

Exploring The Relationship Between Corporate Sustainability Practices And Corporate Financial Performance In Pakistan Testing The Moderating Role Of Ceo Characteristics And R And D

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Abstract

Background: Climate change, dwindling resources, and increased demands on social responsibility are all factors that have made corporate sustainability practices (CSP) become important across the world. Nevertheless, in young economies such as Pakistan, the CSP-corporate financial performance (CFP) nexus is under-investigated.

Objective: This paper examines the CSP and CFP relationship in Pakistan and how CEO characteristics and research and development (R&D) investment mediate this relationship.

Design and Setting: The study employs a quantitative, **secondary panel data design**, using firm-level data drawn from annual reports, financial statements, and sustainability disclosures of publicly listed Pakistani companies across various industries such as manufacturing, technology, and energy.

Participants: The sample included large and medium-sized firms that have been in business for at least five years. We gathered the data through structured surveys of CEOs and senior executives, supplemented by secondary financial and sustainability reports.

Measures: CSP (environmental, social, and governance dimensions) is an independent variable. Dependent variable: CFP (return on assets, return on equity, ROI, market value). Moderators: the attributes of the CEO (education, experience) and investment in research and development. The study also includes R&D expenditure (percentage of annual revenue allocated to research and development) as a key moderating variable to assess how innovation intensity affects the CSP–CFP relationship.

Results: It was found that CSP demonstrates a significant effect on CFP ($b = 0.45$, $p < 0.01$). This relationship was positively moderated by CEO education and experience

($b = 0.12$, $p < 0.05$), and R&D investment increased the impact of CSP on financial performance ($b = 0.15$, $p < 0.01$).

Conclusions: CSP is associated with social and financial factors in Pakistan. They play very important roles in enhancing this connection by leadership qualities and investing in innovation. The paper has implications on the corporate strategy and policymaking, which focus on integrating sustainability in the business practice so as to attain a competitive edge. Longitudinal designs should be used in future studies, and investigations into other possible moderating variables like institutional pressures and cultural forces should follow.

INTRODUCTION

The application of corporate sustainability practices (CSP) has gained prominence as stakeholders are now requiring that firms should operate in an environmentally sustainable and socially responsible manner. CSP brings it in that the economic, environmental, and social aspects are incorporated in corporate strategy and operations. What at one point was a niche issue has now become a global mandate due, in large part, to the realization of climate change, resource depletion, and social inequality, and increased pressure on regulators, shareholders, and consumers (1). Companies that have been identified to have good sustainability practices stand at a better position to reduce risks and exploit opportunities as well as create non-current value, hence improving overall performance (2).

However, the implementation of sustainability is still uneven and unresearched in such emerging economies as Pakistan. The corporate world is presented with significant challenges, such as unstable financial conditions, insufficient infrastructure, inability to access capital, and ignorance regarding the advantages of sustainable practices (3). In spite of these obstacles, there is an increased emphasis placed on sustainability, especially in the sectors that severely affect the environment, like energy, manufacturing, and agriculture. In the case of Pakistan, incorporation of CSP in company strategy is very important to promote economic growth and development in the long run.

In spite of the fact that the link between Corporate Social Performance (CSP) and Corporate Financial Performance (CFP) has been widely studied on a global level, there is still a lack of evidence on the same in Pakistan. This relationship is important in context not only when it comes to academic matters but also when it comes to informing policymakers, managers, and investors on how to formulate the best sustainability strategies.

Conventionally, CFP used to be gauged by the profitability, the return on investment (ROI), and the growth indicators. In the recent past, however, scholars have opined that non-financial results like environmental and social contributions are as critical as long-term success (4). It can be concluded that the consideration of CSP in corporate strategy will lead to a higher level of efficiency, cost reduction, and reputational capital, which also allows easy access to finance, improves the level of stakeholder trust, and leads to competitive advantage. However, the CSP-CFP relationship is not

unanimous in the sense that in emerging markets the institutional and regulatory environments are not similar to developed economies.

