

Linking Corporate Social Responsibility and Corporate Performance: A Moderated Approach

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Abstract

Purpose- This study is an attempt to analyze the impact of Corporate Social Responsibility Expenditure on Corporate Performance and evaluates the moderating effect of Sustainable Business Practices related to water conservation and waste management. The focus of the study is on non-financial firms working in Pakistan, a developing country confronting environmental sustainability issues.

Design/Methodology/Approach- For the purpose of conducting this study, a panel sample consisting of 25 non-financial firms listed on Pakistan Stock Exchange for the years 2018 to 2024 has been taken, with 175 firm-year observations. Panel regression methods were used, with the use of software STATA. The financial measures adopted for analyzing firm performance were ROA, ROE, and Revenue. For the moderating role of Sustainable Business Practices, an index was created based on the disclosure of firms engaged in sustainable practices related to water conservation and waste management.

Findings- The findings suggest that Corporate Social Responsibility Expenditures itself does not systematically translate into higher firm performance and the direct effects on profitability measures are found to be weak. However, the interaction between Corporate Social Responsibility Expenditure and Sustainable Business Practices is positive and statistically significant for ROA and ROE which indicates that Corporate Social Responsibility Expenditures can only contribute to profitability when it is rooted in substantive sustainability practices. While, revenue performance is mainly driven by the firm size rather than CSR-related investments.

Practical Implications- The results show that there is a need for the alignment of the Corporate Social Responsibility activities with sustainable efforts to bring about the expected financial gains. Companies need to focus on incorporating their Corporate Social Responsibility efforts within their sustainability activities instead of having

symbolic or standalone Corporate Social Responsibility activities, while policy makers should promote regulatory frameworks that incentivize substantive environmental engagement.

Originality/Value-The study advances CSRE and corporate performance literature by highlighting conditional nature of CSR financial effects in an emerging economy. By highlighting the moderating role of water related Sustainable Business Practices in Pakistan, the study provides novel evidence on how CSR expenditure can be transformed into tangible profitability outcomes.

Keywords: Corporate Social Responsibility Expenditure, Sustainable Business Practices, Corporate Performance, Return on Assets, Return on Equity, Revenue.

1. Introduction

Water conservation and waste reduction strategies have become core sustainability imperatives for today's economies (López-Cabarcos, Piñeiro-Chousa, Quiñoá-Piñeiro, & López-Pérez, 2024). Companies worldwide are being pushed by regulators, shareholders, and citizens into doing more than philanthropy and internalizing comparatively significant waste and water management practices into their very fundamental strategies (Aftab et al., 2024). Global policy reports in recent years emphasize the indispensability of water for prosperity and peace and for developing resilience and emphasize that collective public-private action is needed for achieving sustainability objectives (UNESCO, 2024). At the same time, academicians also suggest that sustainability initiatives by companies, when operationalized by spending in environmental practices, green technology, or development of capacities, benefit firm outcomes like cost reductions, operational enhancements, and reputational gains (Aftab et al., 2024). Such benefits, however, are conditional and are often intermediated by tangible operational practices rather than a direct result of spending on CSR (Aftab et al., 2024; Silva, Simões, & Teixeira, 2024; Zhang, Vătămănescu, & Ma, 2024).

Corporate social responsibility (CSR) has been broadly understood as voluntary integration of social, environmental and ethical concerns by firms into their business operations and has increasingly been linked to the achievement of United Nations Sustainable Development Goals (SDGs), which provide a framework for addressing poverty, inequality and environmental challenges etc. (Carroll, 1999; United Nations, 2015). Recent global research highlights that spending on CSR has shown a rising alignment with financial performance and the United Nations Sustainable Development Goals (SDGs). For instance, Sharma and McLean (2025) found that CSR expenditure by Indian firms enhances profitability and aligns with certain Sustainable Development Goals (SDGs). However, this study focuses primarily on profit-based indicators by overseeing how sustainable business practices, such as waste conservation and water management, may influence the relationship between CSR expenditure and corporate performance, particularly in emerging economies like Pakistan. Besides single country-centric research, past systematic reviews also synthesize the evidence into CSR and financial performances. Coelho, Jayantilal, and Ferreira (2023), established strong yet varied evidence linking CSR and corporate financial performance, with variations

between contexts, methodological frameworks, and operationalization of CSR. They have highlighted that recent research tends towards from generic indices of CSR toward monetary spending-based CSR, quality of sustainability reporting, and industry-based environmental practices as more credible predicts of performance. This also argues for country specific operationalization of CSR, such as Pakistan's waste- and water-management practices which are not yet researched thoroughly, although critically needed for sustainable performance of businesses (Alam & Tariq, 2023; Iqbal et al., 2022; Iqbal et al., 2023).

In Pakistan, there is a particular need for effective treatment of wastes and water. Pakistan has acute water stress and mounting waste-related issues catalyzed by demographic expansion, rapid urbanization, weak infrastructure, and intermittent regulatory enforcement (Iqbal et al., 2022; Iqbal et al., 2023). Recent assessments of Pakistan's environmental infrastructure report deteriorating water quality, pressured freshwater sources, and chronic municipal solid-waste management failures, and all of these generate enormous-scale environmental and public health spillovers (Metelenko et al., 2025). Even against this history, sustainability reporting by Pakistani firms is erratic. Evidence from firm-level researches verifies that disclosures are often altruistic in nature and scant on operational detail, and quantitative environmental performance measures such as levels or amounts of water recycled or volumes of wastes are reported by a minority of firms. Nonetheless, empirical evidences verifies that CSR can have a positive influence upon financial results in Pakistan, however considerable untapped potential remains if CSR investments are directed towards operational sustainability practice (Alam & Tariq, 2023).

