO is environmental disclosure, SOCL is social disclosure, CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

4.2. Multivariate Analyses

4.2.1. How CEO Characteristics Moderate the Impact of Corporate Sustainability on Financial Performance

Tables 6 and 7 illustrate the moderating effect of CEO characteristics on the association between corporate sustainability (CS) and financial performance (return on assets ROA and return on equity ROE, respectively). In both Tables 6 and 7, Colum (1) represents the link between ESG disclosure (ESG) and corporate performance; Colum (2) represents the link between environmental disclosure (ENVRO) and corporate performance, Colum (3) represents the link between social disclosure (SOCL) and corporate performance, and Colum (4) represents the link between government disclosure (GOV) and corporate performance.

Table 6. Moderating role of CEO characteristics on corporate sustainability and performance associations.

VARIABLES	(1)	(2)	(3)	(4)
	ROA ESG	ROA ENVRO	ROA SOCL	ROA GOV
CS	−0.0025 *** (0.0007)	−0.0031 *** (0.0008)	−0.0024 *** (0.0007)	−0.0024 * (0.0014)
CEObusy	−0.0224 *** (0.0067)	−0.0206 *** (0.0066)	−0.0226 *** (0.0068)	−0.0241 *** (0.0068)
CEOowner	0.0627 ** (0.0291)	0.0655 ** (0.0287)	0.0631 ** (0.0291)	0.0586 ** (0.0246)
CEOeduc	0.0146 ** (0.0070)	0.0134 ** (0.0068)	0.0147 ** (0.0070)	0.0150 ** (0.0071)
CEOgender	0.126 * (0.0640)	0.118 * (0.062)	0.126 ** (0.064)	0.124 ** (0.062)
CEOtenure	0.0032 *** (0.0009)	0.0031 *** (0.0009)	0.0032 *** (0.0009)	0.0030 *** (0.0008)
CEObusy*CS	0.0018 *** (0.0005)	0.0018 ** (0.0007)	0.0004 *** (0.0001)	0.0011 *** (0.0003)
CEOowner*CS	0.106 *** (0.033)	0.214 ** (0.083)	0.0215 *** (0.0076)	0.0813 *** (0.0200)
CEOeduc*CS	−0.0015 ** (0.0006)	−0.0016 * (0.0008)	−0.0003 ** (0.0001)	−0.0007 ** (0.0003)
CEOgender*CS	0.0039 *** (0.0006)	0.0032 *** (0.0009)	0.0025 *** (0.0001)	0.0038 (0.0005)
CEOtenure*CS	−0.0001 *** (0.0004)	−0.0002 *** (0.0006)	−0.0002 *** (0.0001)	−0.0007 ** (0.0003)
FSIZE	0.0100 *** (0.0038)	0.0104 *** (0.0038)	0.0100 *** (0.0038)	0.0097 ** (0.003)
FAGE	0.0006 (0.0066)	−0.0001 (0.0065)	0.0005 (0.0066)	−0.0005 (0.0067)
FLVE	−0.0005 ** (0.0002)	−0.0005 *** (0.0002)	−0.0005 ** (0.0002)	−0.0003 * (0.0002)
Constant	−0.147 * (0.076)	−0.150 ** (0.073)	−0.145 * (0.076)	−0.145 * (0.077)
Observations	951	951	951	951
R-squared	0.65	0.69	0.61	0.66
Years effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Note: ROA is return on assets; CS is corporate sustainability proxied by ESG disclosure (ESG), environmental disclosure (ENORO), social disclosure (SOCL), and governance disclosure (GOV), CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

Table 7. Moderating role of CEO characteristics on corporate sustainability and performance associations.

