



Unveiling the Impact of Pro-Environmental Behavior on Corporate Environmental Performance

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ABSTRACT

This study investigates the relationship between pro-environmental behavior and corporate environmental performance, focusing on data collected from 387 employees across ten highly polluting manufacturing industries in Jammu and Kashmir. The analysis was conducted using SPSS 23.0 and AMOS 20.0, with hypothesis tested through structural equation modeling (SEM). The results strongly support the hypothesis, revealing a significant and positive impact of pro-environmental behavior on corporate environmental performance. These findings underscore the critical role of employee-driven environmental actions in enhancing organizational environmental outcomes. The study highlights the need for organizations to foster and promote pro-environmental behavior within their workforce as a strategy to improve environmental performance and address stakeholder pressures effectively. Additionally, the study provides directions for future research, suggesting avenues for further exploration to validate and extend these findings in different contexts.

Keywords: Pro-environmental behavior, corporate environmental performance, stakeholder pressures, manufacturing sector, Jammu and Kashmir.

Introduction

The contemporary business environment is increasingly shaped by a growing awareness of environmental issues among stakeholders. This heightened environmental consciousness has compelled organizations to prioritize and ensure environmental protection. As a result, there is an intensified focus on enhancing corporate environmental performance, with companies striving to identify and implement strategies that promote environmental sustainability. Despite these efforts, it has become apparent that organizational policies, in isolation, are insufficient to achieve meaningful environmental outcomes. The effectiveness of such policies is largely dependent on their alignment

with substantive employee actions, underscoring the significant role of human behavior in environmental degradation.

In this context, understanding the influence of employee behavior on environmental outcomes has gained considerable attention. Specifically, the concept of pro-environmental behavior (PEB) has attained significant research interest. Pro-environmental behavior, as defined by Wesselink, Blok, & Ringersma (2017), encompasses the measurable actions undertaken by employees that support and advance environmental sustainability within their organizations. This behavior reflects a commitment among employees to engage in activities that minimize environmental harm and improve corporate environmental performance (CEP). Scherbaum, Popovich, & Finlinson (2008) further elaborate on this concept, describing PEB as the inclination of employees to participate in initiatives and practices that promote environmental well-being.

Given the potential impact of PEB on CEP, it is imperative to explore this relationship in greater detail. This study seeks to investigate whether and how pro-environmental behavior among employees can mitigate the negative effects of organizational activities on the environment and enhance corporate environmental performance. This study seeks to enhance the understanding of how employee behavior influences environmental sustainability within organizations, contributing to the broader body of knowledge on key drivers of sustainable performance.

The manufacturing sector, in particular, has been identified as a significant contributor to carbon emissions and environmental degradation. This sector's substantial environmental footprint makes it an ideal context for exploring the study relationship. Consequently, this research focuses on the manufacturing industry in Jammu and Kashmir, a region where environmental concerns are increasingly pressing. By focusing on this sector, the study aims to provide valuable insights into how manufacturing organizations can leverage employee behavior to achieve more sustainable outcomes.

This research contributes to both academic discourse and practical approaches to environmental sustainability. By emphasizing the role of employee behavior in meeting environmental objectives, it highlights the critical need for organizations to cultivate a culture of environmental responsibility within their teams. The insights gained from this study can inform the creation of more effective strategies to improve corporate environmental performance, ultimately supporting broader efforts towards global sustainability.

Conceptualization

Pro-Environmental Behavior

Pro-environmental behavior (PEB) refers to the voluntary, often unrewarded, actions undertaken by employees to enhance the environmental welfare and overall effectiveness of their organization. Ramus & Killmer (2007) emphasize that these behaviors are typically extra-role activities, meaning they go beyond the standard expectations of an employee's role. Such behaviors might include actions like reducing energy consumption by turning off unnecessary electrical appliances, opting for stairs over elevators, promoting double-sided printing to conserve paper, minimizing waste, and proposing innovative ideas for environmental protection. These initiatives not only reflect individual commitment to environmental protection but also play a crucial role in driving organizational responses to environmental challenges (Baughn, Bodie, & McIntosh, 2007). As Robertson & Barling (2013) point out, employees' pro-environmental behaviors are fundamental in both the creation and implementation of firm-level environmental initiatives. Moreover, these behaviors contribute significantly to protecting the natural environment and can enhance an organization's financial performance (Norton, Zacher, & Ashkanasy, 2014).

