

RESEARCH ARTICLE

Corporate Social Environment and Carbon Dioxide emissions Reduction impact on Organizational Performance; mediator role of Social Capital

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Abstract

Corporate social and Eco-friendly Co₂ emission environment are essential for a firm's and employees' health. This Study investigates the impact of Corporate social environment and Co₂ emission environment on Organizational Performance the mediator role of social capital. The study used 260 Pakistan stock exchange-listed firms data from 2011 to 2020 and estimated impact through Regression least square method and GMM. Robust least square test used for validity and sustainability of results. The results of Regression least square and GMM confirmed that the Corporate social environment and environment friendly Co₂ emission have high significant positive impact on Organizational Performance. Social capital role as mediator is highly positive significance that enhances employee's social, environment Co₂ emission activity and firm outcomes; Indicate corporate social environment, eco-friendly Co₂ emission and social capital have intangible potential Capital of a firm and their significant impact on organizational performance. The robustness test results also confirmed the validity and sustainability impact of Corporate social environment, eco-friendly Co₂ emission and social capital on Organizational Performance. Recommendations are cleared and suggest more focus on employees' social and clean Co₂ emission environmental activities essential requirements of organizational performance, support, and motivation because social capital produce employees self-efficacy and enhances Organizational Performance, Firms appealing to more investments and higher financial performance; investors are aware of the importance of social, firm environmental and employees concerns.

Keywords: GMM; Corporate social environment; Carbon Dioxide emissions; Organizational Performance; Social Capital

Introduction

Corporate social and Co₂ emission environment is an essential role for firms; the purpose of this study is to investigate the impact of Corporate social and eco-friendly Co₂ emission environment can enhance the Organizational Performance with mediating role of corporate social responsibility. Empirical studies in the content of Vietnam SME analysis the corporate social responsibility impact on Organizational Performance through corporate image, corporate reputation and customer loyalty; found that positive relationship between CSR, Organizational Performance and customer loyalty (Le, 2022). Corporate social responsibility influence on business performance. The researcher used 296 stock exchange list firm data of Pakistan; a positive relationship exists between business performance and corporate social responsibility (Jamil, Rasheed, Mohamed, & Zeeshan, OCTOBER 2022).

Employees' perception of micro CSR in non-profit organization indicate that Corporate social environment has a relationship with a non-profit sports organization, estimation of job engagement, job satisfaction and organizational citizenship behaviours (Hazzaa, Oja, &

Kim, 2022). Study on small and medium-size 218 Taiwan enterprises conducted towards BMI, corporate social responsibilities, study more focus on corporate culture that enhance the Organizational Performance (Chen, 2022).

Construction industry organization performance was linked with corporate social responsibility and social performance. High centrality score of a network, Corporate social environment; the developed corporate social responsibility relationship benefit as core-periphery structure, with 26 practices and five benefits situate in the core positions and have a rigorous relationship (Qian Zhang, Oo, & Lim, 2022). Empirical analysis of social capital, Organizational Performance and dimension knowledge share by used 543 SME firms' managerial data and indicated knowledge sharing was helpful for achieved performance and promoting the firm social capital activity (Ha & Nguyen, 2020). The examined trend of corporate social responsibility was with company performance and productivity in the context of China. Clustering methods, ordinary least squares and fixed effects panel regression model were used to measure the performance. There was a positive impact between firm environment, corporate social

projects and companies' health (Li, Khalili, & Cheng, 2019).

The latest Study was conducted on corporate social responsibility's impact on sustainable organization growth; Study used 296 Pakistan stock exchange-listed firms and estimated results corporate social responsibility was the leading factor that enhances firm health (Jamil, Rasheed, & Mukhtar, 2022). There are paradoxical relationship among work diversity and Textile industrial performance (Mukhtar, Kazmi, Muhammad, Jamil, & Javed, 2022). Corporate social behavior positive influence on Organizational performance and social capital immaterial-resource of firm have effect on firm performance (Jamil et al., OCTOBER 2022).

Co₂ emission is causing of Global warming and climate changes; Co₂ emission from fossil fuel is main reason of Climate change and organizational need to integrate sustainable organization operations. Their-fore, eco-friendly Co₂ emission improving the performance of organizations and sustainable packaging play the significant role in organizational development (Sinha).

