

# Nature Connectedness and Pro-Environmental Behavior: Role of Mindfulness and Perceived Effectiveness

<sup>1</sup>Zunaira Arshad; <sup>2</sup>Yasmine Muhammad Javaid Iqbal; \*<sup>3</sup>Bilal Latif; <sup>4</sup>Adnan Jamil

<sup>1</sup>MPhil Scholar, NUST - Business School, Islamabad, Pakistan, [zunaira.mshr22nbs@student.nust.edu.pk](mailto:zunaira.mshr22nbs@student.nust.edu.pk)

<sup>2</sup>Assistant Professor, NUST - Business School, Islamabad, Pakistan, [yasmine.iqbal@nbs.nust.edu.pk](mailto:yasmine.iqbal@nbs.nust.edu.pk)

<sup>3</sup>Assistant Professor, Department of Leadership and Management Studies – National Defence University Islamabad, Pakistan, [bilallatif@ndu.edu.pk](mailto:bilallatif@ndu.edu.pk)

<sup>4</sup>Assistant Professor, Department of Leadership and Management Studies – National Defence University Islamabad, Pakistan, [adnan@ndu.edu.pk](mailto:adnan@ndu.edu.pk)

## ABSTRACT

*The study investigates the impact of connectedness to nature (CTN) on the voluntary pro-environmental behavior (VPEB) of employees in the hospitality and tourism sector of Pakistan along with the mediating impact of employee mindfulness (EM) and the moderating effect of perceived environmental effectiveness (PEE) in light of the re-perceiving theory of mindfulness. This study focused on investigating four variables; connectedness to nature, employee mindfulness, voluntary pro-environmental behavior and perceived environmental effectiveness. This is a quantitative study that gathered cross-sectional data from 277 full-time professionals employed in the tourism and hospitality sector of Pakistan. Data collection was done over six months duration; September 2023 to February 2024. Data analysis is done by using SPSS and PLS-SEM; partial least squares-structural equation modelling. The findings of the study showed a significant indirect effect on employees' PEB. CTN of employees is linked with EM which positively influences the employee's voluntary pro-environmental behavior at the workplace. The mindfulness of an employee regarding his or her actions positively affects perception, which in turn leads to pro-environmental behaviors at the workplace. When individuals are in contact with nature and are mindful of their actions, they develop the environmental attitudes to deal with it and their perception related to environmental effectiveness is affected positively. Overall, this study contributed to theoretical literature by investigating new relationships between existing variables. It added value through practical implications for organizations in the hospitality and tourism industry. According to the findings, policymakers and managers should understand the importance of programs and initiatives that can create employee mindfulness and help them connect to nature, resulting in a changed effective perception towards voluntary pro-environmental behavior. Guidelines and policies can change the perception of employees toward environmental concerns. They can design reward-based programs and motivation campaigns that capture the right talent for the environment and organization and help in retaining them.*

**Keywords:** *Connectedness to Nature, Employee Mindfulness, Voluntary Pro-environmental Behavior, Perceived Environmental Effectiveness, Tourism and Hospitality Industry, Pakistan, Re-perceiving theory of mindfulness*

## INTRODUCTION

Every decision we make, from the products we buy to the way we travel, is an opportunity to champion sustainability and protect our planet. Speaking of travel and choices, the first thing that comes to mind is hospitality and tourism. This study is focused on investigating the different variables such as connectedness to nature, employee mindfulness, pro-environmental behavior and environmental effectiveness in context of Pakistan hospitality and tourism sector. According to “Global Climate Risk Index 2021”, Pakistan has been ranked as the 8th most vulnerable country due to climate change. Recently, tremendous changes have been observed in the environment all along the world including Pakistan which includes cyclones, floods, earthquakes, heatwaves, and much more. According to the International Labor Organization report, Pakistan ranks 176th of 180 countries in the latest Environmental Performance Index (EPI), 2022.

The reason for environmental degradation can be due to tourism and hospitality due to its practices and usage of non-renewable resources consumption, but it also adds to local businesses and industries (Arshad et al., 2018). Previous literature has shown that the hospitality industry falls under the category of largest sectors where environmental and 5 economic impacts are showing up and rising (Manoj et al., 2020). Yusoff et al, (2020) highlighted the dark or affective side of the hospitality industry that it has been exerting 20.6 kilograms of CO<sub>2</sub> per night per hotel, producing one kg of waste per customer in a day, and consuming 218 gallons of water for each room in a day. Consumption and resource usage keep on increasing and becoming more costly with time.

