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An Ethical Leadership Style and Pro-Environmental Behavior: The Mediating Role of Moral Efficacy

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Abstract: To better comprehend the strategies that leaders follow in shaping their organizations, the study of ethical leadership has become increasingly relevant. This study investigates pro-environmental behavior and ethical leadership using a survey of 420 employees from various manufacturing organizations. It examined moral efficacy's role as a mediator between ethical leadership style and environmental behavior, drawing on insights from the social learning theory. The study employed structural equation modeling to test hypotheses. The findings indicate that there is a significant association between ethical leadership, pro-environmental behavior, and moral efficacy. The moral efficacy of employees serves as a mediator in the association between ethical leadership and pro-environmental behavior. It is important to note that moral efficacy does not act as a significant mediator in the relationship between ethical leadership and pro-environmental behavior. This analysis is specifically focused on the manufacturing sector; however, additional research may be performed in the context of service sector enterprises. It is recommended that moderating and mediating variables such as self-esteem, job involvement, and moral courage be explored in future studies to enhance the comprehension of the construct of ethical leadership.

Keywords: ethical leadership, environmental behavior, moral efficacy, social learning theory, manufacturing industry
JEL Classification: M1, Q5

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Introduction

Goal 13 of the UN's 2030 Agenda for Sustainable Development calls for immediate action in order to halt climate change and its effects through developing both individual and institutional capability, as well as systems that allow effectual ecological management (Kirkby et al, 2023, Ahmad & Kaleem, 2021; Islam et al., 2020). The World Health Organization estimates that heat caused by carbon emissions causes around 4.3 million deaths annually and an annual economic loss of between USD 2 billion and USD 4 billion (WHO, 2018). For these reasons, the UN's Sustainable Development Goals (SDGs) for 2019 devote significant attention to combating climate change (Hameed et al., 2020). Human activity in corporate organizations is a major contributor to the worldwide threat of climate change (Chowdhury et al., 2019; Gilal et al., 2019; Robertson & Barling, 2013). Attitude and conduct on the job are strongly influenced by the quality of employees' relationships with their supervisors and managers. It is possible they will take all they have learned from their interactions and use it to guide their future decisions and behaviors (Su et al., 2021). In the same way, researchers agree that leadership is important for followers to change their behavior "towards more pro-environmental behaviors." Ahmad and Kaleem (2021) say that empirical studies are needed to find out how to encourage pro-environmental behavior (PEB) in the workplace (Ahmad & Kaleem, 2021). For instance, when people do industrial and factory work, greenhouse gases are released into the air. Organizations are setting up eco-management systems as a response to the alarming effects of climate change. On the other hand, as pointed out by Robertson and Barling (2017), this is only a partial solution, as the success of such programs depends heavily on the green actions of the organization's employees (Ahmad & Kaleem, 2021). Because human actions have caused climate change by wasting resources and polluting water and air, the primary focus of many organizations has switched to encouraging the development of "green" actions (Islam et al., 2020). The subject of how to encourage environmentally conscious and ethical behavior in the workplace has received surprisingly little attention in the academic literature (Ahmad & Kaleem, 2021). Ethical behavior is promoted by a belief in one's own moral efficacy (ME). The "belief in one's own ability" to succeed in ethical issues is crucial for determining whether or not an individual would engage in ethical behavior when faced with an ethical challenge. This study broadens the scope of the ethical environment by including the concept of ethical leadership (EL) in its investigation into the possible connections between the variables mentioned above (Peng et al., 2017). In this research, we address this constraint by exploring the role that moral efficacy might play in enabling leaders to encourage environmentally conscious behavior among their staff.

This study emphasizes the significant impact of EL on ME, which in turn promotes PEB at work. The research explains the potentiality of EL in boosting ME at work and can have a knock-on effect of encouraging environmentally responsible actions on the job. This study addresses EL, considering that it is a widely acclaimed strategy for managing an organization (Fahim et al., 2019), in which leaders are held accountable for their decisions and actions in affecting the world around them (Ahmad & Ahmad, 2020; Kalshoven et al., 2011). Findings shed new light on how EL might motivate environmentally conscious actions among staff. This research investigates the relationship between ME and followers' adherence to moral leadership and environmental responsibility (Ahmad & Kaleem, 2021). EL facilitates not just the social exchange of ethical principles throughout the workplace but also the development of a sense of ME among employees (Lemoine et al., 2019).

According to earlier research, ME serves as an impulse connecting EL to ethically accept able outcomes (Huang & Paterson, 2017). Integrity in leadership, according to Erkutlu and Chafra (2019), can boost employees' ME and hence reduce the likelihood that they will engage in antisocial behavior on the job (Su et al., 2021). Few researches have been conducted in this area, making them essential. We're investing in this research because ME may be demonstrated by an organization's leadership (ethical leaders), which in turn can inspire PEB among their staff.