Corporate Environmental Performance

Although CEP is well-explored topic in the literature, a universally agreed-upon definition has yet to be established. However, the definition provided by ISO 14031 has gained considerable acceptance among scholars (Günther & Kaulich, 2005; Johnston & Smith, 2001; Nawrocka & Parker, 2009; Perotto et al., 2008). According to ISO (1999), CEP is defined as "the results of an organization's management of its environmental aspects." This definition aligns with the view that CEP reflects a firm's effectiveness in achieving environmental excellence (Judge & Douglas, 1998). Additionally, CEP involves managing environmental impacts through strategic activities, which are crucial for attaining superior environmental outcomes (Walls et al., 2012).

Hypothesis Development

Pro-environmental behavior extends beyond employees' in-role tasks, encompassing their engagement and voluntary actions aimed at fostering environmental sustainability. In the context of manufacturing, these environmentally friendly behaviors are essential for ensuring eco-friendly performance. The implication is that manufacturing firms can significantly advance their sustainability goals by encouraging and refining pro-environmental behaviors among their employees (Loeser et al., 2017; Molla et al., 2011; Ojo & Fauzi, 2020; Ojo et al., 2022). Given the importance of aligning organizational objectives with environmental sustainability, it becomes essential for

organizations to cultivate such behaviors. Pro-environmental behaviors represent measurable, responsible actions by employees that contribute to the environmental sustainability of firms (Andersson, Jackson, & Russell, 2013). Thus, we hypothesize:

H1: There is a significant influence of pro-environmental behavior on corporate environmental performance.

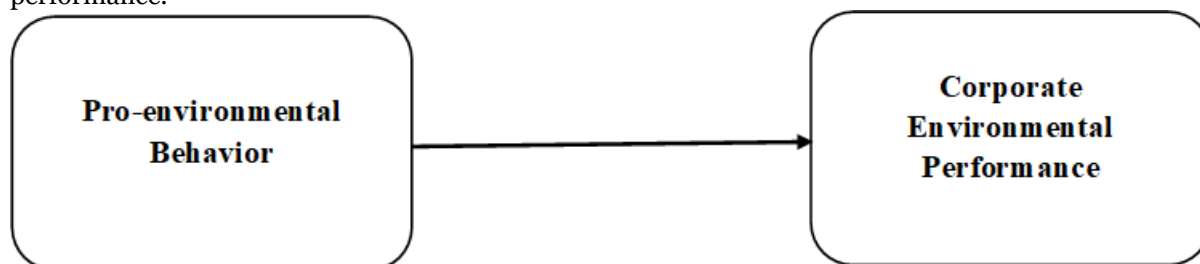


Figure 1: Hypothesized Model

Methodology

Data Collection and Sample Characteristics

This study collected data on the study constructs from employees working in the ten most polluting manufacturing industries in Jammu and Kashmir, as identified by the Central Pollution Control Board (CPCB) of India. The target respondents included both managerial and operational level employees, ensuring a comprehensive understanding of the organizational behaviors at different levels.