The wise and strategic usage of these resources is necessary to deal with the upcoming challenges of environmental deterioration, high-level water consumption, and wastage mixing up with the natural environment. A bundle of such events has also changed the pattern of and the behavior of people toward the environment (Zahid, 2023).

Past research has supported the concept and the fact that employees are the ones who create, develop, and advocate the projects and behaviors that lead to the sustainability of the environment and nature (Manosuthi et al., 2024). Literature suggests investigating the role of employee mindfulness combined with other interventions so that it results in enhancing employee engagement and training employees to develop employee mindfulness (Yu et al., 2023). J. Chen et al., (2023) discussed in his findings that memorable tourism experiences or services can increase motivation for green consumption, while connectedness to nature and environmental awareness played the mediating role between tourism experience and green consumption. This study forwards the limitation to investigate that being connected to nature and having green consumption intention can only be due to a single reason; it should be studied with other factors such as environmental perception and effectiveness behaviors.

Though previous literature supports the relationship of connectedness to nature and voluntary and in-voluntary pro-environmental behaviors, it directs future studies to investigate the relationship with other constructs such as environmental attitudes, employee mindfulness, and well-being in the setting of developing countries. Past literature has investigated the impact of employee engagement in pro-environmental behavior at workplace helps in reducing hazards and boosting of green performance of employees and environment (Saifulina et al., 2023), but the lack of adequate literature leads to investigate the role of pro-environmental behavior of employees in tourism and hospitality industry. In the past study, the effect of employees' mindfulness on VPEB was studied, and how it changes over time (Kumar et al., 2022). This research investigates the correlation between an employee's sense of CNS and EM and the employee's VPEB. There existed a gap in studying the model with any mediator and moderator, so now this model is being studied with EM as mediator and PEE as moderator.

This study seeks to provide valuable insights into the relationships between voluntary pro-environmental behavior and connectedness to nature, employee mindfulness, and perceived environmental effectiveness in the tourism and hospitality sector of Pakistan. This study aims to investigate the relationships between connectedness to nature, voluntary pro-environmental behavior, employee mindfulness, and perceived environmental effectiveness in the tourism and hospitality sector of Pakistan. The objectives of this research are as follows:

1. To investigate the effect of connectedness to nature of employees on voluntary pro-environmental behavior
2. To investigate the effect of connectedness to nature of employees on employee mindfulness
3. To investigate the effect of employee mindfulness on the voluntary pro-environmental behavior of employees
4. To investigate the mediating role of employee mindfulness between connectedness to nature of employees and voluntary pro-environmental behavior
5. To investigate the moderating role of perceived environmental effectiveness between employee mindfulness and voluntary pro-environmental behavior

This study's objectives can be achieved by focusing on the following research questions:

1. Does connectedness to nature of employees lead toward voluntary pro-environmental behavior?
2. Does connectedness to nature of employees influence employee mindfulness?
3. Does employee mindfulness influence the voluntary pro-environmental behavior of employees?
4. Does employee mindfulness mediate the relationship between connectedness to nature and voluntary pro-environmental behavior?
5. Does perceived environmental effectiveness moderate the relationship between employee mindfulness and voluntary pro-environmental behavior of employees?

This study and its investigation are significant as they aim to expand the knowledge on the relationship of connectedness to nature leading to voluntary pro-environmental behavior while employee mindfulness mediates the relationship and perceived environmental effectiveness moderates the relationship.

Why does being connected to nature and concerned about the environment matter a lot? Pakistan is a developing country, and with carbon emissions, pollution, bad air quality, poor water, and worsening living conditions day by day, it seems like the topic of being careful about the environment should be paid attention to. This research significantly adds to the literature by investigating the relationships through the re-perceiving theory of mindfulness.

Literature has shown that in the context of the tourism and hospitality industry, employees experience meaningfulness, belongingness, psychological well-being, and connectedness to nature and are more involved in pro-environmental behaviors when they are exposed to nature, planet and all living things around them (Rezapouraghdam et al., 2023). Studies support the concept that being connected to nature and having a harmonious passion for natural and outdoor activities has a positive effect on employee nature connectedness, workplace well-being, and psychological well-being (C. Zhang et al., 2023).