EL makes a distinctive contribution to PEB through the promotion of value-based decision-making, inclusive procedures, clear communication, accountability, a focus on long-term goals, and empowering individuals within organizations (Islam 2020). Through the incorporation of ecological concerns into leadership approaches, ethical leaders play a crucial role in cultivating a sustainable culture and facilitating favorable environmental results.

Leaders who are devoted to acting ethically and responsibly are regarded as ethical leaders because of their honesty, integrity, and high ethical standards (Bukhari et al., 2019; Nawafleh, 2020). Ethics can be broadly defined as a moral framework that encompasses principles of goodness, righteousness, and propriety. In essence, ethics offers guidance on behavior, attitudes, and actions that are deemed acceptable and appropriate within specific contexts of human activity (Marina & Wahjono, 2017). However, previous studies on EL have not fully explored the question of how ethical leaders influence PEB. In light of this, the current investigation aimed to discover how ethical leaders may encourage their staff to engage in environmentally conscious activities. Prevailing theories suggest that safety consciousness and ethnicity (Khan et al., 2018), psychosomatic-related ownership and perception (Avey et al., 2012), leader-member exchange quality (Walumbwa, 2011), task-related stress (Aksoy, 2012), and trust (Lee et al., 2016) all act as intermediaries between EL and employee behavior on the job. According to recent research by Ahmad and Umrani (2019): "People assume that ethical leaders will encourage environmentally friendly policies and practices within their organization," which has a beneficial effect on workers' outcomes on the job. ME contributes a significant mediating variable between EL and workers' PEB. This supports the claim made by Ahmad & Umrani, (2019), and the requests for future research made by Ayu et al. (2019)and Khan et al. (2018), that it is still essential to discover the system by which EL might influence a person's job-related outcomes.

Therefore, considering the significant implications of PEB, existing scholarly works focus on identifying its predictors, such as perceived organizational support, organizational environmental policies, conscientiousness, environmental knowledge, environmental-specific servant leadership, and human resource management practices. Previous studies have also highlighted the indirect pathways through which employees engage in environmentally friendly behaviors and the established mechanisms that can promote such behaviors among employees. This emphasizes their ethical obligation towards environmental preservation. Employees' voluntary, humane, and altruistic efforts are deemed more suitable for addressing environmental challenges. Despite these inquiries, research on the precursors of PEB is still in its nascent stages, particularly lacking in emerging and developing contexts like India. Thus, the understanding of how organizations can promote PEB remains limited and inadequate. Additionally, existing literature falls short in elucidating the theoretical foundations of the relationship between organizations' environmental strategies and PEB (Norton et al., 2012). Nevertheless, Robertson et al. (2013)

noted the insufficiency of current research in explaining how immediate leaders stimulate employees to exhibit PEB. There is a growing demand to explore how EL influences followers' perceptions of the organizational environment to impact their behavior at work. It has been observed that there are few studies on PEB research. For instance, there appears to be a lack of research on the debate surrounding EL and PEB. In a broader sense, this current study aims to address these gaps in the literature by investigating the mechanisms through which EL can promote PEB within organizations. Prior studies have not thoroughly investigated the specific effects of EL on employee conduct. Moreover, the intricate role of ME in mediating the influence of EL on environmentally friendly behavior has not been sufficiently explored, particularly within the manufacturing sector. This study intends to explore how EL fosters PEB by utilizing ME as a mediating factor.

Literature Review

Theoretical background and hypotheses development

Ethical leadership and pro-environmental behavior (PEB)

To date, most studies on ethical leadership have shown that it can control followers' non-green attitudes and actions, such as employee job satisfaction, commitment, and behavioral fallouts. The literature has shown that ethical leadership has a positive effect on the moral behavior of followers (Ahmad & Umrani, 2019; Islam et al., 2020), but there needs to be more research on how it might affect their PEB. The behavior of supervisors could influence their subordinates to act positively or negatively because supervisors have significant control over their subordinates and a large impact on their work demands and social support (Rantika & Yustina). There has been a significant surge of interest among researchers and practitioners regarding the subject of PEB. This heightened focus has emerged particularly due to the recognition of PEB as essential for enhancing organizational effectiveness (Wijayanto & Kismono,2004). PEB aims to "reduce the negative impact of one's actions that are harmful to the environment" (Anja & Agyeman, 2010). Such environmentally conscious actions by employees add worth to businesses by enhancing ecological acts (Ramus & Killmer, 2007; Kim et al., 2019). Ahmad and Umrani (2019) have recently argued that "people assume that ethical leaders will push for green policies and practices within their organization." However, they could not find proof in their studies to support their assertion. Therefore, this research investigates how ethical leadership might inspire employees to adopt eco-friendly workplace practices.