To determine the appropriate sample size, we utilized the formula provided by Krejcie & Morgan (1970), which suggested a sample size of 381. However, to account for potential non-responses and attrition, we distributed a total of 423 questionnaires using a probability sampling technique. Specifically, this study employed a multi-stage probability sampling technique to collect data, ensuring results could be generalized to the representative population (Uma, 2016). The sampling process began by focusing on the 10 highly polluting industries in Jammu and Kashmir (J&K) as identified by the Central Pollution Control Board. These industries were classified into 10 strata, including sectors like cement, drugs and pharmaceuticals, food and beverages, agricultural feed products, textile, paper, plastic, synthetic fibres and rubbers, iron and steel and fertilisers. Next, districts with the highest concentration of manufacturing organizations were selected—Jammu, Samba, Udhampur, and Kathua from the Jammu division, and Anantnag, Pulwama, Srinagar, and Budgam from the Kashmir division—while districts with fewer factories were excluded. Proportionate sampling was then applied at two levels: district-wise and industry-wise. Organizations from the selected districts were randomly chosen using systematic random sampling. A total of 76 organizations participated, with questionnaires distributed among 423 respondents. Questionnaires were distributed systematically, with the number of respondents per organization ranging from 1 to 10, depending on the organization's size. This approach was intended to enhance the reliability of the data and ensure sufficient representation.

Of the 423 distributed questionnaires, 391 were returned, representing a high response rate. After a careful review of the returned questionnaires, 387 were deemed complete and valid for further analysis. The slight reduction in the final sample size was due to the removal of incomplete or improperly filled questionnaires, ensuring the quality and accuracy of the data used in the study.

The demographic information of the respondents, including their gender, age, and educational qualifications, is detailed in Table 1. This demographic breakdown provides insight into the diversity of the sample and helps contextualize the findings within the specific characteristics of the respondents.

Table 1: Respondents demographics

Variable	Sub-Category	Frequency	Percentage	Cumulative Percentage
Gender	Male	341	88.1	88.1
	Female	46	11.9	100.00
	Others	0	0	100.00
	Total	387	100.0	
Age	18- 30 years	71	18.30	18.30
	30- 40 years	265	68.50	86.80
	40- 50 years	44	11.40	98.20
	50 years & Above	7	1.80	100.00
	Total	387	100.00	
	Upto Matric	38	9.80	9.80

Educational Qualification	Intermediate Graduate	to	321	82.90	92.80
	Post Graduate & Above		28	7.2	100.00
	Total		387	100.00	

Source: Calculation using SPSS 23.0

Measurement

A five-point Likert scale was used to measure both PEB and CEP, with participants indicating their level of agreement with various statements, ranging from 1 (strongly disagree) to 5 (strongly agree). This approach enables the evaluation of the respondents' perceptions regarding the study variables.

Pro-Environmental Behavior (PEB)

In this study, pro-environmental behavior was treated as the independent variable. The measurement of PEB was based on a thirteen-item questionnaire developed by Robertson & Barling (2017). This instrument was selected due to its established reliability and validity in capturing the breadth of environmentally responsible behaviors in the workplace. This scale included items like, "At work, I recycle whenever possible." The Cronbach's alpha value for this PEB was 0.992, indicating excellent internal consistency and reliability of the measurement instrument.

Corporate Environmental Performance (CEP)

Corporate environmental performance, the dependent variable in this study, was assessed using a six-item questionnaire developed by Zhu et al. (2008). This scale was chosen for its comprehensive evaluation of a firm's environmental outcomes. The CEP included items like, "This company has significantly reduced effluent waste during the past year." The Cronbach's alpha value for CEP was 0.936, demonstrating high internal consistency and reliability.

Analysis

The data analysis was conducted using SPSS 23.0 and AMOS 20.0 software packages. These tools were employed to test the study's hypothesis. Specifically, structural equation modeling (SEM) was used as the primary analytical technique to assess the proposed relationships and to test the overall model fit.

Hypotheses Testing

Before testing the hypotheses, the model fit was evaluated to ensure the adequacy of the proposed model. The results indicated that the model fit the data well, with all the fit indices meeting or exceeding the recommended thresholds. Table 2 provides a detailed comparison of the model fit indices against the standard benchmarks, affirming the suitability of the model for hypothesis testing.