Despite the importance of these questions, limited empirical work exists regarding whether Pakistani firms' spending on CSR in monetary terms translates into real-world organizational sustainable behavior and whether it leads toward organizational waste and water-management operational improvements. Earlier research had mostly relied upon sustainability disclosure indices or sustainability score composites that frequently reflect organizational verbal commitments and not on actual spending or organizational outcomes (Rasheed et al., 2018; Alam & Tariq, 2023). Little is discussed about whether firms' spending on CSR translates into adopting organizational waste- and water-management operational practices (Mustafa et al., 2023; Silva et al., 2024). It also remained underexplored whether such practices serve as a mediator through which CSR spending contributes to organizational financial performance (Mwandu, Kihanga, & Komba, 2023). Evidence further suggest that these operational practices further enhance outcomes which are measured through return on assets, return on equity and revenue (Simionescu, 2020). The corporate performance was therefore evaluated by three indicators: Return on assets (ROA), Return on equity (ROE) and revenue, where ROA is one of the most common profitability indices in management and finance literature because it captures the rate at which firms utilize their assets internally for profitability (Chen et al., 2020; Li et al., 2020). It targets internal financial performance and has less reliance on market performance vis-à-vis market-based indices like Tobin's Q. ROE in contrast measures the profitability from shareholders perspective by identifying the return generated on equity capital and capturing financial performance

of firms in terms of wealth creation and financial leverage effects (Naughton et al., 2023). Secondly, Revenue was also used as a proxy for firms' growth and market success (Zhang et al., 2020; Naughton, J., Chollet, P., & Savitri, A., 2023).

Considering the above-mentioned gaps, this new study follows three specific objectives. Firstly, it examines whether Pakistani companies' spending on monetary CSR has a direct effect on company financial performance, measured separately through ROA, ROE and Revenue, separately. Secondly, it assesses whether those practices, once adopted, enhance company performance and also act as a moderator between CSRE and company's financial outcomes (ROA, ROE and revenue). Thirdly, the study compares the three models by using ROA, ROE and Revenue as dependent variable in order to identify the consistency and variation between CSRE-corporate performance relationship among different dimensions of corporate performance. By empirically examining these relationships in the context of Pakistan, this research is an attempt to provide insight into how sustainable business practices can influence the impact of CSR expenditure on corporate performance.

2. Literature Review

Corporate Social Responsibility (CSR) has long been theorized and empirically examined as a driver of corporate performance in different contexts. Theoretical foundations for this linkage are found in Stakeholder Theory (Freeman, 1984) and the Triple Bottom Line (TBL) framework (Elkington, 1997). Stakeholder Theory argues that companies build long-term value by satisfying the needs of stakeholders like communities, regulators, and the environment, rather than through profit maximization. Similarly, the TBL framework points out that sustainable performance extends beyond financial outcomes to include social and environmental dimensions (Baumgartner & Rauter, 2017; Townsend & Muff, 2023). These theories suggest that CSR, when it is built into operations in a strategic manner, enhances legitimacy, builds stakeholder trust, and leads to long-term performance. Recent systematic reviews and meta-analyses have also endorsed this theoretical rationale. A comprehensive meta-analysis of 223 studies by (Li, Yan, & Li, 2025), found a robust positive relation between CSR and corporate financial performance (CFP), particularly for emerging economies where weak regulatory systems amplify the signal effect of CSR. Similarly, Coelho, Jayantilal, and Ferreira (2023), through their systematic literature review of 180 studies, reported a methodological change toward adopting monetary expenditure-based CSR and longitudinal research design, enabling more rigorous causal inferences. These reviews ratify a global consensus that CSR matters, yet also underline the need for context-specific work focusing on operational mechanisms. Globally, studies have begun linking CSR expenditure and sustainability performance. For example, Sharma and McLean (2025) demonstrated that Indian firm CSR expenditure has a positive association with financial performance and sustainability performance for the United Nations Sustainable Development Goals (SDGs). In Southeast Asia, Aulia and Savitri (2025) demonstrated that there is a mediator role for CSRE between green financing and sustainable business performance and that CSRE plays a conduit function for financial and environmental value creation. These studies, however, often categorize

CSR at a macro level and therefore undertreat operational areas such as waste and water management.

In Pakistan, there has always been a priority in CSR research based on disclosure indices and thorough sustainability reporting. Alam and Tariq (2023) found that sustainability performance is positively connected to firm financial performance in Pakistani listed firms, and (Sindhu, Windijarto, Wong, and Maswadi, 2024) confirmed CSR's positive contributions towards financial and non-financial performances for the banking sector. In Pakistan's non-financial sector, (Rasheed, Arshed, Malik, and Mahmood, 2018) also established positive links between firm performance and CSR. These, however, mostly used composite measures of CSR and yet overlook the manner in which some operational sustainable business practices (SBPs), such as waste minimization and water conservation, moderate this relationship. This research therefore represents a huge research gap that needs to be addressed.