According to Eisenbeiss (2012), responsibility and sustainability have been the guiding principles of ethical conduct in Western and non-Western cultural and rational traditions. Ethical behavior considers how one's choices may affect the quality of life in the future (Eisenbeiss, 2012). Ethical behavior promotes eco-ethical living by protecting nature through the responsible use of resources and ensuring the survival of future generations. According to these viewpoints, ethical leadership is believed to favor employee behavior and the environment since it is dedicated to achieving benefit for everyone via eco-ethical methods. The social learning theory (SLT) describes how a leader's ethical compass affects the eco-friendly actions of their followers (Bandura, 1977). A fundamental tenet of this theory is that managers, supervisors, and other positions of authority within an organization serve as exemplars for their subordinates. They learn from the actions of their role models because they watch, mimic, and experience the outcomes of those

actions (Bandura, 1977). The SLT is most applicable when the leader is modeling environmentally friendly or pro-green behavior as the desired outcome. For instance, workers learn from watching their managers conserve energy by turning off the lights, ACs, fans, and laptops when they are unused. The "social learning perspective" has been utilized to clarify the beneficial impact of ethical leadership in regulating followers' moral behavior(Aris et al., 2018) and extra-role behavior(Arain et al., 2016; Jordan et al., 2011) despite the paucity of research on the effects of ethical leadership on green behavior. Hence, the first hypothesis is derived from this discussion, as follows:

H1: Ethical leadership style will significantly influence pro-environmental behavior.

Ethical leadership and moral efficacy

By investigating moral efficacy's mediating role, it is possible to thoroughly explain the connection between ethical leadership and pro-environmental behavior. That is, the degree to which followers' judgments of a leader's ethicalness result in a shift in the moral efficacy of those followers. Lee et al. (2017) argue that ethical leadership will have a constructive effect on pro-environmental behavior.

Ethical leaders can help their followers be more moral by being good examples of ethicalness, having knowledge of ethics, and focusing on people (Bandura, 1991; Lee et al., 2017; Dirks, 2002; Jordan et al. 2011)One can consider a leader's stature as the outward manifestation of authority that has the potential to shape the beliefs and actions of followers in two primary areas: (1) morale and (2) productivity. First, an ethical leader who is reliable and truthful and who respects workers by providing them with autonomy and opportunities will make those workers feel required to reciprocate in terms of care, respect, and support through favorable job-related attitudes. Second, impartiality in evaluations of work performance and promotions fosters optimism and dedication among employees, thereby increasing their productivity (Kouzes & Posner, 2013) and making them more efficient (Ashfaq & Abid, 2021). According to Hannah & Avolio (2010), the ability to motivate intellectual resources and provide a plan of action to achieve ethical acts within a particular moral area, while facing moral adversity, is defined as moral efficacy. Employees with higher levels of self-efficacy will improve the performnace level of a company as a whole (Hadi et al., 2023).Individuals' specific behaviors should be consistent with their thoughts, intentions, effectiveness, and confidence, and numerous studies have demonstrated the importance of the link between moral leadership and people's outward behavior. In this approach, one's psychological resources—particularly one's belief (confidence) in performing an ethical action—may also be a precursor to ethical leadership, and this kind of effectiveness may be seen as moral efficacy. Bandura (1991, 1997) reveals that social elements such as leadership foster efficacy beliefs, which have been shown to be positively associated with employee confidence, such as perceptions of self-efficacy (Peterson, 2010). Following the preceding reasoning, we expect for the present study that leaders' ethical behavior is positively associated with employees' moral efficacy (Peng et al., 2017). Although the association between ethical leadership and moral efficacy has been the subject of limited empirical research, there is evidence to support the relationship. For instance, Schaubroeck & Hannah (2012) have discovered that ethical leadership style indirectly influences employee moral efficacy by fostering an ethical culture (Lee et al., 2017).

Thus, we hypothesize the following:

H2: Ethical leadership significantly correlates with an employee's moral efficacy.

Moral efficacy and pro-environmental behavior

Moral efficacy refers to an individual's confidence in their ability to make a positive impact on society (Chou, 2014;Bandura, 2020). In the context of environmental conservation, moral efficacy plays a crucial role in promoting pro-environmental behavior. This study examines how moral efficacy might help achieve pro-environmental behavior. Within the specific framework of environmental conservation, the construct of moral efficacy assumes an indispensable function in the facilitation and encouragement of behaviors that are deemed pro-environmental, thereby contributing to the broader objective of ecological sustainability. Research has shown that individuals with high moral efficacy are more likely to engage in pro-environmental behaviors, such as reducing energy consumption and recycling (Paillé & Boiral, 2013; Kim et al., 2022). This is because individuals with high moral efficacy believe that their actions can make a difference in protecting the environment. A study by Lee and Kim (2023) finds that moral efficacy was a significant predictor of pro-environmental behavior, even after controlling for other factors such as environmental concern and knowledge. Similarly, a study by Wang et al. (2024) finds that moral efficacy is a key factor in promoting sustainable transportation behaviors. Moreover, research has also shown that moral efficacy can be enhanced through various interventions, such as environmental education and community-based initiatives (Chaudhary, 2020; Chen et al., 2025). For example, a study by Zhang et al. (2022) finds that an environmental education program increases participants' moral efficacy and pro-environmental behavior. Finally, research has revealed that individuals with high levels of moral efficacy can engage in pro-environmental behaviors because they are more likely to follow through on their desires to do so (Kim et al., 2016; Katz et al., 2022).