A firm financial performance behave on firm social and environment behavior, Garch Model study indicated social and environmental responses were negative relate to increase of global Co₂ emissions. Social and environmental implementing policies were change the investor attitude that leads to organizational performance (Sariannidis, Zafeiriou, Giannarakis, & Arabatzis, 2013). The greenhouse gas emission is a factor which uses to monitor climate change that directly effects on business and performance. Organizational performance measured by Return on Assets and returns on equity; indicate Co₂ emission was a significant but negative effect or organizational (Alvarez, 2012).

Environmental innovation-Co₂ emission and environment governance was significant impact and nexus each other and emphasis the environment governance enhance Co₂ emission reduction (Albitar, Borgi, Khan, & Zahra, 2022). Green logistics work when environmental sustainability in organization (de Souza, Kerber, Bouzon, & Rodriguez, 2022). Co₂ emission increase when energy consumption and financial activity increased in organization, while social and internal connection, institutional quality helping factors for Co₂ emission reduction (Madni, Anwar, & Ahmad, 2022).

Literature Review

His earliest effort on corporate social environment was from a seminal work (Carroll, 1979). Corporate social environment in multidimensional construct documents support of policies and practices, why the business community should advance in corporate social responsibility Cause (Carroll & Shabana, 2010; Wartick & Cochran, 1985). Fortune magazine's rating was used by researchers and analyzed the relationship between CSR and financial performance; social linked with risk

of stock returns both stock market returns and accounting base was closely related to performance (McGuire, Sundgren, & Schneeweis, 1988). Who determines corporate social environment model in the business firm's reformulating of principles of social responsibility; Process of social responsiveness, rule, regulation and policies and firm relationship (Wood, 1991). The researcher Provide an Alternative economic theory that influences both research and theory in society and business field (Brenner & Cochran, 1991). Organization set relationship classified stakeholder as primary or secondary and developed a framework and ground in the reality of organization behaviour analysis the corporate social environment (Clarkson, 1995). Organizational Performance and corporate social responsibilities; the barriers to situation class forecasting (Flyvbjerg, 2006). Corporate social responsibility was voluntary commitments of corporate that exceed the explicit and implicit responsibilities imposed on firms by society (Falck & Hebllich, 2007).

Corporate social environment interactions with Organizational Performance: Corporate social environment possibility that enhanced financial performance of firms. Results of empirical Study showed that positive relationship between corporate social environment and financial Organizational Performance moderator industry (Hull & Rothenberg, 2008). The measured firm relationship was with non-financial stakeholders such as employees, customers, suppliers and communities (social performance) (Choi & Wang, 2009).

Social and environment performance have nexus to organizational performance and negative effect global Co₂ emission (Sariannidis et al., 2013). Internal social performance was significant impact on Organizational Performance while external had no impact on Organizational Performance estimated results of financial and non-financial firms (Akintimehin et al., 2019). China based research of 112 enterprises and 269 surveys analysis the competitive advantage of CSR and social capital and indicated CSR indirectly permute competitive advantages for social capital that lead to performance of firms (Zhao, Meng, He, & Gu, 2019). Corporate social responsibility have supportive and positive role for society and environment friendly Co₂ emission of organization (Kudlak, 2019).

Companies was responding the effect by environment of social and Co₂ emission reduction (Naranjo Tuesta, Crespo Soler, & Ripoll Feliu, 2021). Research focus on chemical manufacturing industry by used 97 respondents of manager of firms of Indonesia and indicated that positive and significant relationship between social capital and cultural Organizational Performance lead to human resource performance (Nuryanto, Mz, Sutawidjaya, & Saluy, 2020). China based research of mediator role of CSR and performance by used survey data of 206 chines firms and indicated green supplier

integration both social and economic significant role for Organizational Performance (Cesar & Jhony, 2020). Co₂ management accounting control has significant impact on organization financial performance (Naranjo Tuesta et al., 2021). CSR relation with social capital was extended depend on framework and practices (Qiansong Zhang, Pan, Jiang, & Feng, 2020). Knowledge seeking interaction and Social capital factors of trust, sanction, norms, and social identification had influence on operational decision of operational firms (Gubbins & Dooley, 2021).