VARIABLES	(1)	(2)	(3)	(4)
	ROE ESG	ROE ENVRO	ROE SOCL	ROE GOV
CS	−0.0026 *** (0.0008)	−0.0035 *** (0.0009)	−0.0025 *** (0.0008)	−0.0042 *** (0.0015)
CEObusy	−0.0242 *** (0.0069)	−0.0232 *** (0.0068)	−0.0245 *** (0.0070)	−0.0244 *** (0.0070)
CEOowner	0.209 *** (0.037)	0.211 *** (0.037)	0.210 *** (0.038)	0.199 *** (0.035)
CEOeduc	0.0051 ** (0.0077)	0.0039 (0.0076)	0.0053 * (0.0078)	0.0061 (0.0078)
CEOgender	0.0439 (0.0675)	0.0431 ** (0.0673)	0.0452 (0.0675)	0.0411 * (0.0666)
CEOtenure	0.0026 *** (0.0009)	0.0025 *** (0.0009)	0.0026 *** (0.0009)	0.0024 *** (0.0009)
CEObusy*CS	0.0013 ** (0.0006)	0.0012 * (0.0007)	0.0003 ** (0.0001)	0.0007 ** (0.0003)
CEOowner*CS	0.0606 (0.0374)	0.1920 ** (0.0765)	0.0100 (0.0103)	0.0638 *** (0.0189)
CEOeduc*CS	−0.0012 * (0.0006)	−0.0010 (0.0008)	−0.0002 ** (0.0001)	−0.0006 * (0.0003)
CEOgender*CS	0.0031 *** (0.0007)	0.0041 *** (0.0009)	0.0034 *** (0.0001)	0.0047 *** (0.0006)
CEOtenure*CS	−0.0001 *** (0.0004)	−0.0001 *** (0.0005)	−0.0003 *** (0.0001)	−0.0008 ** (0.0003)
FSIZE	0.0059 (0.0040)	0.0063 (0.0040)	0.00597 (0.0040)	0.0064 (0.0040)
FAGE	−0.0030 (0.0038)	−0.0031 (0.0038)	−0.0030 (0.0038)	−0.0029 (0.0038)
FLVE	−0.0114 * (0.0058)	−0.0132 ** (0.0058)	−0.0112 * (0.0058)	−0.0111 * (0.0058)
Constant	0.0290 (0.0791)	0.0204 (0.0790)	0.0293 (0.0790)	0.0069 (0.0804)
Observations	951	951	951	951
R-squared	0.71	0.69	0.71	0.70
Years effect	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Note: ROE is return on equity; CS is corporate sustainability proxied by ESG disclosure (ESG), environmental disclosure (ENORO), social disclosure (SOCL), and governance disclosure (GOV), CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

According to Tables 6 and 7, it is apparent that corporate sustainability (proxied by ESG score (ESG), which comprised three dimensions; environmental disclosure (ENORO), social disclosure (SOCL), and governance disclosure (GOV)) was negative and significantly related to financial performance. In detail, ESG, ENVRO, and SOCL had a negative and significant relationship with ROA at 1% significance levels, and GOV was negatively related to ROA at a 10% significance level (see Table 6). In addition, ESG, ENVRO, SOCL, and GOV had a negative and significant relationship with ROE at a 1% significance level (Table 7). These findings suggest that firms with more ESG activities tend to have negative financial performance. This may be a result of the high cost and prone resources related to ESG investments. These findings are in line with prior studies, such as [15,16,18,49]. These studies argued that corporations should focus on managing their assets and resources, as well as engaging in projects that grow profits. However, involving sustainability activities, such as education initiatives, support for social projects, and charitable contributions, can incur higher costs, resulting in reduced financial returns [23]. Thus, concentrating on

sustainability activities by managers may prevent maximizing the business value [47]. In addition, this adverse association was also in line with the hypothesis of management opportunism, which argued that when a corporation had good financial results, managers reduced social spending in order to raise their personal wealth. By contrast, when the financial results are poor, the managers may increase their participation in costly social activities.

Regarding the CEO characteristics variables, the coefficient in relation to the CEO busy variable was significant and negative across all the columns of Tables 6 and 7. That is, a CEO who held more than one position in the firm was more able to reduce corporate profitability. In contrast, the coefficients associated with CEO ownership, the CEO's education level, CEO gender, and CEO tenure were positive and significant (see Tables 6 and 7). These results imply that a CEO who owns high shares in a corporation holds a high degree (e.g., master's degree or Ph.D.), is a female, and has experienced a long time serving in corporations could improve the financial performance of corporations.