These studies conducted in different cultures, countries, and different environmental locations led to investigating the relationship in a much less explored context such as in Pakistan, and doing this while working on a new relationship. The overlooked area where employees working in the tourism and hospitality sectors of Pakistan are studied is the main target of this research. Moreover, this model studies the mechanism of mediation and moderation presented in research. Hence, with all this significance, this research focuses on investigating the relationship between connectedness to nature, voluntary pro-environmental behavior, mediation of employee mindfulness, and moderation of perceived environmental effectiveness in the tourism and hospitality sector of Pakistan.

## **LITERATURE REVIEW**

Previous studies fitting to this study have been summed up in the following table. This proposed study is based on the re-perceiving theory of mindfulness and conducted in the hospitality and tourism sector of Pakistan. This study opts for a quantitative approach as adopted by other studies as well.

Previous studies have studied connectedness to nature in mediating role, the current study will examine the relationship where perceived environmental effectiveness acts as the moderator and employee mindfulness as the mediator where connectedness to nature acts as the independent variable and voluntary pro-environmental behavior as the dependent variable.

## Re-perceiving Theory of Mindfulness

Mindfulness is a socio-cognitive construct developed by Langer, defined as “a state of openness to novelty in which the individual actively construct categories and distinctions” (Andersen, 2017). It is one of the meditative practices that urges individuals to focus on present moment experience with new perception and thinking instead of looking at it with past judgement (Madonna, 2018).

**Table 2.1 Summary of Past Literature**

Author	Title	Year	Country	Methodology	Variables
Kumar & Panda	The effect of Employee Mindfulness on Voluntary Pro-Environmental Behaviour at the Workplace: the mediating role of Connectedness to Nature	2022	India	Quantitative	IV: Employee Mindfulness Mediator: Connectedness to Nature DV: Voluntary Pro-Environmental Behaviour
Gajda & Zbierowski	Exploring the consequences of mindfulness at work: the impact of mindful organizing on employee attitudes and behavior toward work and organization	2023	Poland	Quantitative	IV: Mindful Organizing Mediator: Organizational Commitment Moderator: Environment DV: Organizational Citizenship Behaviour, Work Motivation
Yu et al	Abusive supervision and emotional labor on a daily basis: the role of employee mindfulness	2023	Hong Kong	Quantitative	IV: Daily abusive supervision Mediators: Daily work engagement DV: Daily emotional labor Moderator: Employee Mindfulness
Chen et al	How does the rural tourism experience affect green consumption in terms of memorable rural-based tourism experiences, connectedness to nature, and environmental awareness?	2023	China	Quantitative	IV: Rural tourism experience Mediators: Connectedness to nature, Environmental awareness DV: Green consumption
Teixeria et al	Pro-Environmental Behaviours: Relationship with nature visits, connectedness to nature and physical activity	2022	Portugal	Quantitative	IV: Natural environment, Physical activity Mediators: Connectedness to nature DV: Pro-environmental behaviours
Saifulina et al	Effects of personal environmental awareness and environmental concern on employee’s voluntary pro-environmental behavior: a mediation analysis in emerging countries	2023	Spain	Quantitative	IV: Personal environmental awareness, Environmental concern Mediators: Environmental values and attitudes, Harmonious environmental passion DV: Voluntary Pro-environmental behaviour at work
Usman et al	Analysis of asymmetries in the nexus among clean energy and environmental quality in Pakistan	2020	Pakistan	ARDL	IV: Alternative and nuclear energy, Combustible renewables and waste, Electricity consumption, National income of Pakistan

Tanveer et al	Green HRM and hospitality industry: challenges and barriers in adopting environmentally friendly practices	2024	Pakistan	Qualitative	Identify the role of HR professionals, strategies, challenges, and barriers in sustainability performance (SP) through green HRM
---------------	--	------	----------	-------------	--

The theory linked with this research is the re-perceiving theory that focuses on the hypothesized model. Re-perceiving is a meta mechanism of action. In the re-perceiving mechanism of mindfulness, an individual can let go of previous thoughts and contents by experiencing new moments more deeply and developing clear objectives and purpose. The model of mindfulness contains three components that were studied initially in the literature; “on purpose”, “paying attention” and “in a particular way” (Shapiro et al., 2006). It is defined as the awareness that a person develops by paying attention to the present moment with more capacity and in a way that is focused on learning and having a less egocentric approach and more objective way (Shapiro et al., 2012). According to the literature, the perspectives shift as the development happens, which is facilitated by mindfulness. Re-perceiving and shifting in perspective can also contribute to positive outcomes that are generated by the practice of mindfulness. It helps identify what is truly meaningful for individuals and what they truly value. Previous literature has investigated the mechanism of mindfulness with leadership features as well and resulted in findings that people leading others should be mindful of their activities and reconsider them so that they can perform their best (Babu et al., 2022).