Two moderators that have been considered as relatively important in this relationship are two potential moderators: research and development (R&D) investment and CEO characteristics. CEOs can be at the focal point in developing sustainability strategy; they are vital in the implementation of sustainability, as their education, experience, leadership style, and their personal commitment to sustainability have a very high influence on efficiency (5). Simultaneously, R&D investment promotes the innovation of the process, products, and technologies that can have fewer environmental effects and use more efficient resources. Combining the CEO traits with R&D can contribute positively to the impact of CSP on CFP, and hence, they are essential to research in the changing business environment in Pakistan.

Corporate Sustainability Practices (CSP) and Corporate Financial Performance (CFP).

There is strong literature on the relationship between corporate financial performance (CFP) and corporate sustainability practices (CSP), yet the results have been inconsistent. Sustainability, in the developed economies, is often synonymous with increased efficiency and cost minimization, innovation, and reputation, all of which lead to improved financial results. Nevertheless, evidence in the emerging economies is not as clear-cut as it is in the developed economies because of differences in the quality of institutions, the form of governance, and the maturity of the market.

Indicatively, Zahid et al. noted that Environmental, Social, and Governance (ESG) disclosure scores have a positive influence on the performance of a firm in India, which is an indicator of the financial gains of sustainability efforts in developing markets. Conversely, Farooq et al. (6) discovered that the CSP-CFP relationship in Pakistan is mostly conditional on the firm-related factors, including governance forms and size, which implies that the results of sustainability are context-specific. Such mixed findings support the need to investigate the CSP-CFP nexus in Pakistan, where there is a lack of empirical research.

CEO Characteristics as Moderators

The Chief Executive Officers (CEOs) are at the center of corporate strategy formulation, including the sustainability programs. It has been indicated that education, experience, tenure, risk-taking, and international exposure traits of CEOs play a significant role in determining how decisions are made and in prioritizing sustainability.

In a report on the Latin American companies, have discovered that the risk aversion of CEOs has an impact on the corporate risk-taking behavior, which directly impacts sustainable practices adoption (7). On the same note, Mahmood et al. (2024) established that the periodicity of CEOs and the performance of firms are positively correlated, meaning that seasoned CEOs can better integrate sustainability in the strategies of firms(8). Ng and Kee (2019) also emphasized that the Asian environment omits the role of CEO characteristics to predict corporate environmental performance.

Such results indicate that the CSP-CFP relation can be mediated by CEO attributes and that sustainability is more likely to influence the financial results depending on the qualities of the CEOs (9).

R&D Investment as a Moderator

Another factor that has an effect on the effectiveness of CSP is research and development (R&D) investment. R&D will enhance financial performance by creating products, processes, and technologies that could minimize the damage to the environment, increase the efficiency of resources, and create new market opportunities.

The authors of the study discovered that the job of R&D investment mediates between corporate financial fragility and green innovation and that companies with higher commitment to R&D would be more likely to have sustainability outcomes. Similarly, Rauf et al. (2023) indicated that the positive impact of the R&D on the performance of green innovation in China is reinforced by the disclosure of corporate social responsibility (CSR), indicating the beneficial interaction between sustainability and innovation. These results suggest that the CSP-CFP relationship can be balanced by the R&D investment, especially in the emerging markets where innovation is a decisive factor of competitiveness (10).

Critiques and Gaps in Existing Literature

Although a lot of research has been done, there are still a number of gaps. First, a lot of evidence on CSP and CFP is generated by developed economies, and emerging economies like Pakistan have not been thoroughly explored. Second, the majority of studies follow a cross-sectional design that restricts the interpretation of the impact of sustainability on financial results in the long-term perspective. Third, Pakistan is an institutional and economic setting where the moderating effects of CEO traits and R&D investment on the CSP-CFP relationship have not been adequately investigated.

Contribution of the Study

This paper fills these gaps by examining the relationship between CSP and CFP in Pakistan and testing the moderating effects of CEOs' characteristics and R&D investment. The study helps to add a more subtle dimension to the existing knowledge about sustainability practices and their impact on financial performance in emerging markets by applying organizational, leadership, and innovation lenses to the topic. It is believed that the findings will be of great value to academicians, policymakers, and corporate executives who aim at aligning sustainability and financial performance within the Pakistani context.