2.1 CSRE and Corporate Performance

The direct relationship between corporate social responsibility expenditure and company performance has previously been proven in many contexts. According to Coelho et al. (2023) investments in CSR enhance company reputation, reduce risk exposure, and open access to resources, each yielding enhanced financial performances. In emerging markets, legitimacy is signaled by CSR in those environments where weak governance and institutional voids prevail (Alam & Tariq, 2023). Empirical proof from Pakistan verifies this trend, and CSR activity was established as enhancing profitability and operational efficiency (Rasheed et al., 2018; Sindhu et al., 2024).

Prior research suggests that profitability analysis in a vacuum may overlook growth potential for firms, particularly for emerging economies characterized by expansion and scope in establishing and maintaining competitiveness (Zhang et al., 2020; Naughton, J., Chollet, P., & Savitri, A., 2023). Accordingly, this study implies that by supplementing with Revenue, there is a more holistic picture of company performance that captures profitability (ROA, ROE) and growth (Revenue). ROA captures firms' internal operational efficiency, ROE reflects profitability from shareholders' perspective and the effectiveness of equity utilization, whereas revenue serves as an indicator of market growth and external performance outcomes. Examining these measures independently allows for a more comprehensive assessment of CSR performance effects.

The use of multiple performance indicators is in line with the recent sustainability and CSR literature, which promotes for multidimensional performance evaluation to avoid bias associated with dependence on a single metric (Chen et al., 2020; Pierre Chollet et al., 2023). This study provides a balanced view of corporate performance by considering ROA, ROE and revenue by capturing both internal efficiency of firms and their external market outcomes. This kind of approach addresses the long-lasting evaluation in the CSR-performance literature that a single measure analyses may produce incomplete or misleading conclusions (Chen et al., 2020; Pierre Chollet et al., 2023). The above lead to the development of the following hypotheses:

H1: CSR expenditure has a positive significant effect on corporate performance (ROA) in Pakistani firms.

H2: CSR expenditure has a positive significant effect on corporate performance (ROE) in Pakistani firms.

H3: CSR expenditure has a positive significant effect on corporate performance (R) in Pakistani firms.

2.2 Sustainable Business Practices and Corporate Performance

Sustainable business practices have consistently demonstrated direct and measurable relationships with firms' performance in the past. The companies which are involved in reducing consumption of natural resources, optimizing waste management and enhance operational efficiency are not only able to mitigate regulatory and reputational risks but also achieve cost savings and increase in profitability (Townsend & Muff, 2023). Abbas (2024) also stated that sustainable business practices, such as eco-innovation, positively influences environmental and financial outcomes, thereby establishing a direct pathway in achieving organizational performance.

Current studies have highlighted the financial relevance of several operational domains including water conservation and waste management. For example, the study by (Simionescu, Gherghina, Sheikha, and Tawil, 2020) found that efficient water consumption is positively associated with return on assets (ROA), whereas higher waste generation was found negatively correlated with profitability (ROA) in U.S. S&P 500 firms. Similarly, the authors (Albitar, Yang, Li and Hussain, 2024) highlighted that reuse initiatives and waste recycling significantly enhanced financial outcomes across G7 firms by reducing total waste volumes. In addition to the above, (Chee, Yau, Amidjaya, Liwan and Kueh, 2022) also observed that the Malaysian Firms with widespread environmental management disclosures, covering water and waste management, highlighted improved environmental performance, although the impact of water initiatives on ROA was less effective as compared to carbon management efforts.

The crux of the above findings suggests that more focused sustainability strategies, particularly considering the water conservation and waste efficiency lead towards improved financial outcomes through cost reductions and enhanced asset productivity. In Pakistan, which is considered as a developing economy, issues relating to water conservation and waste management are escalating rapidly. Therefore, adopting effective sustainable practices are need of the hour to achieve long-term corporate performance.

2.3 Sustainable Business Practices as a Moderator

Strategic Management and sustainability issues have been widely discussed in the past literature as critical areas of contemporary research, reflecting their importance in achieving long term organizational goals, particularly in enhancing overall performance. Accordingly, Noor (2025) and López-Cabarcos et al. (2024) emphasized that the performance implications of corporate social responsibility depend on how deeply these initiatives are engraved in firm's internal sustainability routines and capabilities. Bokhari, 2024 has also highlighted that the sustainable business practices including water conservation, waste minimization and other resource efficient operations are not just peripheral activities but represent organizational capabilities which represent CSR expenditure in generating tangible corporate value.

Considering, Resource Based View (Barney, 1991) and Dynamic Capabilities Theory (Teece, 2007), sustainable business practices are strategies which enable firms to reconfigure operations, transform socially oriented investments into competitive advantage and most importantly to integrate environmental objectives with cost-efficiency. Past literature has increasingly confirmed the linkage of CSR effectiveness with sustainability capabilities. Noor (2025) have examined Pakistani firms and found that board-level ESG practices and sustainability orientation have significantly moderated the CSR and performance relationship, suggesting that CSR spending is more impactful when accompanied by structured sustainability systems. Bukari (2024), in another illustration, confirmed that companies with strong ESG performance increase the impact of governance quality on financial performance, thereby supporting the idea that the strength of internal sustainability moderates the relationship between variables to strengthen strategic performance. Additionally, López-Cobarcos et al. (2024) noted that organizational schemes focused on water efficiency and effective waste management practices positively impact financial performance through SBPs.