In the context of the present research, this theory applied as that when employees are more mindful of their actions and are more connected to nature, their perspectives shift and they develop a new sense of mindfulness and responsibility towards the environment and practicing behavior. Re-perceiving theory supported by underpinning factors such as “on purpose”, “paying attention”, and “in a particular way” contributes toward the factor of employee mindfulness towards voluntary pro-environmental behavior. When their perception and beliefs towards environmental effectiveness change, their mindfulness brings more originality and value which results in positive changes. The present study proposes that employee mindfulness will positively influence their voluntary pro-environmental behavior at the workplace and employees will develop more connectedness to nature.

## Hypothesis Development

### 1- *Connectedness to nature and voluntary pro-environmental behavior*

Previous research conducted in the SME sector shows that connectedness to the nature of employees develops a significant indirect effect on the pro-environmental behavior of employees in which CSR also plays its role (Hongxin et al., 2022). It also shows that when employees’ pro-environmental behavior and connectedness to nature are linked, both are more likely to thrive in the financial performance of an SME or an organization. Similarly, both are supposed to relate in

the same way when studied in the context of the tourism and hospitality industry. This study investigates whether individuals having nature contact have a positive relationship with nature connectedness and whether there are more chances of volunteering for pro-environmental activities. Employees who are more in contact with nature due to their jobs, such as employees from the hospitality and tourism industry, are more likely to participate in such practices and are more likely to be close and connected to nature. Even though past studies show the relationship between these two variables, there is still a lack of empirical evidence exhibiting that in the hospitality and tourism industry of Pakistan, the connectedness of the nature of employees has a significant positive impact on voluntary pro-environmental behavior of employees and it might urge them to take green initiatives while being a part of organizations. Therefore, this research proposes the following hypothesis:

**H1: CNS has a positive impact on VPEB.**

### *2- Connectedness to Nature and employee mindfulness*

Research conducted before in manufacturing sectors shows the result that connectedness to the nature of employees plays a mediating role in employee mindfulness about voluntary pro-environmental behavior (Kumar et al., 2022a). Another study conducted at a Canadian university showed the results that nature connectedness is significantly correlated with emotional well-being and mindfulness (Howell et al., 2011). Previous literature has investigated the relationships between mindfulness, connectedness with nature, and ecologically sustainable behavior of individuals. Another study investigates the relationship between employees' mindfulness and the mediating role of connectedness to nature, and findings encouraged the intervening role of connectedness to the nature of employees (Kumar et al., 2020). Being connected to nature means employees are more likely to be mindful of their actions, behaviors, and practices. To investigate this relationship, this study proposes the following hypothesis:

**H2: CNS has a positive impact on EM.**

### *3- Employee mindfulness and voluntary pro-environmental behavior*

Previous research conducted in the manufacturing sector of India showed the result that EM positively influences the employee's voluntary pro-environmental behavior at the workplace (Escario et al., 2020). Studies have shown that EM positively influences the employee's VPEB at the workplace, which means that more mindful employees can show more commitment to environmentally friendly behaviors. Past literature has investigated the role of mindfulness either directly or indirectly in enhancing workplace pro-environmental behaviors. Results have shown that practicing mindfulness urges people to engage in more pro-environmental behaviors (Patel & Holm, 2018). However, there is an inadequate amount of literature that further investigates this relationship within an organizational context. Gärtner, (2013) has also observed in his study that at the workplace, managers who are mindful of their actions and surroundings are more likely to engage in workplace pro-environmental behaviors. They do so not because they are liable to the underlying pro-environmental values but because others are also attached to such values, and not engaging may have opportunity cost attached to it. Organizations and employees who are in touch with nature and are more linked to their mindful behaviors are more likely to participate in

voluntary pro-environmental behaviors and activities. Based on this, the following hypothesis is proposed:

**H3: EM has a positive impact on VPEB.**

*4- The mediating effect of employee mindfulness*

Past research has investigated that green mindfulness positively and significantly mediates the relationship between green performance within the organization and green leadership (Nisar et al., 2017). It shows that employee mindfulness exhibits the mediation effect. Reb et al., (2019) in their research, investigated the relationship between leader mindfulness and employee performance through the lenses of organizational justice and leader-member relations. Findings of the literature have supported the concept that leader mindfulness has a significant impact on employee performance, benefits employees, and helps develop better relations. This means that the mediating role of mindfulness impacts the relationship positively. It is more likely to be another way that employees associated with the hospitality and tourism industry can be mindful of their actions relating to the environment and nature, and it may lead to better environmental performance, which urges them to practice green behaviors. The same literature urges to fill the absence of work that explains the individual and workplace factors that affect mindfulness and predicts how and when they can influence workplace outcomes. Based on this, the following hypothesis is proposed:

**H4: EM mediates the relationship between CNS and VPEB**

*5- Moderating effect of perceived environmental effectiveness*

A past study conducted to investigate the moderating mechanism of consumers' perceived environmental effectiveness shows that it can significantly moderate the chain mediation path by reducing the positive effect of cognitive dissonance on online return intention (Lv & Liu, 2022). If employees' perception of the environment is mindful, then they'll be more committed to voluntary pro-environmental behavior (Saleem et al., 2020). It shows that individuals are concerned about the effectiveness of the environment, and the degree of awareness related to such issues is linked to people's concerns. There are many ways to deal with environmental concerns, but this can be done when individuals are in contact with nature and are mindful of their actions so that they develop the environmental attitudes to deal with it (Escario et al., 2020). However, the presence of limited literature urges us to investigate this relationship where perceived environmental effectiveness plays a moderating role between employee mindfulness and voluntary pro-environmental behavior, which leads to the following hypothesis:

**H5: PEE moderates the relationship between EM and VPEB**

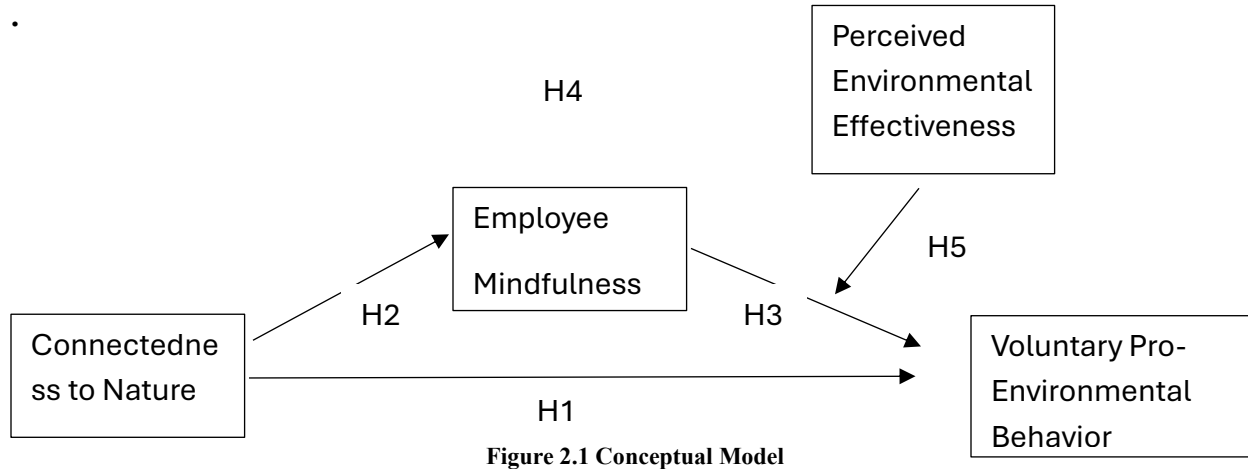


Figure 2.1 Conceptual Model

Table 2.2 Summary of Hypotheses

Hypothesis Number	Hypotheses Statement
<i>H1</i>	Connectedness to nature has a positive impact on voluntary pro-environmental behavior.
<i>H2</i>	Connectedness to nature has a positive impact on employee mindfulness.
<i>H3</i>	Employee mindfulness has a positive impact on voluntary pro-environmental behavior.
<i>H4</i>	Employee mindfulness mediates the relationship between connectedness to nature and voluntary pro-environmental behavior.
<i>H5</i>	Perceived environmental effectiveness moderates the relationship between employee mindfulness and voluntary pro-environmental behavior.

