



A RELATIONSHIP BETWEEN CORPORATE SOCIAL RESPONSIBILITY AND EMPLOYEES' PRO-ENVIRONMENTAL BEHAVIOUR: A META-ANALYTIC REVIEW

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Abstract: Over the past ten years, the relationship between organisations and society has been the subject of intense discussion, often accompanied by harsh comments. To meet the requirements of both present and future generations, it is imperative to protect the integrity of natural systems and adhere to international norms that safeguard fundamental, social, and environmental principles. Since employees are strategically important in assisting the company in achieving its requirements, their involvement is crucial to the success and effectiveness of Corporate Social Responsibility (CSR). With employees' active participation, an organisation's chances of accomplishing sustainable goals are greatly reduced, which is why employee environmental empowerment is crucial for CSR projects. This study synthesises research findings on the relationship between CSR and Employees' Pro-Environmental Behaviour (PEB), and to investigate this association, a meta-analytic approach is utilised. The meta-analysis was conducted through Meta Essential (Version 1.5) software. The findings of the study uncover a substantial positive correlation between CSR and employees' PEB, with an overall effect size of $r = 0.45$ ($N = 16237$, 95% [CI = 0.38-0.48]). By combining the overall effect of CSR on Employees' PEB and drawing conclusions for further research, this literature review offers a valuable addition to earlier studies.

Keywords: Corporate Social Responsibility, Pro-Environmental Behaviour, Meta-Analysis, CSR, Subgroup Analysis on Type of Industry

1. INTRODUCTION

Over the last few decades, the concept of corporate social responsibility (CSR) has evolved from a niche idea to one that is increasingly important to many of today's business decisions (Cochran, 2007). The relationship between organisations and society has been vigorously discussed during the past 10 years, frequently with scathing remarks. Over the decade, there have been demonstrations against the conduct of many organisations, as well as revelations of corporate abuse and developing financial scandals. Simultaneously, there is a favourable association between corporate performance, ethical behaviour, and environmental care. For this reason, the nature of CSR is relevant to both firms and academics (Crowther and Rayman-Bacchus, 2017). The issues about global socioeconomic and environmental challenges have grown more intense in the modern period. To create a sustainable society, all segments of society must be held accountable in this regard (Tariq *et al.*, 2022), as a result, organisations in the modern period are addressing environmental issues in more proactive and comprehensive ways (Wolff *et al.*, 2018). Based on Blowfield's (2005) definition, CSR is a term that encapsulates a company's obligation to its stakeholders, the larger community, and the environment without sacrificing the pursuit of financial gain. CSR takes the form of a company's plans and procedures for improving its connections with and effects on the environment and its most important stakeholders. Employees act as "enactors" and "ambassadors" of CSR. It is a core element of the corporate reputation, and due to its centrality, CSR

shapes how stakeholders and potential employees view a business (Sharma, 2019). A company's ability to create and execute an environmental policy is highly dependent on the values and actions of its employees (Chou and Hsu, 2015). They make an effort to operate in a way that is consistent with the environmental management systems of their organisations, and they step up to the plate when it comes to making a difference in the world, both socially and environmentally (McShane and Cunningham, 2012). Employee involvement is essential for the success and efficacy of a CSR as it plays a vital strategic role in helping the corporation achieve its overall business goals. Employee empowerment is essential for CSR initiatives because, without the active participation of employees, the organisation's hopes of achieving sustainable objectives will remain weak (Duthler and Dhanesh, 2018; Rupp *et al.*, 2018). The effectiveness of green programs and policies in an organisation hinges on the pro-environmental behaviour (PEB) of its employees, who are thus seen as agents of change in this area (Dumont *et al.*, 2017; Saeed *et al.*, 2019).