However, despite all these theoretical developments, the literature concerning formal analysis with SBPs acting as moderators is scarce, especially in developing countries like Pakistan, which is faced with many sustainability issues due to water shortages and wastage problems. This makes it strategically vital for organizations to adopt SBPs (Noor, 2025). Firms which are capable to integrate these practices are better positioned to convert their CSR expenditure into operational efficiency and profitability through resource savings and reputational legitimacy. Accordingly, supported by the past empirical evidences grounded in RBV, this study examines whether sustainable business practices especially related to water and waste management positively moderates the relationship between CSR expenditure and corporate performance in Pakistani firms. In the context of the emerging market environment of Pakistan, where institutional voids and regularity gaps exist, it is expected that the effectiveness of CSR expenditure in enhancing corporate performance is dependent upon the adoption of such sustainable practices. This leads to the development of the following hypothesis:

H4: Sustainable Business Practices positively moderates the relationship between CSRE and Corporate Performance (ROA)

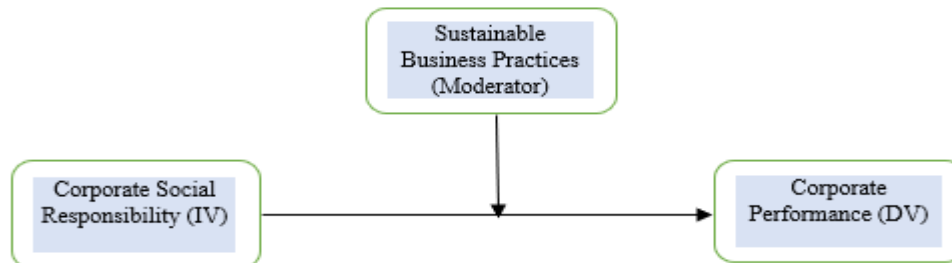
H5: Sustainable Business Practices positively moderates the relationship between CSRE and Corporate Performance (ROE)

H6: Sustainable Business Practices positively moderates the relationship between CSRE and Corporate Performance (R)

2.5 Conceptual Framework

Based on Stakeholder Theory and TBL frameworks, this study conceptualizes sustainable business practices as a moderating factor which strengthens the relationship between CSR expenditure and corporate performance. This model identifies the conditional effects of sustainable business practices by framing CSR expenditure as a strategic pathway to profitability and sustainability within the Pakistani context.

Figure 1. Conceptual Framework



3. Methodology

3.1. Data and Sample

This research is a quantitative explanatory study using secondary panel data of 25 non-financial firms listed on the Pakistan Stock Exchange (PSX) over the period 2018-2024, yielding 175 firm-year observations on CSR expenditure, sustainable business practices and corporate performance. Firms were selected based on the frequent disclosure of monetary CSR expenditure, reflecting the limited availability of consistent CSR data in emerging economies and the advantages of small purposive samples for data quality and comparability (Ameer & Othman, 2012). This study utilizes recent systematic work that highlights that long-panel work at the firm level is more effective at uncovering long-run causality between performance and CSRE rather than year-by-year research (Coelho et al, 2023). Moreover, financial institutions were excluded due to their different reporting structures and regulatory backgrounds, which make them non comparable to non-financial firms in context of sustainability disclosures etc. (Ullah, Jebran and Nadeem, 2023).

The variable corporate performance was measured using three indicators: Return on Assets (ROA), Return on Equity (ROE) and Revenue (R). ROA shows internal profits and efficiency of asset management, while ROE measures shareholder profitability. On the other hand, Revenue depicts market growth and financial performance externally. CSRE was standardized using the sum of cost of goods sold and general and administrative expenses in order to minimize potential size effects and ensure an accurate measure of a company's ability to manage its finances towards social and environmental responsibility efforts (Li et al., 2022; Shahab & Ye, 2023; Naseem et al., 2020). SBPs were measured using a dichotomous disclosure-based index for water and waste management. Total assets and GDP were included as control variables to account for firm size and macroeconomic conditions.

To test the relationships, panel regression models with robust standard errors clustered at firm level were employed. Firstly, the direct effect of Corporate Social Responsibility Expenditure (CSRE) on Corporate Performance (CP) was examined while controlling for firm size (TA) and macroeconomic conditions (GDP). Afterwards, the moderating role of SBPs was incorporated to assess whether the impact of CSRE on corporate performance varies with firms' adoption of water conservation and waste management practices. The direct and generalized regression equations are mentioned as follows:

$$CP_{it} = \beta_0 + \beta_1 CSRE_{it} + \beta_2 TA_{it} + \beta_3 GDP_t + \varepsilon_{it}$$

$$CP_{it} = \beta_0 + \beta_1 CSRE_{it} + \beta_2 SBPs_{it} + \beta_3 (CSRE \times SBPs)_{it} + \beta_4 TA_{it} + \beta_5 GDP_t + \epsilon_{it}$$

where CP_{it} represents each performance measure (ROA, ROE and Revenue) for Firm i in year t , $CSRE_{it}$ is the CSR expenditure, $SBPs_{it}$ is the water conservation and waste management index, and ϵ_{it} is the error term. Whereas, TA_{it} is the total assets of the firm and GDP_t is the gross domestic production of that particular year. Separate regressions for each performance indicator allow for a multi-dimensional assessment of internal efficiency, shareholder returns and market growth providing a robust framework to analyze the conditional effect of CSR through sustainable business practices (Chen et al., 2020; Pierre Chollet et al., 2023).