The review of existing literature highlights the potential for corporate sustainability practices (CSP) to enhance corporate financial performance (CFP). While evidence from developed markets generally supports this relationship, findings in emerging economies are mixed, indicating the need for context-specific analysis. Given Pakistan's institutional and market conditions, examining this link is both timely and relevant.

CEO characteristics have been shown to significantly influence corporate strategies, including the adoption and implementation of sustainability initiatives. Attributes such as education, experience, and leadership style affect how CEOs integrate sustainability into organizational practices, suggesting that CEO traits may strengthen or weaken the CSP–CFP relationship.

Similarly, research and development (R&D) investment plays a critical role in fostering innovation and enabling firms to achieve sustainability goals. By supporting the development of environmentally friendly products, processes, and technologies, R&D enhances the potential of CSP to generate positive financial outcomes. Thus, R&D investment may act as a moderator that amplifies the financial benefits of sustainability initiatives.

Drawing on these arguments, the following hypotheses are proposed:

H1: Corporate sustainability practices (CSP) are positively related to corporate financial performance (CFP) in Pakistan.

H2: CEO characteristics moderate the relationship between CSP and CFP, such that firms led by CEOs with higher education and greater experience achieve stronger financial performance from sustainability practices.

H3: R&D investment moderates the relationship between CSP and CFP, such that higher levels of R&D spending strengthen the positive effect of sustainability practices on financial performance.

METHODOLOGY

Research Design

This study adopts a quantitative panel research design based on secondary data collected over five years (2018–2022) to examine the relationship between Corporate Sustainability Practices (CSP) and Corporate Financial Performance (CFP) in Pakistani firms. The use of panel data enables analysis of both cross-sectional and temporal variations, offering deeper insights into how sustainability practices influence financial outcomes over time.

Sampling and Data Collection

This study used **secondary panel data** of large and medium-sized publicly listed firms in Pakistan, covering a **five-year period (2018–2022)**. The data were obtained from reliable secondary sources such as company annual reports, sustainability disclosures, and official stock exchange databases. Firms were selected based on data availability for both corporate sustainability practices (CSP) and corporate financial performance (CFP) indicators

Secondary Data: Corporate financial performance indicators (e.g., profitability ratios, ROI, market capitalization) were obtained from firms' annual reports, Bloomberg,

and other financial databases. Sustainability reports were used to measure environmental, social, and governance (ESG) practices as indicators of CSP.

Variables

Independent Variable:

Corporate Sustainability Practices (CSP), measured using ESG dimensions:
Environmental (e.g., energy use, waste management, emission reduction),
Social (e.g., labor practices, community engagement),
Governance (e.g., board diversity, ethical standards)

Dependent Variable:

Corporate Financial Performance (CFP), assessed using:
Profitability Ratios (Return on Assets [ROA], Return on Equity [ROE]),
Market Value (stock prices, market capitalization),
Return on Investment (ROI).

Moderating Variables:

CEO Characteristics (education, years of experience, leadership style, and risk-taking orientation), collected primarily through surveys and interviews

R&D Investment (R&D Expenditure): Measured as the **percentage of total annual revenue allocated to research and development activities**, derived from firms' annual financial statements. This variable reflects innovation intensity and its potential moderating effect on the CSP–CFP relationship.

Data Analysis

Descriptive Statistics: Used to summarize the characteristics of the dataset, including mean, standard deviation, and distribution of CSP, CFP, CEO characteristics, and R&D investment.

Correlation Analysis: Pearson's correlation coefficient was applied to assess the strength and direction of relationships among variables.

Multiple Regression Analysis: Employed to test the direct effect of CSP on CFP, as well as the moderating effects of CEO characteristics and R&D investment.

Structural Equation Modeling (SEM): Conducted to validate the hypothesized relationships and capture complex interactions between CSP, CEO traits, R&D investment, and CFP, including both direct and indirect effects.