2. LITERATURE AND HYPOTHESIS DEVELOPMENT

2.1 Corporate Social Responsibility (CSR)

CSR refers to the practice where companies integrate social, environmental, and economic factors into their values, culture, decision-making, strategies, and daily operations. They do this in a way that is transparent and accountable, ensuring they contribute positively to society and the environment while conducting their business. This approach aims to promote better practices inside the company, generate money, and enhance society. With the growing significance of sustainable development, the incorporation of how the business sector tackles these concerns is now a component of CSR (Hohnen and Potts, 2007). According to Cadbury (2006), CSR serves the dual purpose of promoting firms to adopt a comprehensive perspective on their obligations as well as discouraging them from participating in any endeavours that solely prioritise financial gain. Over the last decade, there has been a meteoric rise in shareholder interest in CSR. Organisations that adopt CSR as a business strategy believe that it can help increase their profitability in the long run. They see CSR not just as a way to do good for society and the environment, but also as a way to improve their financial success. Additionally, those who view CSR as an ethical stance also understand the importance of being profitable and meeting the needs of shareholders. They believe companies can act responsibly while still focusing on financial success. This recognition stems from the understanding that without these elements, corporations may be unable to sustain their commitment to fulfilling their social responsibilities (Wan-Jan, 2006).

2.2 Pro-Environmental Behaviour (PEB)

Actions that are beneficial to the environment can be seen as driven by either individual self-interest (such as saving money) or broader societal concerns (such as caring for the ecosystem) (Ture and Ganesh, 2014). PEB is a term used to describe various actions and choices that are beneficial to the environment. By PEB, "we simply mean behaviour that consciously seeks to minimise the negative impact of one's actions on the natural and built world" (Kollmuss and Agyeman, 2002). PEB is also referred to as ecological behaviour, environment-friendly behaviour, environmentally responsible behaviour, responsible environmental behaviour, ecologically significant activity, and environmentally associated behaviour (Fenitra *et al.*, 2022). As per Chaana *et al.* (2021), organisations can aid in the preservation of natural resources and the advancement of CSR through PEB, which is a notable and significant segment of behaviour on the part of employees, as it makes it easier for organisations to protect the environment and their natural resources (Russell, 2008; Ramus and Steger, 2000). Forgas and George (2001) posit that people's cognition influences their judgments and behaviours, and that people's thinking and behaviour occur in an emotive context.

2.3 The Corporate Social Responsibility (CSR) and Pro-Environmental Behaviour (PEB) Linkage

A socially responsible company maximises profits while considering the whole range of societal, economic, and environmental impacts of its operations (Marsden, 2006). While several theories have attempted to explain the connection between CSR and businesses, far less is known regarding the specific ways in which CSR influences individuals. There are theoretical frameworks, such as the Theory of Planned Behaviour (Robertson and Barling, 2012), the Value-belief Norm Theory (Stern, 2000), the Social Exchange Theory (Paillé Mejía-Morelos, 2014), and the Norm-activation Model (NAM) have been proposed in recent times. Modern businesses are making great strides in environmental protection and in finding long-term, sustainable solutions to their problems. Motivating employees to participate in PEB more often and consistently is one of the most effective ways that organisations have begun to recognise (Afsar *et al.*, 2018; Babiak and Trendafilova, 2011). When organisations demonstrate their commitment to social responsibility to their employees through their CSR efforts. The employees learn

more about the condition of the environmental and social issues, and as a result, they possess a greater understanding of the company's CSR initiatives aimed at protecting both issues (**Babiak and Trendafilova, 2011; Lee et al., 2013**). The extra effort from employees is common when they believe their employers are acting properly toward stakeholders and society at large. Employees show their support for green policies, tactics, and practices by adopting similar PEB practices at the workplace (**Shah et al., 2023**). CSR has been a potential predictor at the organisational level for predicting employee behaviour. However, it is also crucial to consider the influence of individual elements, such as various psychological and emotional factors, in generating distinct outcomes for employees (**Zhang et al., 2022**). Also, there are shreds of evidence from research that CSR at the organisational level influences employee behaviour and emotions (**Jilani et al., 2021; Murtaza et al., 2021; Shah et al., 2023; Suganthi et al., 2019; Tariq et al., 2022**). Employees in the workplace not only notice how their company treats its employees, but they also observe the quality of its interactions with other stakeholders. It is understood that CSR perception has resulted in identification with their company, which will manifest in their attitudes and actions toward work, including loyalty, contentment, and citizenship (**Paruzel et al., 2020**). To provide a clearer understanding, a model has been designed to depict the connection between CSR and PEB of employees (see Figure 1).

Hypothesis 1: Corporate Social Responsibility will have a positive impact on Pro-Environmental Behaviour.