3.2. Measurements of Corporate Performance (CP)

Corporate performance (CP) is measured using Return on Assets (ROA), Return on Equity (ROE) and Revenue, which are used to measure profitability, shareholder return and growth dimensions, respectively. ROA indicates the ability of a firm to generate profit from its assets and is utilized widely as a profitability indicator within CSR-performance scholarship (Naughton, J., Chollet, P., & Savitri, A., 2023). ROE represent returns to shareholders and provides an additional profitability perspective that incorporates leverage effects (Pierre Chollat, Lambert & Jean, 2023). Whereas, Revenue is operationalized as the growth and market performance of the firm and refers to its capacity to boost income streams based on operations and stakeholder confidence (Zhang, Li & Chollet et al., 2023). Using these three indicators simultaneously provides a multi-dimensional and balanced assessment of corporate performance taking both short-run financial efficiency and long-run growth simultaneously and being consistent with recent literatures of CSR-finance (Alam & Tariq, 2023; Aftab et al., 2024). All financial data were obtained from the firms' annual reports.

3.3. Measurements of Sustainable Business Practices (SBPs)

Sustainable Business Practices (SBPs) is measured through firms' disclosure and adoption of waste management and water-saving initiatives that are crucial components of environmental sustainability in emerging markets. A binary disclosure-based index is utilized to assess the extent and quality of reporting on these practices. A score of 0 is assigned when there is no mention or only qualitative reference to water or waste management, while a score of 1 is given for comprehensive quantitative disclosure with narrative explanation, defined targets or trend analysis.

This index-based approach facilitated both interfirm and inter year comparison and further enabled the transformation of qualitative information into structured data. Similar disclosure-based indices have been widely utilized by recent CSR-sustainability studies of South Asian markets to study the environmental dimension of sustainable business practices (Alam & Tariq, 2023; Aftab et al., 2024).

3.4. Measurement of Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) is measured using firms' CSR expenditures (CSRE) in million rupees based on annual reports, financial statements and sustainability reporting. The use of monetary CSR disclosure provides a standardized and comparable CSR activity indicator within and across years and eliminating

subjectivity of narrative-based reporting (Li et al., 2020; Zhang et al., 2020). CSRE refers to a firm's investment in social and environmental initiatives like education, healthcare, community development, environmental protection etc., and has become a widely accepted proxy in empirical CSR-performance research, particularly within emerging market contexts (Alam & Tariq, 2023; Aftab et al., 2024).

To ensure comparability across firms of varying sizes and operational scales, CSR expenditure was converted into a CSR intensity measure by scaling it against the total operating expenditure, calculated as a sum of cost of sales and administrative expenses. Moreover, through this approach size related issues are mitigated and a firms' capacity to allocate operational resources towards society and environment are identified which is consistent with previous CSR intensity measures (Li et al., 2022; Shahab & Ye, 2023; Naseem et al., 2020).

Cost of Sales and administrative expenses were selected as the scaling base because these components were consistently disclosed across all sampled firms and years as compared to other expense categories. Also, by employing a uniform and consistent denominator enhances measurement reliability and inter firm comparability, a critical concern in CSR research conducted in emerging economies (Naseem et al., 2020; Shahab & Ye, 2023).

This measurement approach aligns with the already established sustainability and accountability literature and provides an objective basis for examining the impact of CSR expenditure on corporate performance in Pakistani context.

3.5. Estimation

This research analyzes the interplay between Corporate Social Responsibility (CSR), Sustainable Business Practices (SBPs), and Corporate Performance (CP) using panel regression models. The empirical investigation follows a systematic procedure of four-steps.

To begin with, log transformation was used to reduce heterogeneity. Second, descriptive analysis and correlation analysis were used to identify relationships between CSRE, SBP, and corporate performance measures including ROA, ROE, and revenue. Regression analysis was employed to determine the influence of CSRE on corporate performance separately for each corporate performance measure. Lastly, moderation analysis was performed to examine the moderating impact of SBP associated with water and waste management on the relationship under study. Robust variance covariance estimates were used to deal with heteroscedasticity and within panel dependency issues. As control variables, we included firm size (total assets) and macroeconomics (GDP) to isolate the conditional effect of CSR expenditure on corporate performance.

This strategy will help make a full evaluation of how the impact of the use of CSR resources influences corporate performance depending on whether the company uses water and waste management techniques.

4. Results And Discussion

4.1. Descriptive Statistics

The descriptive statistics for each variable have been estimated and presented within the study. It includes details about the number of observations, the average value, standard deviations, minimum and maximum, and results of the normality test based on

skewness, kurtosis, chi-squared, and Shapiro-Wilk statistics. Such an estimation enables one to get insights into the data distribution characteristics and detect possible deviations from the normality distribution, as well as variations in firms' performance and corporate social responsibility indices.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness p-value	Kurtosis p-value	Normality (χ^2 p-value)	Shapiro-Wilk (Prob >z)
ROA	175	10.951	11.815	-37.90	57.60	0.000	0.000	0.000	0.000
ROE	175	27.206	52.847	-306.50	295.00	0.003	0.000	0.000	0.000
R	175	10.698	1.791	0.000	14.243	0.000	0.000	0.000	0.000
WI	175	0.469	0.500	0.000	1.000	0.481	—	—	1.000
CSRE	175	0.151	0.722	0.000	5.249	0.000	0.000	0.000	0.000