RESULTS

Descriptive Statistics

Table 1 presents descriptive statistics for the study variables. On average, firms reported moderate levels of Corporate Sustainability Practices (CSP) ($M = 3.25$, $SD =$

1.22), while Corporate Financial Performance (CFP) showed relatively higher mean values ($M = 6.40$, $SD = 2.15$). CEOs in the sample had an average of 14.5 years of education and 20.3 years of professional experience. Research and Development (R&D) investment averaged 3.85% of annual revenue.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	Min	Max
Corporate Sustainability Practices (CSP)	3.25	1.22	1.00	5.00
Corporate Financial Performance (CFP)	6.40	2.15	1.50	10.00
CEO Education (Years)	14.5	4.2	7	24
CEO Experience (Years)	20.3	7.6	10	40
R&D Investment (% of Revenue)	3.85	1.52	1.0	8.5

Correlation Analysis

Table-2 reports Pearson's correlation coefficients. CSP was positively and significantly correlated with CFP ($r = 0.45$, $p < 0.05$). CEO education and experience also demonstrated positive associations with both CSP and CFP, suggesting that leadership factors play an important role in shaping corporate sustainability and financial outcomes. R&D investment was positively correlated with both CSP ($r = 0.32$, $p < 0.05$) and CFP ($r = 0.40$, $p < 0.05$), highlighting its potential moderating influence.

Table 2: Correlation Matrix

Variable	CSP	CFP	CEO Education	CEO Experience	R&D Investment
CSP	1	0.45*	0.22*	0.28*	0.32*
CFP	0.45*	1	0.18*	0.35*	0.40*
CEO Education	0.22*	0.18*	1	0.55*	0.28*
CEO Experience	0.28*	0.35*	0.55*	1	0.30*
R&D Investment	0.32*	0.40*	0.28*	0.30*	1

Note: All correlations are significant at the 0.05 level.

Regression Results

Multiple regression analysis was conducted to test the proposed hypotheses. Results are summarized in Table 3. CSP had a positive and significant effect on CFP ($\beta = 0.45$, $p < 0.01$), supporting Hypothesis 1. CEO education ($\beta = 0.18$, $p < 0.05$) and CEO experience ($\beta = 0.20$, $p < 0.05$) were significant predictors of CFP, and their

interaction with CSP was also significant ($\beta = 0.12$, $p < 0.05$), supporting Hypothesis 2. Similarly, R&D investment significantly moderated the CSP–CFP relationship (interaction $\beta = 0.15$, $p < 0.01$), supporting Hypothesis 3.

Table 3: Multiple Regression Results

Independent Variable	β	SE	t-statistic	p-value
CSP	0.45	0.12	3.75	0.00
CEO Education	0.18	0.09	2.00	0.04
CEO Experience	0.20	0.08	2.50	0.02
R&D Investment	0.25	0.11	2.27	0.03
CSP $\times$ CEO Education	0.12	0.05	2.40	0.02
CSP $\times$ R&D Investment	0.15	0.06	2.50	0.01

Note: β = Standardized Beta Coefficient; SE = Standard Error.

The results confirm that firms engaging in sustainability practices experience superior financial performance. Moreover, CEO characteristics—particularly education and experience—enhance the impact of CSP on CFP. R&D investment also plays a critical role, strengthening the positive effect of CSP on financial outcomes. These findings support all three hypotheses and highlight the importance of leadership and innovation in leveraging sustainability for financial success.

DISCUSSION

This research looked at the correlation between Corporate Sustainability Practices (CSP) and Corporate Financial Performance (CFP) in Pakistani companies where the moderating variables are CEO characteristics and R&D investment. The results provide a number of valuable insights.

CSP and CFP Relationship

The findings affirm a considerable positive association between CSP and CFP, and it confirms Hypothesis 1. This implies that sustainability practices are not only supporting the social and environmental objectives, but they also support a financial outcome. The result is consistent with the previous studies conducted in developed markets, which overwhelmingly prove that CSP is able to mitigate risks, enhance efficiency, and drive innovation that results in high-quality financial performances (12). Nonetheless, this research represents a significant shift from the literature in developed countries, where the CSP–CFP relationship is typically assumed to be factual; it provides crucial evidence needed in Pakistan, a developing market with different institutional structures and governance systems.

Moderating Role of CEO Characteristics

These findings also confirm Hypothesis 2 that CEO education and experience reinforce the positive impact of CSP on CFP. This highlights the importance of the role of leadership in entrenching sustainability into corporate strategy. The results align with the studies by Ng and Kee (2019), who emphasized the role of CEO traits in environmental performance, and by Mahmood et al. (2024), who discovered a positive impact of the tenure of CEOs on the results of the firm. In the changing business environment of Pakistan, highly educated and experienced CEOs can be in a better position to integrate sustainability and long-term value generation, which enhances the financial payoff of CSP (13).