H3: Pro-environmental behavior and moral efficacy have a significant relationship.

Moral efficacy as a mediating variable

Self-efficacy, a crucial concept in the SLT, describes how someone perceives and assesses his or her capacity to do a given job (Bandura, 1977). As a distinct form of self-efficacy, moral efficacy is described as a person's level of assurance in their capacity to act morally. Self-efficacy is the belief that a person or group can successfully do a job or a set of behaviors (Bandura, 1997; Bandura, 1986). Numerous studies have demonstrated the construct's significant and positive impact on attitudes, intentions, behaviors, outcomes from education, and performance in various settings, including educational and work environments (Stajkovic & Luthans, 1998; Judge and Bono, 2001). Our definition of moral efficacy is based on previous research. It implies "the belief a person has in his or her own skills" to actively and constructively confront any moral challenges that may arise at work and to surmount any barriers to create and execute ethical solutions to issues of ethics (Hannah and May 2011). May et al. (2003) contend that a leader's self-confidence is essential for translating ethical intentions into actions, particularly in circumstances where there may be competing interests or opposition. They also assert that leadership activities

may increase moral efficacy and bravery (May et al., 2014). According to Brown et al. (2005), ethical leaders exhibit moral personal behaviors in professional settings and mutual interactions, which may strengthen or weaken their influence on subordinates through management style and communication. Ethical leadership has two significant features: an individual who acts as the leader must be a role model to their followers, and he should behave ethically. Second, an ethical leader should be a leader who promotes ethical values and provides rewards and punishments. Integrity displayed by ethical leaders in the workplace can strengthen both the moral efficacy and the moral identity of employees (Erkutlu & Chafra, 2019). Leaders' ethical actions, such as enforcing higher standards, encouraging suitable behavior, and penalizing workplace violators, can boost followers' moral efficacy views and capacities. The intention to act morally will increase as moral efficacy increases (Hannah and May 2011). When the moral efficacy is higher, employees are more likely to convey moral perception and propensity to prosocial activity (Zhou et al., 2011; Huang and Paterson, 2017). In other words, people with higher moral efficacy levels will be ready to act sustainably around their coworkers and vice versa. Based on the premise of the SLT and the findings of earlier research, this study proposes the following hypothesis:

H4: Moral efficacy mediates the association between ethical leadership and pro-environmental behavior.

Theoretical Underpinning

This study primarily extends the framework of Bandura's social learning theory (SLT) (Bandura, 1997) by proposing that ethical leadership can have a significant impact on pro-environmental behavior (PEB). According to SLT, individuals acquire appropriate behavioral patterns through observation and modeling. Ethical leaders serve as credible role models for moral behaviors, influencing employees' perceptions of organizational norms and values related to environmental sustainability efforts and encouraging greater commitment to Pro-Environmental Behaviors (PEB). Employees who perceive a supportive organizational climate towards environmentally friendly actions are more likely to engage in PEB. Additionally, heightened moral efficacy can reinforce this relationship, as morally conscious employees are more inclined to adopt PEB when they observe ethical leadership behaviors within the organization.

Consequently, this research adds to the understanding of PEB and SLT by exploring a novel pathway in which ethical leadership fosters PEB with the intermediary role of ME. Furthermore, this research contributes to empirical knowledge concerning ethical leadership outcomes. It enriches the organizational behavior literature in developing nations where investigations into PEB, ME, and EL still need to be completed.

Methods

To fulfill the study's objectives and test the suggested theoretical model,using the survey approach,data weregathered from the employees of different manufacturing companies; a total of 420questionnaires were distributed. We ensured that all of the survey participants' information was kept confidentialand anonymous (Saleem et al., 2020).

Respondents with a minimum of twoyears of experience wereselected because at least this amount ofexperience wasessential to understanding the style of leadership and

significance of PEB.Of the 420questionnaires that were distributedfor this survey,388 were collected. Twelve surveys were discarded because of inaccurate or missing data.

Measures

To measure ethical leadership (EL) style, this study employed a 10-item scale developed by Brown et al. (2005),the reliability value of which was reported to be 0.90. Ali (2019) utilized the same scale and reported a reliability value of 0.83.