Organizational social capital as a potential intangible resource of firms which impact on Organizational Performance; A South Korea based research indicated Organizational social capital was an intangible assets that enhance employee's wellbeing as well as organizational outcomes (Brunetto, Saheli, Dick, & Nelson, 2022; Thomas & Gupta, 2021). The CEOs social capital role in CSE estimate by used 256 SME firms data and result were in favor of different performance indicators (Tran & Adomako, 2021). The researcher used 80 individuals' data his/her family in industry and running family business media firms and indicated social capital and family business development dimension of structural, relationship on trust of social capital were favorable while trust dimension on commitment effected the social capital and not supported (Tajpour, Salamzadeh, Salamzadeh, & Braga, 2021). The S&P 137 firms data used and measured the Organizational Performance with CSR, and indicate stronger impact of social and economic for enjoying performance (Al-Shammari, Banerjee, & Rasheed, 2021; Huang, Shang, Wang, & Gong, 2022).

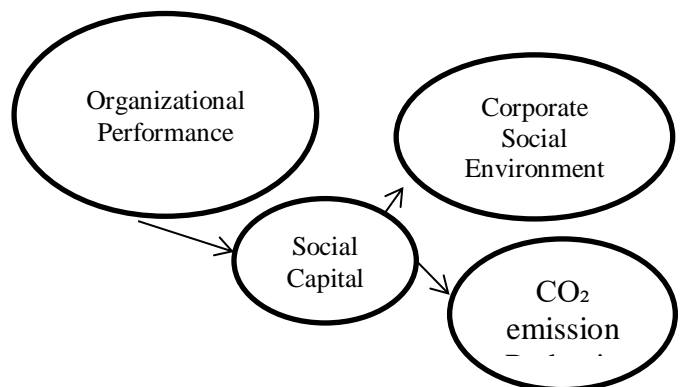
Corporate social environment was robust the performance of firms and moderation result indicated executive discretion least than the job demand by analysis multiple method and the 1999 firms data (Janani, Christopher, Nikolov, & Wiles, 2022). Behavioral governance theory based analysis CSR impact on performance by using French firms data indicated significant but negative react when governance consider as contingency factor and significant with performance (Janani et al., 2022). Firm positive was react and significant relation with Organizational Performance (Khan et al., 2022). Empirical study examines the relationship of social capital and innovation performance of firms by using data of 217 Chinese digital firms. Results indicate the social capital and digital Organizational Performance were significant relationship exists (Lyu, Peng, Yang, Li, & Gu, 2022).

A Turkish study of Social capital was imbalance the firm ambidexterity and performance, role of social capital inhibiting the performance due to low generalized trust (Wasti, Terzi, & Kerti, 2022). Another Turkish based study estimated the work place Ostracism impact on social capital and performance by using 180 Turkish firms' employees and indicated mediator role between Ostracism and SRP of social capital and truest on firm

was significant (Paşamehmetoğlu, Guzzo, & Guchait, 2022). Set skills that can produce wide problems, complex social problems, organizational management issues, leadership positions and strategic innovation (Brown & Katz, 2011). Corporate social responsibility influences stakeholders' intentions. Empirical Study provides information on corporate social and firm's environmental responsibility in the content of influences purchase, investment employee's intention of different stakeholders (Alniacik, Alniacik, & Genc, 2011). The driver of organization, in particular, was customer, government and non-government organizational groups that push firms towards sustainability but neglect the employees (Wolf, 2013).

Empirical Study examines the impact of firms' social, environmental, and governance initiatives on financial performance in the context of developed and emerging markets firms. There was a positive impact on Corporate social and environment on Organizational Performance (Ting, Azizan, Bhaskaran, & Sukumaran, 2019).

Environment innovation more moderation effect showing Non Co₂ emission organizations than Co₂ emission organizations (Konadu, Ahinful, Boakye, & Elbardan, 2022). Latest study indicated 1 percent increase in industrial growth was 2.88 to 4.54 percent reduce Co₂ emission. Corporate social environment were enhance the socio cultural and employee's motivation lead to organizational success. Social and environment Co₂ emission were essential for company's credibility, employees and investor engagement (Ahmad et al., 2022).



Data and Methodology

Data: Study examines the impact of Corporate social environment on Organizational Performance mediator role of social capital of the firm. The sample data is 260 firms of Pakistan stock exchange-listed in Pakistan for 2011 to 2020. The ordinary least square regression model and GMM are used to examine the impact. After analysis, the results robustness test is used to check result validity and sustainability. Organizational Performance calculates through Return on Assets; social capital is total costs invested on employees by the firm. Corporate social environment calculates through taxes paid, social expenses, internal expenses, employee's

welfare expenses, social cost and no. of shares outstanding. The equation and formulation are given below.