Table 2: Values of model fit indices against the standard values

Model Indices	Fit	Study Value	Recommended Value	Reference (s) for Recommended Values
CMIN/df		3.93	< 4.00	"Field, 2013"
GFI		0.71	Close to 0.90	"Hooper et al., 2008; Hu & Bentler, 1995"
AGFI		0.67	Close to 0.90	"Hooper et al., 2008; Hu & Bentler, 1995"
CFI		0.90	Close to 0.90	"Hooper et al., 2008; Hu & Bentler, 1995"
IFI		0.90	Close to 0.90	"Hooper et al., 2008; Hu & Bentler, 1995"
TLI		0.90	Close to 0.90	"Hooper et al., 2008; Hu & Bentler, 1995"
NFI		0.88	Close to 0.90	"Hooper et al., 2008; Hu & Bentler, 1995"
RMR		0.06	Less than 0.10	"Bollen, 1989; Cudeck & Browne, 1983"
RMSEA		0.08	Less than 0.10	"Bollen, 1989; Cudeck & Browne, 1983"

Note: GFI = Goodness of fit index; AGFI = Adjusted goodness of fit index; CFI = Comparative fit index; NFI = Normed fit index; IFI = Incremental fit index; RMR = Root mean square residual; RMSEA = Root mean square error approximation

After the model fit was confirmed, the structural equation modeling (SEM) was used to test the proposed hypothesis. The results reveal a significant positive effect of pro-environmental behavior on corporate environmental performance, with a standardized regression coefficient of $\beta = 0.367$ ($t = 7.434$, $p < 0.001$), as detailed in Table 3. The R-square value for this relationship is 0.135, indicating that PEB accounts for approximately 13.5% of the variance in corporate environmental performance within this study. These findings offer strong empirical evidence supporting the hypothesis, establishing pro-environmental behavior as a key predictor of corporate environmental performance and confirming hypothesis H_1 .

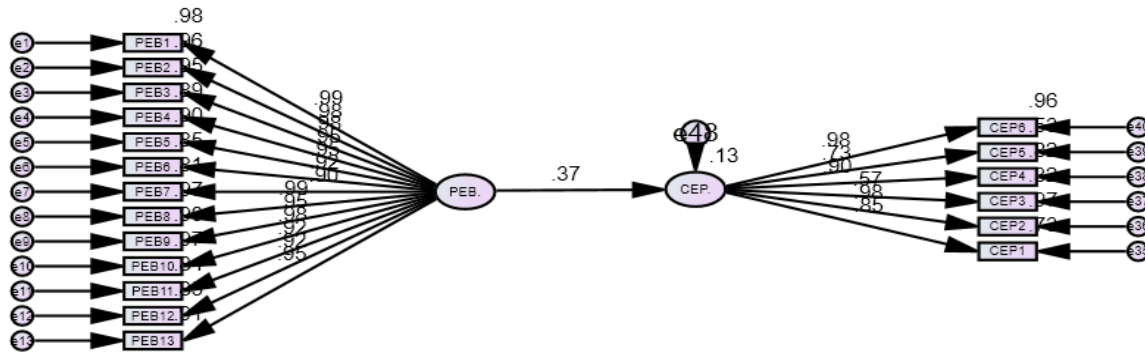


Figure 2: Structural model for pro-environmental behavior and corporate environmental performance

Table 3: Hypothesis testing results of PEB and CEP

Hypothesis	Path	Estimate	CR	Sig.	Direction	Result
H1	PEB→CEP	0.367	7.434***	0.000	Positive	Supported

Source: Computed using AMOS 20.0

Note: PEB: Pro-environmental behavior, CEP: Corporate environmental performance, CR: Critical ratio, *** implies the regression weight for PEB in the prediction of CEP is significantly different from zero at the 0.001 level (two-tailed).

Findings and Discussion

This study explores the predictive relationship between PEB and CEP, focusing on quantifying the extent to which PEB influences CEP. The findings reveal a significant and positive impact of PEB on CEP, underscoring the importance of eco-friendly actions by employees in enhancing an organization's environmental outcomes. This aligns with existing literature, such as the work by Naz, Jamshed, Nisar, & Nasir (2023), which highlights that environmental performance is closely tied to the green behaviors exhibited by employees.