Through the above-mentioned results it has been identified that the mean value of ROA is 10.95 (SD=11.82) which indicate moderate profitability among the firms, however, high standard deviation shows the sign of substantial variation in asset utilization efficiency and possibility of presence of outliers. Whereas, ROE shows a mean of 27.21 (SD=52.85), indicating moderate dispersion in shareholders' returns which may have arisen from the differences in leverage and capital structures across firms. The mean value of R shows the result of 10.70 (SD=1.79), which shows that most firms maintain stable revenue levels, however, some variations do exist. WI shows a mean of 0.47 (SD=0.50), indicating the fact that the firms show moderate engagement in sustainable water and waste management practices with some variation across the samples. Finally, CSRE has a mean of 0.15 (SD=0.72), indicating corporate social responsibility expenditures are generally low but display significant variability as firms report higher spending levels.

Moreover, results of normality tests, Skewness, Kurtosis, Chi-square and Sharipo Wilk indicate that ROA, ROE, Revenue(R) and CSRE significantly deviate from normality ($p < 0.01$). Such non-normality is common in financial and CSR-related data due to firm heterogeneity and presence of extreme values. In contrast, normality testing is not applicable to WI as it is a binary variable. Keeping in view these normality issues, robust standard errors were employed in all regression estimations to account for potential deviations which is consistent with best practices in empirical CSR and corporate performance research.

4.2. Correlation Analysis

Table 2 presents the Pearson correlation coefficients among firm performance indicators (ROA, ROE & Revenue), water conservation and waste management (WI), CSR expenditure (CSRE), Firm size (TA) and macroeconomic conditions (GDP).

Table 2. Correlation Analysis

Variable	ROA	ROE	WI	R	CSRE	TA	GDP
ROA	1.000						
ROE	0.593	1.000					
WI	0.060	0.150	1.000				
R	0.273	0.332	0.333	1.000			

CSRE	0.036	-0.059	0.198	0.067	1.000		
TA	0.154	0.235	0.338	0.556	0.109	1.000	
GDP	0.009	0.017	-0.092	-0.041	0.011	-0.042	1.000

The correlation between ROA and ROE ($r=0.593$) is moderately strong and positive, indicating consistency between accounting-based measures of firm performance. This result indicates that firms with higher asset efficiency tend to generate higher returns for shareholders. WI shows weak positive correlations with ROA ($r=0.060$) and ROE ($r=0.150$), implying that waste related sustainable business practices are not strongly associated with short term financial performance. However, WI is positively associated with firm revenue ($r = 0.333$) and size ($r = 0.338$), showing that more extensive operations and high levels of income might increase the intensity of waste production. Firm Revenue, on the other side, exhibits medium positive correlation coefficients with ROA ($r = 0.273$) and ROE ($r = 0.332$). It means that firms which generate higher revenue tend to achieve more profits and provide high returns to their stakeholders. Such a connection is consistent with the context since increased sales volumes help achieve better results and improve financial performance. Moreover, the strong positive correlation between R and firm size ($r = 0.556$) indicates that larger firms typically report higher revenues, reflecting economies of scale and broader market reach.

There is low correlation between CSR expenses and ROA ($r = 0.036$) as well as ROE ($r = -0.059$), meaning that companies do not achieve direct benefits from their CSR investments. However, there exists a significant positive correlation between CSRE and waste intensity ($r = 0.198$). Thus, companies with increased environmental performance spend more money on CSR programs. The company size measured by total assets (TA) shows a positive relationship with ROA ($r= 0.154$), ROE ($r= 0.235$), and CSR expenses ($r= 0.109$). This means that large companies perform well compared to small companies and dedicate more funds to CSR initiatives. Finally, GDP shows negligible correlations with all firm-level variables, implying limited short-term influence of macroeconomic conditions on firm performance, CSR spending or waste intensity within the sampled period.

All the correlation coefficients in the above-mentioned analysis remain below the threshold of 0.80, indicating no serious multicollinearity concerns. This supports the suitability of the variables for inclusion in multivariate panel regression analysis.

4.3. Regression and Moderation Analysis

This study estimates the effect of corporate social responsibility expenditure (CSRE) on corporate performance (CP) using panel data of non-financial firms listed on the Pakistan Stock Exchange (PSX). Three performance indicators are considered as dependent variables, Return on Assets (ROA), Return on Equity (ROE) and Revenue (R), whereas CSRE is used as the independent variable and total assets (TA) and macroeconomic conditions (GDP) are included as control variables. To investigate the moderating effect, sustainable business practices (WI: water conservation and waste management) were incorporated as an interaction term with CSRE denoted as CSS

(CSRE x WI). Panel data for 25 firms over 07 years (2018-2024) was used, creating a strongly balanced panel with 175 observations.

To account for unobserved firm-specific heterogeneity, both fixed-effects (FE) and random-effects (RE) models were initially estimated for each dependent variable. Estimating both models is necessary because each model addresses unobserved heterogeneity differently. The FE model controls for all time invariant characteristics of each entity by giving each its own intercept thereby removing bias from factors that do not change over time. In contrast, the random-effects (RE) model assumes that these characteristics are uncorrelated with explanatory variables, allowing it to use both within and between entity variation for more efficient estimation.