Moving to the interaction between corporate sustainability (CS) and CEO characteristic variables, it is apparent that the interaction between CEO busy and corporate sustainability variables (ESG, ENVRO, SOCL, and GOV) was negative. For example, Table 6 (Column 1) shows that the coefficient of CEObusy*CS was 0.0018, whereas the coefficient of CS was -0.0025 . This ends with less coefficient influence over CS on ROA, decreasing from -0.0025 to -0.0007 . The same results were found for the rest Columns. Table 7 (Column 1) also indicates that the coefficient of CEObusy*CS was 0.0013, whereas the coefficient of CS was -0.0026 . This implies the lower coefficient effect of CS on ROE, which reduced from -0.0026 to -0.0013 . We obtained the same findings for the rest of the Columns. However, this indicated that busy CEO had more experience resulting in mitigating the negative influence of CS on firms' financial performance. A number of previous works in the literature have assured [57] that a busy CEO would have more reputation and experience.

In addition, the interaction between CEO ownership and corporate sustainability variables (ESG, ENVRO, SOCL, and GOV) was positive as these changed the coefficients of CS from -0.0025 to 0.1035 (Column 1), from -0.0031 to 0.2109 (Column 2) and so on. Table 7 also reported the same results; for example, the association between CEOowner*CS and ROE (Column 2) was positive since the coefficient changed from -0.0035 to 0.1885. This positive link was in line with the studies of [63], which found that CEO incentives could enhance CS activities and lead to positive financial performance. The agency theory supports this association since CEO compensation can solve the problems of moral hazard when associated with the information asymmetry between stockholders and managers [68], as CEO compensation packages could reduce the agency problem and mitigate agency costs [69].

Moreover, the CEO education and CEO tenure seemed to make the negative association between CS and firm performance stronger since both interaction variables had a negative coefficient sign in both Tables 6 and 7. Prior studies have argued that the level of executives' education affects their decision-making processes, views, values, and skills [61]. Furthermore, CEOs with long time serving in corporations might have more power to make the right decisions and efficient tactics that can assist the corporate performance better. They can also acquire increasing quantities of corporate-specific expertise and skills in addition to obtaining depth awareness of the corporate's capabilities, management, and culture [73]. Therefore, it could be that the education level of the CEO and their tenure in the firm can enhance the CEO's interests more toward tangible profitable activities rather than costly ones [23].

Nevertheless, the interaction between CEO gender (CEOgender*CS) and corporate sustainability variables (ESG, ENVRO, SOCL, and GOV) was positive. For example, the coefficients of CS changed from -0.0025 to 0.0014 (Table 6, Column 1) and from -0.0026 to 0.0005 (Table 7, Column 1). The positive link was in line with the studies of [58,81]. These studies mentioned that the representation of the female on board could bring new ideas and suggestions and solve issues [49].

For the control variables, firm size (FSIZE) was significantly and positively associated with ROA. Firm age (FAGE) had no relationship with both ROA and ROE. Financial leverage (FLVE) had a significant and negative correlation with both ROA and ROE.

4.2.2. Robustness Check

Tables 8 and 9 retest the effect of CEO characteristics on the link between corporate sustainability and financial performance using GMM estimation method. Table 8 uses ROA as a measure of financial performance, and Table 9 uses ROE as an alternative measure of financial performance. The findings reported in Tables 8 and 9 are consistent with the main results shown in Tables 6 and 7. The AR(1), AR(2), and Hansen tests confirm the validity of the models that have been used. This implies that our results are free from endogeneity problems.

Table 8. Moderating role of CEO characteristics on corporate sustainability and performance associations (Additional test: GMM model).