The positive relationship observed in this study may stem from the fact that an organization's overall performance is significantly influenced by the behaviors and activities of its employees. Employees who engage in pro-environmental behaviors contribute directly to the organization's ability to meet its environmental objectives. As a result, the pro-environmental actions of employees emerge as a strong indicator of improved corporate environmental performance. This finding reinforces the notion that fostering a culture of environmental responsibility within the workforce is essential for organizations aiming to achieve superior environmental outcomes.

Given these insights, it is crucial for organizations to focus on cultivating pro-environmental behavior among their employees. To achieve this, pro-environmental behavior should be established as a core organizational value and integrated into various human resource strategies. For instance, organizations should consider incorporating PEB into their training programs, ensuring that employees are educated about the importance of environmentally friendly practices and how they can contribute to the organization's sustainability goals. Additionally, performance appraisal systems should be adapted to evaluate and reward employees who demonstrate strong pro-environmental behaviors, thereby encouraging others to follow suit.

The study finding also indicates that employees who are committed to environmental sustainability act as the driving force behind the organization's efforts to protect the environment and achieve sustainable growth. Therefore, fostering pro-environmental behavior within the workforce is not just a supplementary activity, but a critical component of a firm's strategy for achieving long-term environmental performance.

In summary, this study underscores the critical influence of PEB on CEP, revealing that the eco-friendly actions of employees significantly enhance an organization's environmental outcomes. The findings suggest that organizations must prioritize the cultivation of pro-environmental behavior as a core value, integrating it into organization's strategies and interventions to foster an eco-friendly culture. By doing so, companies can not only achieve superior environmental performance but also contribute effectively to broader sustainability goals, making pro-environmental behavior a key strategic component for long-term success.

Implications and suggestions

This study offers substantial theoretical and practical implications concerning PEB and CEP. Theoretically, it contributes to the existing body of knowledge by elucidating whether employees' pro-environmental behaviors can enhance environmental performance within organizations. By establishing the link between PEB and CEP, the study provides valuable insights into how individual actions at the employee level can collectively impact an organization's overall environmental outcomes. This understanding is crucial for scholars and practitioners alike, as it highlights the importance of integrating behavioral factors into environmental management strategies.

From a practical standpoint, the study provides actionable insights for managers and organizational leaders seeking to foster a culture of environmental responsibility. To enhance pro-environmental behaviors and subsequently improve corporate environmental performance, organizations can implement robust systems for recognizing and rewarding employees' green efforts. Such systems can include both monetary and non-monetary rewards, such as financial bonuses, public recognition, certificates, and additional perks, to motivate employees to engage in environmentally friendly practices. This approach not only motivates employees but also fosters a more inclusive and supportive culture for environmental sustainability.

Limitations and Directions for Future Research

Despite its significant contributions to both theory and practice, the present study has certain limitations that should be acknowledged. One key limitation is the reliance on perceptual data, which may introduce a risk of perceptual bias. The subjective nature of self-reported data can sometimes lead to inaccuracies or misrepresentations, potentially affecting the validity of the findings. To address this limitation, future research should consider incorporating objective data sources, such as actual environmental performance metrics or observational data, to complement and validate the self-reported measures. This would help to reduce the potential for perceptual bias and provide a more comprehensive understanding of the relationship between PEB and CEP.

Additionally, future studies could explore the impact of various organizational factors, such as leadership styles, corporate culture, and employee engagement programs, on the promotion of pro-environmental behaviors. By examining these factors, researchers can gain deeper insights into the conditions that best support the development of PEB and its subsequent impact on corporate environmental performance. Expanding the scope of research to include diverse industries and geographical regions could also provide a more generalized understanding of these relationships, further enriching the literature on environmental sustainability in organizations.

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