Figure 1: Proposed Model of the Relationship Between CSR and PEB

2.4 Moderator of the Study

Male Percentage- Understanding gender roles is crucial to understanding how employees participate in environmental protection, which varies depending on the cultural background of the individual (**Ahmad et al., 2021**). According to the study of **Hidalgo (2022)**, women are more likely than men to engage in PEB, and these behaviours are linked to patterns that can be carried out during regular daily routines because women typically take on more responsibilities at home, even when they work outside the home. Females with Pro Environmental Behaviour reports more favourable and appreciative attitudes towards the environment (**Plavsic, 2013**). Gender is a strong predictor of environmental concern and direct and indirect PEB (**Dalen and Halvorsen, 2011; Nhamo and Mukonza, 2020; Zelezny et al., 2000;**).

3. METHODOLOGY

3.1 Question Formulation

The core of the study centres on a critical research question: How does CSR influence employees' PEB? This question aims to explore and understand the effects of CSR initiatives on the environmental actions and attitudes of employees within an organisation.

3.2 Literature Search

For this meta-analytical investigation, the authors, constituting a two-member team, conducted a systematic literature review (SLR) to empirically explore the correlation between CSR and PEB (see Figure 2). The initial phase of the literature search involved selecting search engines and databases containing research papers and articles from reputable sources. Google Scholar and Scopus were selected as the primary search engines and databases to conduct the comprehensive search. The second phase is the literature search, which involves the formulation of keywords. The selected keywords primarily focused on "Corporate Social Responsibility" and "Pro-environmental Behaviour," with an established search string detailed in Table I. The search was restricted to document titles, abstracts, and keywords only.

Table I: Search Query

Source	Search String
Google Scholar	"Corporate Social Responsibility and Pro-environmental Behaviour"
Scopus	

3.3 Paper selection and evaluation (inclusion and exclusion criteria)

A search on Google Scholar and Scopus found a total of 154,153 articles. After applying predefined criteria for inclusion and exclusion, a final selection of 74 studies was made. This was achieved by excluding 1,35,010 documents (Only studies conducted between 2011 and 2025 were included), and 19,069 records were removed for other reasons. This filtration process resulted in 74 studies. Following a preliminary examination, 30 duplicate articles were removed, and 6 reports were not retrieved, leaving 38 studies. The final compilation comprised 38 empirical papers, as depicted in Figure 2, focusing on employees' PEB within the context of CSR.