Moderating Role of R&D Investment

The findings also prove Hypothesis 3, which asserts that the CSP-CFP relationship is reinforced by the investment in research and development. This reflects the contribution of innovation as an important facilitator of sustainability. Companies investing in research and development are in a position to come up with eco-friendly technology, enhance efficiency in utilizing resources, and create new market opportunities. Such an outcome is consistent with Zhang et al. (2023), who have proven that R&D plays a mediating role in facilitating green innovation, and Rauf et al. (2023), who have highlighted the synergistic effect of CSR disclosure and R&D on the outcomes of innovation (14). To Pakistani companies, it appears that R&D investment is a paramount process of turning sustainability into financial performance (15).

Theoretical Implications

The paper adds to the body of literature by taking the CSP-CFP argument to a new market economy. It emphasizes the role of including leadership (CEO features) and innovation (R&D investment) as moderators, therefore providing a more holistic perspective of sustainability as translated into financial performance. These results are also providing support to the stakeholder theory and the resource-based perspective, which state that companies that effectively implement sustainability practices, in combination with effective management and resourcefulness, can attain a lasting competitive advantage.

Practical Implications

To practitioners, the findings indicate that sustainability is not an act of compliance or reputational action but a strategic enforcer of financial results. Managers are encouraged to put CSP as part of corporate strategy and acknowledge the leadership and innovativeness involved in ensuring it is enacted to its full potential. To the policy makers, the results indicate that appropriate institutional structures must be offered to support sustainability reporting, to motivate investments in R&D, and to facilitate leadership development programs to enhance corporate governance.

Limitations and Future Research

Although this study offers valuable insights, it is important to acknowledge certain limitations. Although the five-year panel design improves temporal validity, future studies may extend the duration to further establish causality; longitudinal research is required to address the long-term consequences of CSP on CFP. Second, the analysis was based on publicly listed companies, which do not perhaps accurately reflect the overall corporate environment in Pakistan, especially small and family-owned enterprises. Third, self-reported survey data were used to measure CEO characteristics, which could cause bias in responses. Subsequent studies may include more objective leadership scales and investigate more moderation variables, including regulator pressures, cultural beliefs, or industry-specific processes.

CONCLUSION

This paper assessed how Corporate Sustainability Practices (CSP) have been influencing Corporate Financial Performance (CFP) in Pakistan, and it has tested the moderating effect of CEO characteristics and R&D investment. These findings reveal that the financial performance of the firms that implement sustainability activities is better, and the impact is considerably elevated by effective leadership and robust investment in innovation.

The results contribute to three aspects. First, they apply the CSP-CFP argument to a developing economy, which leaves empirical evidence on the topic, which is still scarce in Pakistan. Second, they emphasize the role of CEO traits, education, and experience in enhancing the connection between sustainability and financial performance. Third, they introduce the position of R&D investment as the driver of turning sustainability efforts into financial benefits in the long term.

Practically, the paper underlines that sustainability must be considered as a strategic asset and not a peripheral activity. Managers are advised to incorporate CSP as part of the overall business strategies, build leadership capabilities, and invest adequate resources in R&D so as to maximize social and financial returns. These should be encouraged by policymakers using regulatory frameworks and incentives that encourage sustainability reporting, leadership growth, and innovation.

Though the research is very informative, it also leaves the way to subsequent research. Longitudinal studies would help illuminate the cause-and-effect relationship between CSP and CFP and would provide more generalizability given that they would include small and unlisted firms. Moreover, it might be of interest to examine other moderating variables like the dynamics within an industry, institutional pressures, or cultural effects on the translation of sustainability into financial success.

To sum it up, this paper shows that corporate sustainability with efficient leadership and innovation does not only play a role in achieving societal and environmental objectives but also propels financial outcomes. This poses a challenge and an opportunity to firms in the emerging economies like Pakistan: to be both profitable and responsible in the quest to achieve sustainable growth.

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