The 13-item measure created by Graveset al. (2013) was effective at capturing pro-environmental behavior (PEB). Every response was graded on a 5-point scale (0 = never and 5 = always). Some example items incorporated "I recycle and reuse materials" & "I try to reduce my energy use." Cronbach's alpha was 0.912.

Additionally, the three items' loading values were below the threshold value. Therefore, following Byrne's (2010) instruction, three items were deleted, i.e., "Perform environmental tasks that my company does not require" and "Join in environmental activities that are not required by my job," while the reliability of the remaining nine items was reported to be 0.912. A sample item was "Apply new ideas for reducing our impact on the environment".

Scholz et al. (2002) proposed a 10-item scale, with responses ranging from "strongly disagree" to "strongly agree," was used to measure moral efficacy (ME). The sample items included “I can always manage to solve difficult problems if I try hard enough” and “I am confident that I could deal efficiently with unexpected events.” The Cronbach’s alpha was 0.935.

Results

Data analysis

In order to analyze the research model utilized in this research, the Smart PLS 3 program was utilized to perform the partial least-square analysis (Ringle et al., 2015). First, the measurement model was tested, followed by the structural model.

The results section summarizes the data collected for the study in the form of descriptive statistics and also reports the results of relevant inferential statistical analysis (e.g., hypothesis tests) conducted on the data. You need to report the results in sufficient detail so that the reader can see which statistical analyses were conducted and why, and to justify your conclusions. Mention all relevant results, including those that are at odds with the stated hypotheses (American Psychology Association 2001: 20).

There is no fixed recipe for presenting the findings of a study. We will, therefore, first consider general guidelines and then turn our attention to options for reporting descriptive statistics and the results of the hypothesis test.

Reporting Research Results

Measurement model (outer model)

The measurement model was examined before testing the hypotheses. AVE, CR, and factor loading were employed to assess convergent validity (CV). Four items were eliminated because they had factor loadings that were less than 0.60 (Nisar et al., 2021; Ullah, 2021). Hair et al. (2009) assert that the consistency and reproducibility of the measures determine an instrument's reliability. Table 1 lists two reliability metrics ranging from

0.884 to 0.966: composite reliability and Cronbach's alpha(∞). The construct reliability and internal consistency were confirmed by the hazard ratio values, which varied from 0.919 to 0.969 (>0.70) (Fornell and Larcker, 1981).

Table 1. Reliability and Validity

Constructs	**Outer loadings**	**∞**	**rho_A**	**CR**	**AVE**
Ethical Leadership(EL)		0.941	0.952	0.949	0.653
EL1	0.764				
EL2	0.836				
EL3	0.882				
EL4	0.862				
EL5	0.782				
EL6	0.786				
EL7	0.749				
EL8	0.765				
EL9	0.817				
EL10	0.828				
Moral Efficacy (ME)		0.935	0.940	0.945	0.659
ME1	0.763				
ME2	0.726				
ME3	0.770				
ME4	0.768				
ME5	0.864				
ME6	0.853				
ME8	0.809				
ME9	0.901				
ME10	0.837				
Pro-environmental Behavior (PEB)		0.912	0.926	0.926	0.558
PEB1	0.781				
PEB2	0.824				
PEB3	0.827				
PEB4	0.706				
PEB5	0.850				
PEB6	0.671				
PEB9	0.717				
PEB10	0.674				
PEB12	0.724				
PEB13	0.663				

Discriminant validity (DV)

Henseler et al. (2015) suggest a new method for assessing DV. They claimthat although the Fornell and Larcker criteria accurately assess discriminant validity, they may need help determining when it is present. Therefore, HTMT was used to determine discriminant validity. Table 3 displays the HTMT values for the factors being studied. According to the HTMT criterion, all variable HTMT values must be below 0.90 (Gold et al., 2001). Table 3 shows that all variables have HTMT values below 0.90, proving their discriminant validity.

Discriminant validity measures how unrelated one construct is to another (Alarcón et al., 2015). In order to evaluate this study's discriminant validity, two criteria were applied. According to the criterion established by Fornell and Larcker (1981), discriminant validity is considered to have been established when the AVE values' square is more significant than their corresponding correlations. The Fornell and Larcker criterion(Fornell & Larcker, 1981)was used in this study to prove discriminant validity, as indicated in Table 2. Second is the HTMT in Table 3; construct values must be lower than 0.85 to prove DV (Henseler et al., 2015b). All construct values in Table 3 are less than 0.85, as shown in Table 2 below (Li et al., 2023).