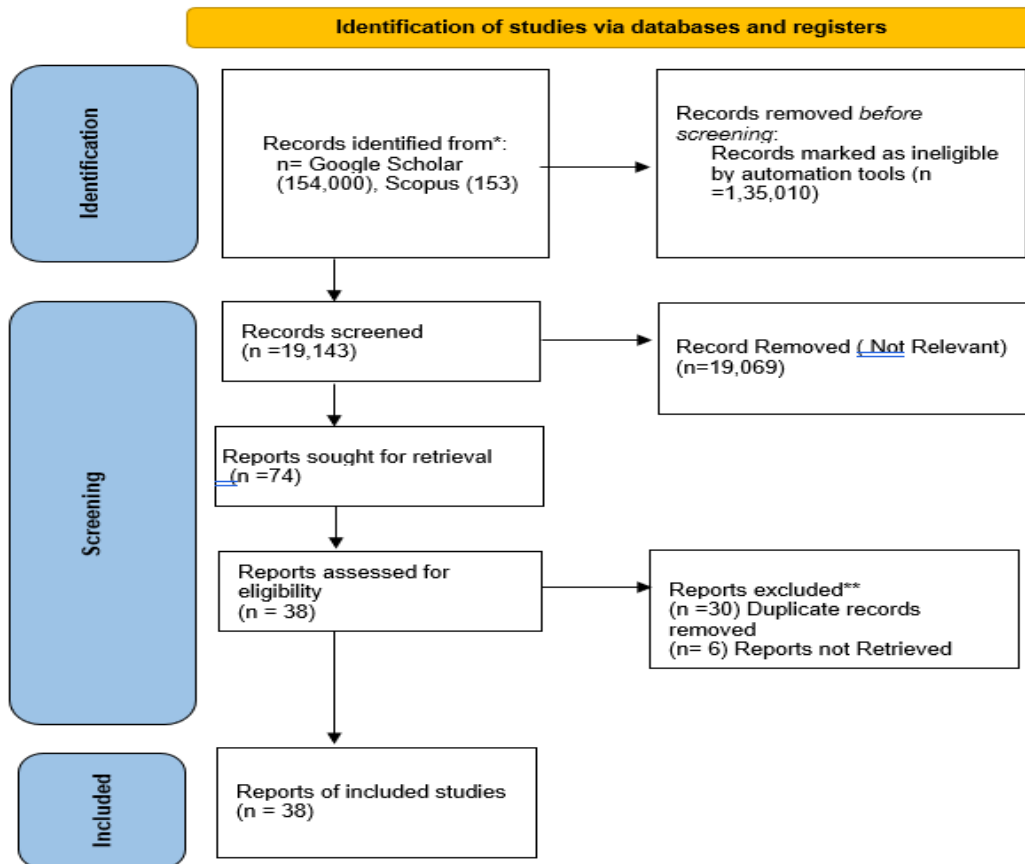


Figure 2: Diagram for Article Selection and Retrieval Process

Source: PRISMA 2020 flow diagram

3.4 Coding of the Studies

Included studies were examined and coded using the following extractions: name of the authors and year of publication, country name in which the survey was conducted, sample size indicated by N, correlation coefficient indicated by R, percentage of male respondents indicated by M%, and Industry (see Table II).

Table II: Descriptions of Included Studies for Meta-Analysis

Author	Country	N	R	M%	Industry
Cheema et al., 2020	Pakistan	479	0.43	76.3%	Hospitality
Zhang et al., 2022	Pakistan	319	0.48	68%	Hospitality
Latif et al. 2022	Pakistan	375	0.38	69%	Manufacturing
Durate and Mouro 2022	Portugal	178	0.20	41%	Different Organisations
Fu et al., 2022	Pakistan	383	0.374	69%	Hospitality
Xu et al., 2022	Pakistan	441	0.489	58.05	Hospitals
Deng et al., 2022	Pakistan	293	0.398	58.39%	Hospitals
Hongxin et al., 2022	Pakistan	489	0.44	60%	SME
Latif et al., 2022	Pakistan	235	0.716	92.3%	Manufacturing
Soni 2022	India	320	0.551	73.2%	Different Indian organisations across different sectors
Shao et al., 2021	Pakistan	489	0.48	55.83%	Hospitality

Wei et al., 2021	KSA	489	0.498	56.85%	Hospitals
Jilani et al., 2021	Pakistan	656	0.428	58.23%	Higher education sector
Yin et al., 2022	China	431	0.60	55.5%	Manufacturing
Wei et al., 2021	-	398	0.41	60.5%	SME sector
Wu et al., 2021	Pakistan	459	0.38	59.48	Banking
Murtaza et al., 2021	Pakistan	392	0.47	56.89	Banking
Ahmad et. al; 2021	Pakistan	436	0.18	58.94	-
Yu et al., 2021	Pakistan	281	0.14	66.19%	SME sector
Molnar et al., 2021	Pakistan	489	0.36	52.35%	Hospital
Afsar et al., 2020	Pakistan	784	0.397	59%	Various industries such as telecommunication, pharmaceutical, medical, manufacturing, hospitality, and electronics
Ahmad et al., 2021	Pakistan	533	0.26	45.4%	Healthcare sector
Afsar et al.,2020	Pakistan	560	0.596	77.85	Various sector
Cheema et al., 2020	Pakistan	374	0.531	53%	Various sector
Sugnthi 2019	India	527	0.31	56%	Manufacturing, service and information technology sector
Islam et al., 2019	Pakistan	402	0.58	81.09%	Hospitality
Tian et al., 2019	China	366	0.15	61%	Hospitality
Jitrumluek et al, 2019	Thailand	774	0.76	-	SME sector
Afsar et al., 2018	Pakistan	298	0.43	75.83%	Diverse industry sectors
Gkorezis and Petridou, 2017	Greece	191	0.34	45.0%	-
Shah et al., 2021	Malaysia	331	0.636	-	Hotel
Liao et al, 2021	China	461	0.26	51%	High-tech industries
Mansour et al. 2022	Pakistan	440	0.66	75%	Diverse Industry Sector
Raza et al., 2021	Pakistan	336	0.42	-	Hotel
Cai et al., 2024	China	526	0.56	69.8	Other
Shah et al., 2023	Pakistan	301	0.471	59.4	Other
Ekmekcioglu et al., 2025	Türkiye	591	0.49	-	Other
Guan et al., 2023	-	410	0.361	66.58	Hospitality