The Hausman specification test was used to determine the appropriate estimator, where the null hypothesis assumes no systematic difference between FE and RE coefficients. Results showed p-values above 0.05 for all dependent variables (ROA: $p=0.9573$; ROE: $p=0.7089$; R: $p=0.6290$), indicating no systematic difference between FE and RE estimates. Accordingly, the random effects model was selected as more efficient and appropriate for all subsequent analyses. Furthermore, initial diagnosis revealed non-normality and potential heteroskedasticity to address this. Clustered robust standard errors at the firm level were applied ensuring valid statistical inference while accounting for within firm correlations over time.

Table 3. CSRE - Corporate Performance Direct Effect Models

DV	CSRE (β_1)	TA(β_2)	GDP(β_3)	Significance	Interpretation
ROA	1.2666	0.6666	0.056	ROA significant	Positive but modest effect of CSRE on ROA
ROE	-3.030	4.491	0.059	ROE significant	Negative direct effect of CSRE on ROE
R	0.031	0.814	-0.012	R significant	CSRE effect negligible; firm size drives revenue

Table 3, shows that for ROA, CSRE demonstrated a positive and statistically significant effect ($\beta=1.267$, $SE=0.300$, $p < 0.001$), suggesting that higher CSRE modestly enhances firms' operational profitability. TA ($\beta=0.666$, $p=0.573$) and GDP ($\beta=0.056$, $p=0.833$) were not significant predictors in this model. For ROE, CSRE showed a negative direct effect ($\beta=-3.030$, $SE=1.261$, $p=0.016$), indicating that CSRE may not immediately translate into shareholder returns. TA and GDP were not significant ($\beta(TA)=4.491$, $p= 0.311$; $\beta(GDP)=0.509$, $p=0.665$), highlighting that firm size and macroeconomic conditions alone do not account for ROE variations. For Revenue (R), the impact of CSRE was negligible ($\beta=0.031$, $SE=0.045$, $p=0.491$), while firm size (TA) remained a strong positive predictor ($\beta=0.814$, $SE=0.132$, $p<0.001$), suggesting that revenue performance is primarily driven by scale rather than CSR expenditure. Hence, the results indicate that impact of CSR expenditure can enhance operational efficiency (ROA), but its influence on financial returns (ROE) and Revenue (R) is negative or limited.

Table 4. Moderation Models

DV	CSRE (β_1)	WI(β_2)	CSS(β_3)	Control	Interpretation
ROA	-50.621	1.029	51.882	TA, GDP	Significant positive moderation; CSR effect depends on WI adoption

ROE	-195.683	-2.093	192.906	TA, GDP	Strong moderating effect; WI mitigates negative CSRE impact
R	3.754	0.423	-3.761	TA, GDP	Interaction insignificant; firm size more relevant

To test whether sustainable business practices related to water conservation and waste management practices (WI) moderate the relationship between CSRE and corporate performance, an interaction term (CSS=CSRE x WI) was introduced in the regression models. The results in table 4 indicates positive and significant moderation CSS with $\beta=51.882$, $SE=16.488$, $p=0.002$. This indicates that firms adopting WI practices strengthen the positive effect of CSRE on ROA. The direct effect of CSRE on ROA shows the results $\beta=-50.621$, $SE=16.522$, $p=0.002$, indicating CSRE alone is not sufficient for sustainable practices WI. However, a strong positive moderating effect was observed when ROE was taken as dependent variable showing CSS: $\beta=192.906$, $SE=59.827$, $p=0.001$, mitigating the negative direct effect of CSRE $\beta=-195.683$, $SE=60.452$, $p=0.001$. The adoption of sustainable business practices related to water conservation and waste management allows CSRE to contribute positively to shareholder returns when combined with sustainable initiatives. Whereas in Revenue model, the interaction term CSS was not significant with $\beta=-3.761$, $SE=4.887$, $p=0.442$, confirming that revenue is largely influenced by firm size TA: $\beta=0.790$, $SE=0.189$, $p<0.001$, rather than CSRE or WI practices. The overall analysis shows that WI practices conditionally enhance the effectiveness of CSRE on profitability measures (ROA and ROE), whereas revenue (R) is unaffected by this interaction.

Discussion

The effect of the corporation's investment in social responsibility activities on firm performance is studied in this paper based on both accounting metrics, such as return on assets (ROA), and return on equity (ROE), and market variables like Revenue, with a moderator variable – sustainable business practices involving water conservation and waste management (WI). The descriptive statistics show an average level of profitability and stockholders' returns, whereas the firm revenue remains fairly constant throughout. The expenditure on CSR and adoption of WI is low and moderate, respectively. It appears that the data is not normally distributed as per normality tests, with deviations from normality observed in ROA, ROE, Revenue, and CSRE, a rather usual situation for financial and CSR data due to firm heterogeneity. Based on the results of the analysis of Pearson correlation coefficients, no strong relationship between CSRE and ROA/ROE was found, although bigger corporations with high revenue invest more money into CSR practices possibly due to compliance with standards and regulations.

Panel regression analysis with random effects, supported by Hausman test results, shows no significant difference compared to fixed effects models which shows that there is a positive but small impact of CSRE on ROA, a negative impact on ROE and a small impact on revenues. Firm size was shown to be the main factor for revenue, stressing the importance of operational capacity and market outreach compared to just CSR spending. Firm size was shown to be the main factor for revenue, stressing the importance of operational capacity and market outreach compared to just CSR spending.