$$\text{Organizational Performance (ROA)}_{i,t} = \alpha_0 + \beta_1 \text{CSE}_{i,t} + \beta_2 \text{CO}_2 \text{ emission Reduction}_{i,t} + \varepsilon_{i,t} \dots 1$$

$$\text{Social Capital}_{i,t} = \alpha_0 + \beta_1 \text{CSE}_{i,t} + \beta_2 \text{CO}_2 \text{ emission Reduction}_{i,t} + \varepsilon_{i,t} \dots 2$$

$$\text{Organizational Performance (ROA)}_{i,t} = \alpha_0 + \beta_1 \text{CSE}_{i,t} + \beta_2 \text{CO}_2 \text{ emission Reduction}_{i,t} + \beta_3 \text{Social Capital}_{i,t} + \varepsilon_{i,t} \dots 3$$

Return on assets

Net income divided by total assets calculate the return on assets (ROA), and we have measured for (F.P.) Organizational Performance Oh, W. Y., Chang, Y. K., & Martynov, A. (2011).

$$\text{ROA}_{i,t} = \frac{\text{net income}_{i,t}}{\text{total asset}_{i,t}}$$

CSE

= EPS

$$+ \frac{(\text{Taxes Paid} + \text{Social Exp} + \text{Int. Exp} + \text{Emp. Welfare})}{\text{No of Shares Outstanding}}$$

Carbon dioxide emissions: Stemming from the burning of fossil fuels and manufacture of product; produced during consumption of solid, liquid, gas fuels and gas flaring.

Social Capital: Total costs invested on employees

4. Result and Discussion

Table 1 Descriptive Statistic

	Organizational Performance	Corporate Social Environment	CO2 Emissions Reduction	Social Capital
Mean	0.036710	79.75765	0.830921	1402933.
Median	0.032456	31.70416	0.806374	364454.5
Maximum	0.757837	3064.054	0.956345	66781000
Minimum	-0.982338	-13.97273	0.763669	43.00000
Std. Dev.	0.115521	176.8948	0.063318	3794308.
Observations	2600	2600	2600	2600

The above table of descriptive statistics of mean and standard deviation shows the potential of variables. Variables capacity influences dependent variables; Organizational Performance mean 0.03 and standard deviation 0.11 of dependent variable potential. Corporate social environment mean 79.75, and standard deviation at 176.89 show Corporate social environment abilities. Co2 Emission Reduction mean 0.83 and standard deviation 0.06 indicate the Co2 emission impact efficiency. Social capital mean 1402933.00 and standard deviation 3794308.00, showing the social capital potential that can influence. Above variables mean and deviation indicator having possible potential influence on any dependent variable.

Table 2: Correlation

	Organizational Performance	Corporate Social Environment	CO2 Emissions Reduction	Social Capital
Organizational Performance	1	0.1452	-0.0770	0.0473
Corporate Social Environment	0.1452	1	0.0744	0.0453
CO2 Emissions Reduction	-0.0770	0.0744	1	0.0617
Social Capital	0.0473	0.0453	0.0617	1

The above table shows the correlation matrix, the endogenous factor assessment. It can be estimated between +1 and -1; which variable near to 1 faces endogenous problem issue. Organizational Performance, social Capital and CSE positive while Co2 emission negative correlating variable. There is no endogenous issue that exists.

Table 3 Regression (Organizational Performance)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Corporate Social Environment	9.52E-05	1.27E-05	7.477378	0.0000
CO2 Emissions Reduction	0.031708	0.003111	10.19202	0.0000
Social Capital	1.30E-09	5.93E-10	2.191021	0.0285
R-squared	0.019234	Mean dependent var		0.036710
Adjusted R-squared	0.018478	S.D. dependent var		0.115521
S.E. of regression	0.114449	Akaike info criterion		-1.496227
Sum squared resid	34.01681	Schwarz criterion		-1.489462
Log likelihood	1948.095	Hannan-Quinn criter.		-1.493776
Durbin-Watson stat	0.869278	Observation		2600

The above table shows the Regression least Square result, which shows the Corporate social and Co2 emission environmental impact on Organizational Performance; At the same time, social capital plays a mediator role between Organizational Performance and Corporate social, Co2 emission environment. Corporate social environment is the highest significant showing for Corporate Social Environment with 9.52*** and Co2 emission reduction 0.03*** 1 per cent considerable level. Social capital is also showing 1.30** 5 per cent positive significance for Organizational Performance from 2011 to 2020. Results indicate that Corporate social environment, Co2 emission reduction and social capital are essential for Organizational Performance and of the highest importance influencing indicators.