3.5 Data Assumptions and Decision Rule

To minimise potential issues resulting from decision-making problems, we have carefully adhered to established and standardised processes to improve the quality and interpretability of our meta-analysis. By ensuring the analysis's robustness and dependability, our strategic method seeks to increase the validity of our conclusions. In this work, we have carefully addressed the following considerations to resolve intrinsic judgment issues:

3.5.1 Missing Data- Moderation and subgroup analyses were exclusively performed on studies possessing available data, with analysis being omitted for those studies with missing data.

3.5.2 Male Percentage- We determined the male percentage by deducting the female percentage from 100% (i.e., the total percentage of male and female participants) in studies that only supplied the female percentage rather than the male percentage.

3.5.3 Correlation- In some studies, correlations were not provided. In these cases, researchers calculated the correlations by the formula $r = .99\beta + .04\lambda + 0.2n$ (Peterson and Brown, 2005) and treated it as the value of correlation.

3.5.4 Quality Assessment- To ensure thorough methodological validation, the authors conducted the Systematic Literature Review (SLR) multiple times. The consistent outcomes of the searches comprised 38 papers.

4. RESULT AND DATA ANALYSIS

4.1 Characteristics of Included Studies

In this meta-analysis, 34 experimental studies involving a total of 16237 participants were included, representing nine countries: Pakistan (n=24), India (n=2), China (n=3), Portugal (n=1), KSA (n=1), Thailand (n=1), Greece (n=1), Malaysia (n=1), Türkiye ((n=1), and Taiwan (n=1). Significantly, a particular study did not disclose the source of its sample. Notably, **Durate and Mouro's (2022)** research conducted in Portugal had the smallest sample size, consisting of 178 employees. In contrast, **Afsar et al. (2020)** study in Pakistan boasted the largest sample, involving 784 workers from various industries. Encompassing studies conducted from 2017 to 2025, this meta-analysis offers a comprehensive overview spanning over six years. The reported correlation coefficients exhibited a broad range, varying from 0.06 to 0.76, indicating diverse strengths and directions within the relationship between CSR and employees' PEB.

4.2 Overall Effect Size of CSR and Pro-Environmental Behaviour

Figure 3 concisely captures the visual representation of the association between CSR and PEB through a Forest plot. The plot conveys a positive and statistically significant correlation, suggesting that CSR has a discernible impact on employees' PEB. The overall effect size, indicated as " $r = 0.45$ " in Table III, serves as a quantitative measure of the strength and direction of this relationship. The positive sign signifies a consistently positive association observed across the various studies included in the meta-analysis. Table III supplements these findings by furnishing additional details. It encompasses 38 studies ($k = 38$), a 95% confidence interval (0.38-0.50), high heterogeneity ($I^2 = 93.86\%$), and statistical significance ($P < 0.001$). These parameters collectively contribute to a comprehensive understanding of the robustness and consistency of the identified relationship within the meta-analysis, thereby enhancing the reliability of the observed CSR-PEB association.