VARIABLES	(1) ROA ESG	(2) ROA ENVRO	(3) ROA SOCL	(4) ROA GOV
CS	−0.0019 * (0.0010)	−0.0019 * (0.0010)	−0.0044 *** (0.0014)	−0.0022 ** (0.0011)
CEObusy	−0.0270 *** (0.0080)	−0.0636 *** (0.0047)	−0.0446 *** (0.0093)	−0.0361 *** (0.0059)
CEOowner	−0.0331 (0.0388)	0.1330 *** (0.0150)	0.0393 * (0.0201)	0.0110 (0.0237)
CEOeduc	0.0244 ** (0.0099)	0.0231 *** (0.0040)	0.0064 (0.0103)	0.0257 *** (0.0042)
CEOgender	0.2081 ** (0.0803)	0.1216 *** (0.0286)	0.0129 (0.0422)	0.0612 *** (0.0226)
CEOtenure	0.0088 *** (0.0014)	0.0094 *** (0.0008)	0.01943 *** (0.0025)	0.0084 *** (0.0013)
CEObusy*CS	0.0014 *** (0.0012)	0.0014 *** (0.0005)	0.0013 *** (0.0003)	0.0020 *** (0.0003)
CEOowner*CS	0.063 * (0.0349)	0.214 *** (0.0212)	0.027 ** (0.0134)	0.169 *** (0.0182)
CEOeduc*CS	−0.0029 ** (0.0011)	−0.0081 *** (0.0006)	−0.0017 *** (0.0005)	−0.0010 *** (0.0003)
CEOgender*CS	0.0021 (0.0014)	0.0071 ** (0.0010)	0.0046 *** (0.0005)	0.0024 (0.0004)
CEOtenure*CS	−0.0002 ** (0.0001)	−0.0005 *** (0.0004)	−0.0001 *** (0.0003)	−0.0002 *** (0.0004)
FSIZE	0.0112 *** (0.0025)	0.0061 *** (0.0014)	0.0350 *** (0.0038)	0.0143 *** (0.0022)
FAGE	0.0122 *** (0.0019)	0.0138 *** (0.0007)	0.0233 *** (0.0019)	0.0054 *** (0.0017)
FAGE	−0.0002 (0.0003)	−0.0018 *** (0.0002)	−0.0931 *** (0.0111)	−0.0548 *** (0.0088)
Constant	−0.2410 *** (0.0884)	−0.0864 ** (0.0365)	0.0743 (0.0551)	0.0469 (0.0432)
Observations	951	951	951	951
YEARS EFFECT	YES	YES	YES	YES
INDUSTRY EFFECT	YES	YES	YES	YES
AR (1) test (<i>p</i> -value)	0.000	0.000	0.000	0.000
AR (2) test (<i>p</i> -value)	0.429	0.2310	0.230	0.311
Hansen test of over-identification (<i>p</i> -value)	0.863	0.398	0.568	0.823

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Note: ROA is return on assets; CS is corporate sustainability proxied by ESG disclosure (ESG), environmental disclosure (ENORO), social disclosure (SOCL), and governance disclosure (GOV), CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

Table 9. Moderating role of CEO characteristics on corporate sustainability and performance associations (Additional test: GMM model).

VARIABLES	(1) ROE ESG	(2) ROE ENVRO	(3) ROE SOCL	(2) ROE GOV
CS	−0.0091 *** (0.0032)	−0.0027 *** (0.0009)	−0.0044 ** (0.0018)	−0.0132 *** (0.0031)
CEObusy	0.0024 (0.0264)	0.0097 (0.0151)	−0.0283 ** (0.0116)	−0.1140 *** (0.0158)
CEOowner	−0.0770 (0.1033)	0.1443 *** (0.0464)	−0.0099 (0.0298)	0.0398 (0.0778)
CEOeduc	0.0527 ** (0.0249)	0.0035 (0.0149)	−0.0432 *** (0.0099)	−0.0208 (0.0128)
CEOgender	0.354 ** (0.140)	−0.232 *** (0.062)	−0.360 *** (0.054)	0.275 * (0.139)
CEOtenure	0.0152 *** (0.0043)	0.0081 *** (0.0021)	0.0167 *** (0.0028)	0.0268 *** (0.0032)
CEObusy*CS	0.0039 *** (0.0030)	0.0015 *** (0.0013)	0.0017 *** (0.0004)	0.0078 *** (0.0012)
CEOowner*CS	0.216 * (0.115)	0.088 (0.077)	0.033 *** (0.011)	0.303 *** (0.056)
CEOeduc*CS	−0.0090 ** (0.0035)	−0.0035 * (0.0020)	−0.0012 ** (0.0005)	−0.0011 * (0.0006)
CEOgender*CS	0.0174 (0.0045)	0.0141 * (0.0023)	0.0053 (0.0004)	0.0241 ** (0.0016)
CEOtenure*CS	−0.0008 ** (0.0003)	−0.0009 (0.0001)	−0.0002 *** (0.0007)	−0.0005 *** (0.0001)
FSIZE	0.0516 *** (0.0069)	0.0124 *** (0.0044)	0.0414 *** (0.0049)	0.0376 *** (0.0065)
FAGE	0.0174 *** (0.0056)	0.0091 *** (0.0024)	0.0196 *** (0.0025)	0.0047 (0.0061)
FAGE	−0.0023 ** (0.0010)	−0.0023 *** (0.0004)	−0.1300 *** (0.0116)	−0.0038 *** (0.0007)
Constant	−0.708 *** (0.175)	0.271 *** (0.060)	0.546 *** (0.065)	−0.486 *** (0.164)
Observations	951	951	951	951
YEARS EFFECT	YES	YES	YES	YES
INDUSTRY EFFECT	YES	YES	YES	YES
AR (1) test (<i>p</i> -value)	0.000	0.000	0.000	0.000
AR (2) test (<i>p</i> -value)	0.158	0.101	0.104	0.115
Hansen test of over-identification (<i>p</i> -value)	0.403	0.389	0.154	0.145