Table 2. Discriminant validity

	EL	ME	PEB
EL	0.808		
ME	0.371	0.812	
PEB	0.468	0.458	0.747

Table 3. HTMT

	EL	ME	PEB
EL			
ME	0.378		
PEB	0.493	0.454	

Inner model

For hypothesis testing, an estimation of the PLS inner model is done. PLS employs a series of single or multiple OLS regression studies together with an iterative estimation algorithm (Chin, 1998). Thus, the evaluation of the formative measurement models can be compared to the representation of the path coefficients as constant regression coefficients, while external invisible variable scores are used to calculate VIF values (Hair et al., 2019). VIF values above 5 indicate the possibility of predictor construct collinearity; however, collinearity may also happen at low VIF values between 3 and 5 (Becker et al., 2015; Mason & Perreault, 1991; Ringle et al., 2015). The values in this study are all under 5; hence, there is no multicollinearity issue. The R^2 measures how much variation each endogenous concept exhibits and, as a result, how well the model explains things (Shmueli & Koppius, 2011). The range of R^2 values from 0.565 to 0.586 in Table 4 indicates that a moderate to large proportion of the difference is explained (Hair et al., 2011; Henseler et al., 2009). The f^2 effect size also quantifies how the R^2 value changes when an external construct is excluded from the model. Impact size values less than 0.02 indicate that there is no impact

(Cohen, 1988). Nevertheless, the results showed values above 0.02. Estimating the value of Q^2 is another way to evaluate the prediction ability of the PLS path model (Geisser, 1974; Stone, 1974). This component indicates the degree of dependency between variables, with values of 0.02, 0.15, and 0.35, indicating modest, moderate, and significant influence levels of a single factor upon another, respectively. The Q^2 values for this study range from 0.518 to 0.722, demonstrating considerable predictive importance as expressed in Table 4. The standardized root-mean-square residual, abbreviated as SRMR, is the statistic used in this study to evaluate the model's fitness.

Table 4. R2, F 2, VIF, Q2

R square	Endogenous variables	R 2	R square adjusted	0.26: Substantial 0.13: Medium 0.02: Small (Hair et al., 2017)
	ME	0.138	0.125	
	PEB	0.313	0.291	
Effect size (F-square)	Exogenous variable	ME	PEB	0.26: Substantial 0.13: Medium 0.02:Small (Hair et al., 2019)
	EL	0.160	0.149	
	ME		0.137	
VIF (Inner VIF)	Exogenous variable	ME	PEB	VIF< = 5.0 (Hair et al 2017)
	EL	1.000	1.160	
	ME		1.160	
Q2 (Predictive Relevance)	Endogenous variables	CCR Q^2 (=1-SSE/SSO)	CCC Q^2 (=1-SSE/SSO)	Values greater than zero indicates predictive relevance
	ME	0.080	0.567	
	PEB	0.150	0.445	
CCR: "Constructs Cross-Validated Redundancy"; CCC: "Constructs Cross-Validated Communalities"				

Table 5 shows statistics indicating that EL positively affected PEB (p-value = 0.001). The data below show that the study's results mean that **H1 was supported.** Meanwhile, EL influenced ME positively (p-value = 0.003). This value confirmed that the statistical test results show that **H2 was supported.** Testing H3 revealed a p-value of 0.007, proving that ME significantly influenced PEB. This study therefore has emphasized that ME is a mediator between EL and PEB. Table 6 presents the indirect influence of statistical test results.

Table 5. Path coefficient (Direct effect)

Constructs	**β**	**m**	**std**	**T**	**P Values**	**Decision**
EL -> ME	0.371	0.396	0.125	2.979	**0.003**	**Supported**
EL -> PEB	0.345	0.365	0.107	3.225	**0.001**	**Supported**
ME -> PEB	0.330	0.332	0.123	2.687	**0.007**	**Supported**

Mediation result

Table 6. Indirect effect

Constructs	β	m	std	T	LL	UL	P Values	Decision
EL -> ME -> PEB	0.122	0.134	0.076	1.618	0.021	0.323	0.106	**Not supported**

However, the mediating impact of ME between EL and PEB was insignificant. ME did not positively mediate the relationship between EL and PEB as the following values indicate :β = 0.100, t = 1618: LL = 0.023, UL = 0.328, p< 0.106; here, the t-values are less than the threshold value >1.96, so it does not show any significant impact on the dependent variable. Table 6 above shows that the t-values of all relations are below >1.96; also, the p-values are greater than 0.05, and the outcomes of LL and UL are both positive, indicating that the mediation effect is not confirmed (Preacher and Hayes, 2008); hence, **H4 was not supported** (Alam et al., 2021).