Table III: Meta-Analysis of CSR and PEB

	k	r	95% CI	I ² (%)	Q	P
CSR-PEB	38	0.45	0.40-0.50	93.86%	603.03	P<0.001

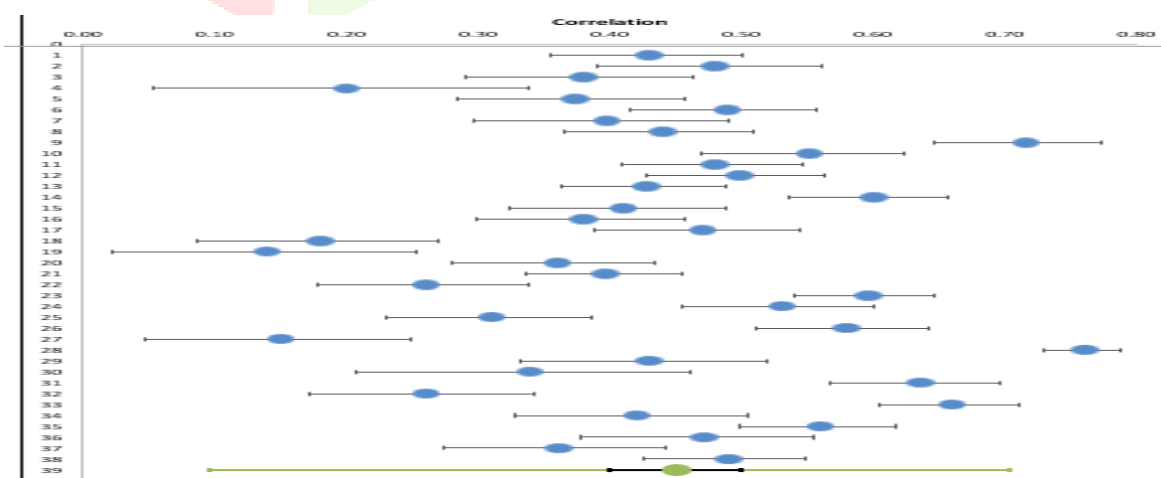


Figure 3: Forest Plot on CSR and PEB

4.3 Moderation and Subgroup Analysis of CSR and Pro-Environmental Behaviour Relationship

The information in Table IV shows that there is a lot of variation (heterogeneity) in how CSR is connected to PEB across the 38 studies, as indicated by the I^2 statistic of 93.86%. This means that there are likely other factors influencing the relationship beyond what is represented by the overall effect size of 0.43. To investigate this further, the researchers looked at one specific factor: the percentage of males in the

studies. In the analysis of 35 studies (excluding three due to missing data on male percentages), the Q-range statistics and grouped studies were based on the type of industry in which employees worked. This approach helps determine if certain characteristics, such as gender distribution or industry type, can provide insights into the reasons for the considerable variability observed in the connection between CSR and PEB across diverse studies.

Table IV: Heterogeneity Analysis

Q	I ² (%)	T ² (Z)	T (Z)
603.03	93.86%	0.04	0.19

4.3.1 Male Percentage as Moderator

A meta-regression analysis was performed to assess how the male percentage moderates the connection between CSR and PEB. The results are presented in Table V. The overall combined effect size was moderately positive ($B = 0.46$, $SE = 0.03$, $p < .001$), indicating a significant baseline relationship. However, the moderator did not significantly impact the CSR and PEB relationship ($B = 0.00$, $SE = 0.00$, $\beta = 0.18$, $p = .272$). Additionally, the overall model lacked statistical significance ($Q = 1.20$, $df = 1$, $p = .272$; $F = 1.07$, $p = .310$), implying that adding the moderator did not enhance the model's explanatory power. The moderator accounted for a small proportion of variance ($R^2 = 3.22\%$), and the between-study variance was minimal ($\tau^2 = 0.02$). This indicates low heterogeneity among studies. Figure 4 visually presents this exploration, plotting the male percentage of participants on the horizontal axis and correlation values on the vertical axis. Although the regression line indicates a marginal upward trend, the absence of a clear pattern and concentration of studies at lower moderator values suggests that the moderator does not meaningfully explain the variability in effect sizes. This visual assessment aligns with the non-significant regression results and the low explained variance ($R^2 = 3.22\%$). Thus, these results suggest that the moderator does not significantly affect the relationship between CSR and PEB.

Table V: Meta-Regression Results (Moderator)