Table 4 GMM (Organizational Performance)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Corporate Social Environment	9.52E-05	1.27E-05	7.477378	0.0000
CO2 Emissions Reduction	0.031708	0.003111	10.19202	0.0000
Social Capital	1.30E-09	5.93E-10	2.191021	0.0285
Robust Statistics				
R-squared	0.019234	Mean dependent var	0.036710	
Adjusted R-squared	0.018478	S.D. dependent var	0.115521	
S.E. of regression	0.114449	Sum squared resid	34.01681	
Durbin-Watson stat	0.869278	J-statistic	31.099***	
Instrument rank	4	Observation	2600	

The above table shows the GMM, the generalized method of moments used for panel data correct assessment. Its use for dynamic panel data combines moment conditions. When the coefficient of the lagged dependent variable is near 0.87, GMM estimation is suggested for measuring panel data. Thereof 9.52*** highest positive and CO₂ emission reduction 0.31*** 1 per cent level significance showing for Corporate social environment and CO₂ emission reduction impact on Organizational Performance. While Social Capital 1.30** highest positive 5 per cent significance level shows as mediator role between Organizational Performance and Corporate social environment, CO₂ emission reduction; high importance of Corporate social and CO₂ emission environment for Organizational Performance, mediator factor is essential for Organizational Performance.

Table 5 Robust Least Square (Organizational Performance)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Corporate Social Environment	9.34E-05	9.50E-06	9.832782	0.0000
CO2 Emissions Reduction	0.030001	0.002321	12.92610	0.0000
Social Capital	3.65E-09	4.42E-10	8.256857	0.0000
Robust Statistics				
R-squared	0.020454	Adjusted R-squared	0.019700	
Rw-squared	0.058079	Adjusted Rw-squared	0.058079	
Akaike criterion	3479.378	Schwarz criterion	3497.380	
Deviance	17.74304	Scale	0.0714***	
Rn-squared statistic	678.7508	Observation	2600	

Non-robust Statistics

Mean dependent var	0.036710	S.D. dependent var	0.115521
S.E. of regression	0.114809	Sum squared resid	34.23127

The above table shows the robust least square results that have been used for results validity and sustainability for a long time. Corporate social environment at 9.34*** and CO₂ emission reduction 0.30*** highest 1 per cent result validity and sustainability for Organizational Performance showing from 2011 to 2020. Social Capital as a mediator performs the highest importance and sustainability of results for Organizational Performance. The above results indicate the results are highly significant, valid and sustainable for a long time.

Conclusion and Policy Recommendations

This Study investigates the impact of Corporate social and CO₂ emission environment on Organizational Performance as the mediator role of social capital. The research collects valuable data from the Pakistan stock exchange list of 260 firms and estimates the valuable results. The Regression least Square result indicates the Corporate social environment high impact on Organizational Performance. At the same time, social capital plays a mediator role between Organizational Performance and Corporate social environment vary, influencing mediator. Corporate social environment is the highest significance for Corporate social environment with a 9.52*** and CO₂ emission reduction 0.30*** 1 per cent significance level. Social capital is also 1.30** 5 per cent positive significance for Organizational Performance from 2011 to 2020. The GMM is the generalized method of moments used for panel data correct assessment. Thereof 9.52*** and CO₂ emission reduction 0.31*** highest positive 1 per cent level significance for Corporate social environment impact on Organizational Performance. At the same time, social capital at 1.30** shows the highest positive 5 per cent significance level as mediator role between Organizational Performance and Corporate social, CO₂ emission environment. GMM also confirms the results of regression least-square; the Corporate social, CO₂ emission environment, social capital mediator role are essential and of the highest importance for Organizational Performance. Research limitation finding focus on Pakistan stock exchange-listed firms may affect other countries' environment; rule and regulation may impact Organizational Performance. Recommendations are cleared and suggest more emphasis on employees' social and Clean CO₂ emission environmental activities essential requirement of organizational performance, support and motivation because social capital enhances the Organizational Performance; produce employees' self-efficacy, and work tasks with social confidence and clean environment lead to Organizational Performance. Firms appealing to more investments and higher

financial performance; investors are aware of the importance of social, firm environmental and employee economic concerns.

Declarations:

Ethical Approval: We declare that all ethical guidelines for authors have been followed by all authors.

Consent to Participate: All authors have given their consent to participate in submitting this manuscript to this journal.

Consent to Publish: All authors have given their consent to publish this paper in this journal.

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