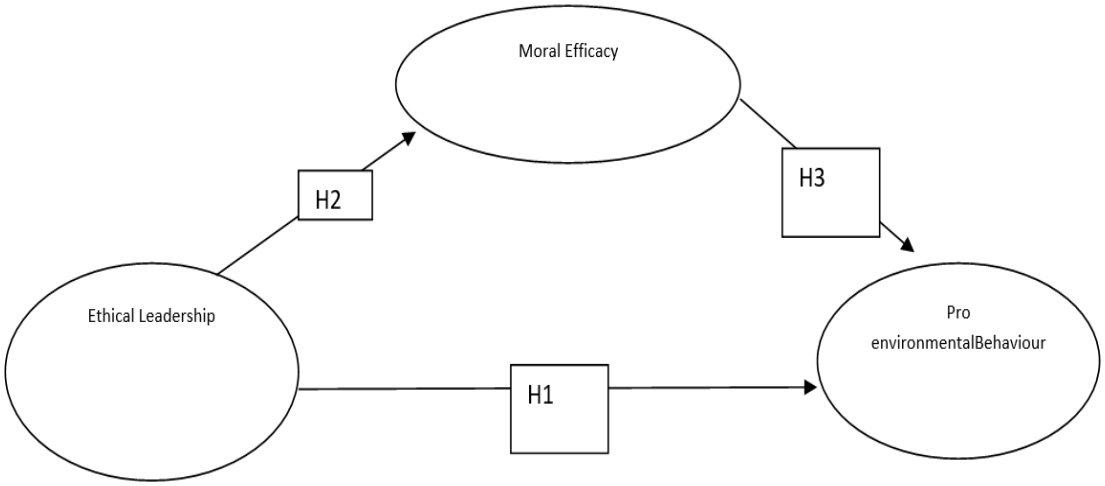

Figure 1. Proposed Model

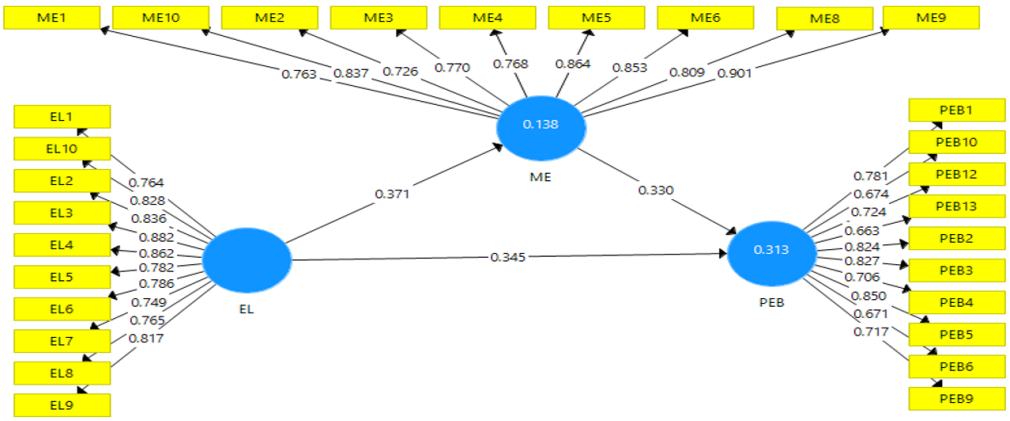

Figure 2. Path Model

Discussion

This study conceptualized and investigated the effect of moral efficacy (ME) as a bridge between ethical leadership (EL) and pro-environmental behavior (PEB). According to the findings, there is a significant connection between ME and PEB and between ME and EL. However, ME does not mediate the association between EL and PEB. Except for one, the data analysis results show that all three hypotheses are supported. The first hypothesis's prediction that EL and PEB are positively correlated is supported. Previous research has also shown an association between EL and PEB(Khan et al., 2018). Our findings and prior research both support the second hypothesis' prediction that EL positively impacts ME (Almutairi, 2020; Demir, 2020). As previously shown, ME is significantly related to PEB, supporting the third hypothesis (Rameshkumar,2020). Hypothesis 4 does not significantly substantiate the mediating role of ME.

The results are consistent with the hypotheses and demonstrate that EL behavior positively affects employee PEB. Credible leaders serve as exemplar models for their followers, who seem to them to provide direction in knowing how to complete their tasks. Their self-confidence is boosted by this learning experience, which boosts their ability to handle new problems successfully. The ME of followers is increased by the legitimacy and support of moral leaders, which enhance learning and confidence. Walumbwa (2011) points out that ME is noteworthy in this relationship. Zhou et al. (2011)find that leaders' actions and organizational resources have a more significant influence on followers' behaviors.

Furthermore, the conservation of resources theory contends that resources in an organization are invested in creating new resources (Hobfoll, 2014). Since ethical leaders give followers resources—both material and emotional—which are appreciated, followers can give back by using these resources to create other resources according to expectations. Leadership creates a positive climate that encourages people to act sustainably within their organizations (Kouzes & Posner, 2013). Aquino & Reed (2002) contend that psychological and environmental factors influence behavior, shedding light on the significance of a leader's behavior and creating an atmosphere that encourages ME.