Predictor	B	SE	β	Z
Intercept	0.46	0.03	—	15.31
Moderator	0.00	0.00	0.18	1.10

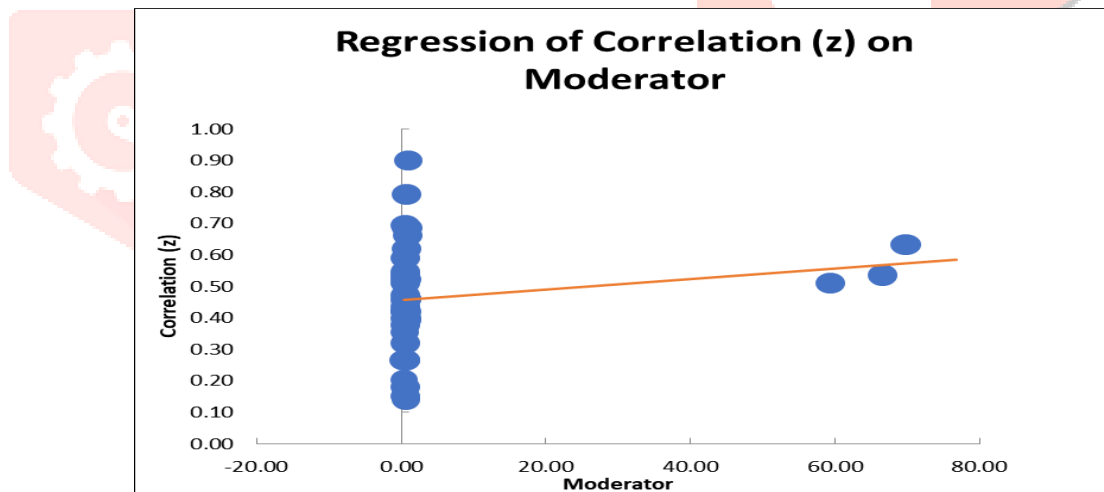


Figure 4: Meta-regression Depicts the Role of Male Percentage as a Moderator in the Association Between CSR and PEB, respectively (Note: Blue Circles Show the Studies and the Size of the Studies Depict their Contribution to the Overall Effect Size)

4.3.2 Subgroup Analysis on Type of Industry

Despite conducting a moderator analysis that showed limited influence on the CSR-PEB relationship, a subgroup analysis focused on exploring potential variations in the impact of intervention within different groups of the study population. Specifically, it looked at the influence of the type of industry on the CSR and PEB association, categorising studies into Hospitality and other sectors (see Table VI). To determine if the type of industry (hospitality versus other sectors) influences the relationship being studied, a subgroup analysis was performed. As detailed in Table VI, this analysis encompassed 38 studies with a combined sample size of 14,359 participants. The ANOVA results (Table VII) revealed no statistically significant difference between groups ($Q = 0.03$, $df = 1$, $p = .862$), indicating that the effect size remains consistent across different subgroups. Additionally, the within-group heterogeneity was not significant

($Q = 35.13$, $df = 36$, $p = .510$), showing uniformity among the studies. The variance explained was minimal (Pseudo $R^2 = 0.09\%$; Table VIII), indicating that industry type does not significantly contribute to variations in effect sizes.

Table VI: Description of the Subgroups

No. of Included Subjects	No. of Included Studies	No. of Subgroups (2)
16237	38	Hospitality Others

Table VII: Results of the Subgroup Analysis (ANOVA)

Analysis of Variance	Sum of squares (Q)	df	p
Between / Model	0.03	1	0.862
Within / Residual	35.13	36	0.510

Table VIII: Explained Variation

Pseudo R^2	0.09%
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Figure 5 illustrates the forest plot for subgroup analysis categorized by industry type. The findings reveal that the effect sizes for both the hospitality and non-hospitality subgroups (Other) are quite similar, with their confidence intervals showing considerable overlap. The combined estimates for each subgroup closely match the overall effect size, indicating consistency across the groups. These visual observations are corroborated by the non-significant heterogeneity between groups ($Q = 0.03$, $p = .862$), suggesting that industry type does not significantly influence the relationship.