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Note: ROE is return on equity; CS is corporate sustainability proxied by ESG disclosure (ESG), environmental disclosure (ENORO), social disclosure (SOCL), and governance disclosure (GOV). CEObusy is CEO busyness, CEOowner is CEO ownership, CEOeduc is CEO education, CEOgender is CEO gender, CEOtenure is CEO tenure, FSIZE is firm size, FAGE is firm age, and FLVE is firm financial leverage.

5. Conclusions

The target of this paper was to examine the association between corporate sustainability and corporate performance. In particular, we aimed to figure out whether CEO characteristics moderated the link between corporate sustainability and financial performance. Unlike previous studies, we use a comprehensive set of CEO characteristic that have not been tested before (e.g., CEO ownership, CEO busyness, and CEO gender). Our sample contained the non-financial corporations that were listed on the Tadawul All Share Index (TASI) over a nine-year period between 2014 and 2022. This study contributed to the literature by analysing the comprehensive attributes of CEOs (CEO busyness, CEO ownership, CEO education, CEO gender, and CEO tenure) instead of focusing on particular

CEO characteristics. In addition to the OLS model, we employed system GMM to solve any potential endogeneity issues.

Regarding the findings of this study, we found a significant and negative relationship between corporate sustainability and corporate performance. Moreover, we demonstrated that CEO characteristics moderated the association between corporate sustainability and corporate performance; specifically, CEOs' busyness mitigated the negative influence of CS on financial performance. However, CEO ownership and gender enhanced the negative influence of CS activities and led to a positive financial performance. By contrast, CEO education and CEO tenure seemed to have a negative influence on the association between CS activities and financial performance. These findings were also confirmed by the system GMM model.

Overall, this study provides implications for policymakers, regulators, and corporations. The findings announced in this paper could provide direction and guidance to corporations and regulators regarding the characteristics of CEOs that play a vital role in enhancing the profitability of corporations. That is, it is important to implement policies regarding the CEO compensation and gender diversity since having CEOs who own a share in the corporation and identify as female can improve financial performance through the CEO's engagement in CSR activities. By contrast, holding a high degree (e.g., master's degree or Ph.D) and having a long-serving history in corporations may reduce the financial performance through the engagement in CSR activities of corporations. Furthermore, policymaker can enhance the regulation codes by improving the requirement of sustainability nonfinancial reporting, which might motivate CEOs to follow to meet the stakeholders' interests.

Regarding the limitations of this study, we recommend that future studies examine the effect of CEO characteristics on the link between corporate sustainability and financial performance during financial crises (e.g., the global financial crisis of 2007–2009 and/or the COVID-19 pandemic). Future research may investigate the above-mentioned relationship while concentrating on financial corporations, as their business model and regulations are not the same as non-financial ones.

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