EL in the service and manufacturing sectors influences the PEB of employees, with some distinctions due to the nature of operations. The service sector focuses on a culture of environmental responsibility, green practices integration, and empowerment through communication. Service-sector companies have less environmental impact than manufacturing, making green initiatives easier to implement. Ethical leaders in the service sector emphasizesustainability, transparency, and support for eco-friendly practices to maintain a positive reputation and competitiveness. Manufacturing operations have greater environmental impacts, requiring sustainable practices, waste reduction, and minimization of environmental harm. EL in manufacturing companies involves sustainability in decision-making, eco-friendly technologies, and stakeholder engagement for transparency. Leaders in manufacturing face challenges in changing practices, overcoming resistance, and balancing environmental goals with efficiency and profitability. While EL principles may be consistent, their application and emphasis will vary in the service and manufacturing sectors based on specific challenges. Both sectors benefit from EL's promotion of PEB, and its contribution to environmental sustainability and organizational success.

Practical Implications

This study offers valuable insights for management. Through an examination of the connections between EL, ME, and PEB, this research offers several practical implications. First and foremost, the concept of EL has garnered significant importance and attention in emerging economies like India. The process of industrialization in India has resulted in various environmental challenges, including the emission of CO2, depletion of natural resources, and shortages of water and electricity (Ansari, Farrukh & Raza, 2021).The adoption of green behaviors by EL can have a positive impact on PEB and motivate individuals to refrain from engaging in practices that harm the environment. Notably, leaders play an increasingly influential role in predicting the green behaviors of employees. Our findings demonstrate that ethical leaders guide their followers towards environmentally friendly actions. Consequently, appointing a leader with high ethical standards can yield desired outcomes from employees. Aselage & Eisenberger (2003) emphasize that a leader is not a solitary entity but rather a representative of an organization who contributes to aligning the values of both the organization and its individuals. In this context, employees willingly follow their leaders and adhere to organizational practices, as a leader's role is aligned with the strategic directions and practices of the organization (Ahmad & Umrani, 2019). Based on these findings, it can be assumed that when organizations and leaders embrace PEB through ME from the outset, employees are more likely to exceed their conventional roles. Furthermore, leaders can influence the PEB of employees by implementing robust ethical rules and regulations. These rules and regulations are essential for encouraging green behaviors such as waste reduction, paper conservation, recycling, and energy-saving, all of which contribute to environmental protection. Secondly, leadership plays a crucial role in fostering a commitment to environmental protection among employees. When leaders demonstrate their commitment to engaging in pro-environmental behaviors, their followers also exhibit a commitment to adhering to environmental regulations and policies (Safari et al., 2018). Consequently, organizations can benefit from EL by enhancing employee commitment to environmental sustainability and PEB. Lastly, this study holds great significance for managers and policymakers who are concerned about environmental issues. It offers solutions for companies operating in India and elsewhere in the world by highlighting the importance of EL in enhancing employee ME and PEB, both of which are crucial for environmental sustainability.

Conclusion

In summary, this study concludes by addressing the questions of what, why, when, and how EL promotes PEB while being morally effective as a facilitator. We propose that PEB is significant for the success of business. To better understand PEB, this study examined how the employee's ME and the immediate supervisor's environmental and ethical leadership interact to predict PEB. In order to advance the understanding of encouraging PEB in organizations, the findings of this research will inspire future potential researchers to create and test further new intricate models involving numerous mediators and facilitators. The study suggests that EL is critical in supporting PEB.

Limitation

Although this research makes several contributions, a few limitations should be noted as they provide valuable information for future research. The first caveat is that it considers only one constraint, namely ME, which reinforces the impact of EL on the PEB. Finding out more about additional personality qualities or contextual elements that might have an impact on this connection, such as ethical identity, ecological values, and perceived organizational support, would be exciting (Kuenzi et al., 2020; Shen et al., 2018). This research has established a mechanism for achieving PEB. It would be fascinating to research how EL affects PEB. It might also be unusual to examine further factors that influence the relationship between EL and PEB, such as the awareness of employees and a harmonious passion for the environment. This research has contributed to the social learning theory, but it is possible to consider further theoretical frameworks to understand the introduction of PEB. For instance, the social information processing theory (Salancik et al., 2013), the organizational "embodiment" of supervisors (Eisenberger et al., 2010), and "lookout" information notices, which may be more relevant in this regard (Saleem et al., 2020). Ashforth (2009) and Hameed et al. (2022) used the social identity theory, according to which context-specific organizational initiatives and regulations that considered stakeholder demands and the performance of the economy, society, and environment enhance organizational identification and reduce unproductive employee behavior. Investigating the consequences of EL on a wider scope of organizational outcomes, such as employee well-being and innovation, may provide valuable insights for future research.

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