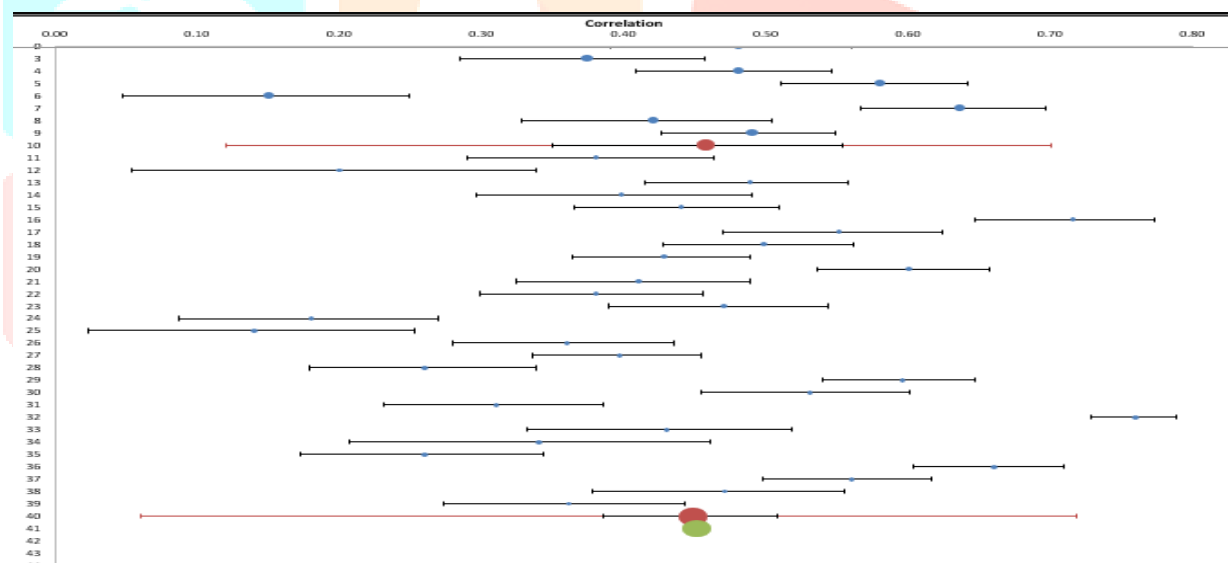


Figure 5: Forest Plot for Subgroup Analysis of Type of Industries.

5. DISCUSSION AND CONCLUSION

This study looked at the relationship between CSR and employees’ PEB. The findings showed a significant and positive connection, suggesting that when companies focus on CSR initiatives, it positively influences employees to engage in pro-environmental actions. The study also considered factors like the percentage of males and the type of industry as reasons for the considerable variability observed in the connection between CSR and PEB. It found that the percentage of males had a modest impact on the CSR-PEB relationship (R^2 of 4.27%), and the type of industry didn’t show significant variations (R^2 of 2.51%). This highlights the complexity of factors influencing the CSR-PEB relationship. In conclusion, the study contributes valuable insights by combining research findings on CSR and PEB. It emphasizes the importance of CSR in encouraging environmentally responsible behaviour among employees and supporting organisational sustainability goals. Despite some variations, the overall positive correlation emphasises the significance of organisational efforts in promoting pro-environmental actions by employees.

6. PRACTICAL IMPLICATIONS

The study highlights key practical implications for organisations seeking to enhance CSR and foster PEB among employees. The substantial positive correlation ($r = 0.43$) emphasises the importance of integrating socially responsible practices into corporate strategies and aligning CSR efforts with employees' environmental concerns. The minimal impact (4.27%) of the male percentage suggests that gender-specific interventions may have limited effectiveness, advocating for inclusive strategies engaging all employees in CSR activities. The consistent CSR-PEB relationship across industry subgroups implies that tailored CSR practices can benefit organisations in diverse sectors. Overall, the study underscores the significance of holistic CSR integration, inclusive engagement, and industry-specific considerations for meaningful and sustainable improvements in PEB within organisational settings.

7. LIMITATION AND FUTURE DIRECTION

This study has valuable insights into CSR and employees' PEB, but has limitations. It focused on Scopus and Google Scholar, potentially missing relevant data from other databases. Only literature up to 2023 was considered, excluding newer contributions. The analysis relied on existing empirical studies, leading to methodological variations. Cross-sectional data limit the establishment of causality, and biases may exist due to specific regions and industries included. The study only considered factors like the percentage of males and the type of industry as reasons for the considerable variability observed in the connection between CSR and PEB. Future research should extend the timeline, employ inclusive language, and explore longitudinal and cross-cultural studies, while also considering employee perceptions. Additionally, future researchers should examine other factors, such as average age, as potential reasons for the significant variability observed in the relationship between CSR and PEB. Interventions and experiments within organisations, qualitative methods, and a comparative analysis of organisational performance could provide practical insights and deepen understanding. Addressing these limitations will guide organisations in enhancing CSR initiatives and promoting PEB.

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