Such findings indicate that investments in CSR practices alone might not positively influence company performance which is well documented in literature.

However, the incorporation of sustainable business practices into the study provided insights into a relationship under certain conditions. The interaction effect of CSR and WI greatly increased the impact of CSR on ROA and ROE. It helped reduce negative effects and increased profitability. It means that CSR positively influences financial success if it is supported by other sustainable business practices. At the same time, the interaction effect had no significant effect on sales because revenue growth mainly depends on the size of the enterprise. Results of this study clearly show that the effectiveness of CSR depends on several factors.

The results are consistent with what has been observed from the theoretical perspectives such as the Stakeholder Theory and the Concept of Creating Shared Value, which posits that CSR leads to improved firm performance due to enhanced legitimacy, trust, and stakeholder relationships if integrated within the core business processes (Freeman, 1984; Porter & Kramer, 2011). This implies that the significant moderating effect of sustainable business practices involving water management and waste on the profitability of firms means that there will be financial gains from CSR investments only when there are operational sustainability initiatives alongside them. This finding validates recent studies revealing that sustainability initiatives improve the credibility and effectiveness of CSR expenditures, thus resulting in better firm-level outcomes in emerging economies (Townsend & Muff, 2023; Abbas, 2024). On the other hand, the weak and insignificant impact of CSR investments on accounting-based performance metrics reinforces the claim that CSR in developing nations tends to be more symbolic rather than value-based (Rasheed et al., 2018; Coelho et al., 2023).

These insights hold great importance for both managerial practices and policy making processes. Managers must be aware of the fact that CSR investments alone cannot bring sustained economic returns in the absence of sustainable practices, such as water saving and waste disposal. By aligning their efforts toward integrating CSR with firm-level sustainability, managers will not only be making CSR more beneficial and valuable from a business standpoint but also make the whole process of operation much more efficient and safer.

These results are beneficial for the policymakers, since they suggest the necessity of creating regulatory frameworks and incentive schemes that would make companies invest CSR budgets in environmentally oriented actions instead of purely philanthropic endeavors. This becomes especially true for the case of Pakistan, where environmental issues, which emerge in the form of water shortage and waste disposal problems, create great risks to the future economic sustainability of this country (Li et al., 2020; Zhang et al., 2020; Metelenko et al., 2025).

Conclusion

The purpose of this study was to examine the relationship between corporate social responsibility expenditure (CSRE) and corporate performance in non-financial companies of Pakistan while considering the moderating effect of sustainable business practices (SBP). By using panel data set and performance indicators, the study provides a picture on how the CSR expenditure affects firm's financial performance in various

organizational settings. Based on empirical evidence, it can be concluded that CSRE analyzed in isolation fails to have a positive impact on corporate performance. On the contrary, in some cases, the CSR expenditure is found to have a negative effect on profitability measures such as ROA and ROE, implying that CSR expenditure may be merely a symbolic activity in an emerging economy that cannot bring financial benefits to firms in the short run. With the help of the moderating effect of SBPs, it is established that CSR expenditure has a positive impact on ROA and ROE only if accompanied by the implementation of certain sustainable business practices. Revenue performance depends, on the other hand, on firm size, implying that market growth depends on the company's capacity rather than its socially oriented activities.

As far as theoretical implications are concerned, the findings contribute to Stakeholder Theory and the Tripple Bottom Line by proving that CSR improves firm's performance if considered in the context of broader organizational strategy that includes the adoption of sustainable business practices. In addition, the study is consistent with the resource-based view according to which sustainable business practices can be viewed as organizational capabilities that allow firms to derive competitive advantage out of socially oriented expenditures. Modeling SBPs as a moderator helps develop CSR-performance theory.

From the viewpoint of theory, the results enrich both Stakeholder Theory and the Tripple Bottom Line approach by showing that the role of CSR in the creation of firm performance is realized not individually but as a part of sustainable development strategy. The research fits into the resource-based approach, implying that sustainable business practices should be considered organizational resources that facilitate the transformation of social investments into competitive benefits. The use of SBPs as a moderator contributes to the CSR performance relationship literature by explaining how CSR investments generate economic benefit.

In practice, the research emphasizes the importance for companies to go past the phase of spending on corporate social responsibility purely in terms of philanthropy and the integration of CSR budget within sustainability activities. In addition, from the perspective of policymakers, it is imperative that they design regulations that can push organizations into utilizing their CSR budget in activities that will have a positive impact on the environment. This point becomes more important for Pakistan considering the country's environmental issues that threaten its sustainability in the future.

Limitations and Future Research

While there have been some valuable discoveries in this study, several areas of this research present opportunities for further investigation. Firstly, the scope of this analysis is narrowed down to non-financial companies at Pakistan Stock Exchange, which may have limited the potential for generalizability of the results for other industries and institutional environment. Future researchers may conduct similar analyses in other countries or involving financial companies to find out whether the effects under study operate conditionally or consistently. Secondly, this research uses binary disclosures-based sustainability index that may not fully represent the extent of sustainability and its environmental implications in practice. Future research might

consider utilizing continuous or performance-based index to get a better insight into operational sustainability implications. Finally, while this study examines only the moderation effects of corporate social responsibility, future researchers may consider other ways such as mediation pathways or dynamic capabilities among others.

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