## METHODOLOGY

### Population

This study focuses on Pakistan's hospitality and tourism sector as the target population. The reason for selecting this specific sector is the close relationship of variables with the individuals targeted in these industries (Kumar et al., 2022b). Employees and managers are the ones who are in close relationship with nature and the environment, and being mindful of their actions and voluntary involvement in eco-friendly activities leads to the effectiveness of the environment (Tanveer et al., 2024; H. Zhang et al., 2023). The reason for choosing this specific industry is the huge margin of tourism in Pakistan (Zahid, 2023) and industries focusing on eco-friendly and sustainable practices trends (Raza et al., 2021)

### Sample Size & Sampling Techniques

For this research, a power analysis was performed using the G\*power. The results of the analysis showed that the minimum sample size for this research should be 110 samples (n=85) (Hair, n.d.). It gave a minimum sample size of 110, which is essential to achieve eight percent statistical power for a medium effect of 0.16 and a significance level of 0.06 (6%). However, a

complex model is under study and will be analyzed using structural equation modelling, so this sample size was not considered adequate. Studies conducted in the past suggest a minimum sample size of more than 160 can be used for correlation analysis and the validity of results from the analysis (Kline, 2023; Memon et al., 2020).

For this research, the non-probability sampling technique is used followed by snowball and purposive sampling. The main reason for using the non-probability sampling technique is that there is no comprehensive list of all hotels, resorts and travel agencies compiled by the government. According to the last survey, data was taken only from famous hotels and was conducted in 2010. Since the target sector is subjective, the random samples cannot be chosen, hence the non-probability sampling technique.

This technique is considered best as it includes all subjects' representation of the entire population. Data was collected over period of six months; September 2023 to February 2024. Data was collected from professionals working in the hospitality and tourism sector of Pakistan.

### Operationalization

A 28-item questionnaire is used to measure connectedness to nature, employee mindfulness, perceived environmental effectiveness, and voluntary pro-environmental behavior constructs. All scales of variables were adopted from existing measures. Scales are taken that have the most suitable and reliable items with respect to the sample and targeted industry. The questionnaire was in the English language so that they are readable and understandable. A 5-point Likert scale was used to measure the responses of participants.

**Table 3.1: Operationalization of Variables**

Variable	Items	Reliability	Description
Connectedness to Nature (Nisbet et al., 2009)	6-Item based scale	0.61 Reliability (Luong, 2022)	"I always think about how my actions affect the environment" (Nisbet & Zelenski, 2013)
Employee Mindfulness (Carlson & Brown, 2005)	5-item based scale	0.87 (Carlson & Brown, 2005).	"I do jobs or tasks automatically without being aware of what I'm doing."
Voluntary pro-environmental behavior (Kumar et al., 2022a)	13-item based scale	0.90 (Kumar et al., 2022a).	"I suggest to my co-workers that they reduce the amount of materials they use."
Perceived environmental effectiveness (Leary et al., 2014; Liang et al., 2020)	4-item based scale	0.79 (Y Kim, 2011)	"I believe I can contribute to the solution of environmental problems."

## ANALYSIS & RESULTS

The collected data was analyzed by using software such as SPSS and Smart PLS. A missing value analysis was conducted to make sure that data collected is good to go for data analysis. The demographic statistics are given below:

### Structural Equation Modeling

#### 1- Measurement Model Assessment

There were two model assessments: measurement and structural. The first one checked the internal consistency reliability, convergent validity, and degree of validity of the study's constructs. The measurement model of this research was tested to determine the convergent validity (CV), degree of validity (DV), and internal consistency reliability.

**Table 4.1: Demographic information of respondents**

Variable	Category	Frequency	Percentage
<b>Gender</b>	Male	213	76.9
	Female	64	23.1
	Other	0	0
<b>Age</b>	Below 25	19	6.8
	26-35	131	47.5
	36-45	115	41.4
	46 years and above	12	4.3
<b>Qualification</b>	Bachelors	152	54.87
	Masters	77	27.8
	PhD	21	3.97
	Diploma or Certificate	34	12.2
	Other	3	1
<b>Job Level</b>	Managerial	193	69.8
	Non-Managerial	76	27.5
	Other	8	2.7
<b>Industry</b>	Tourism	153	55.2
	Hospitality	124	44.8

<b>Connectedness to Nature</b>	Yes	256	92.5
	No	17	6.1
	Maybe	4	1.4
<b>Note:</b> n = 277			

### ***Internal Consistency Reliability***

It is “a measure of the degree to which the items reflect the latent constructs” (Richter et al., 2016). Even though the research items or scales are adopted and are previously used and are more reliable, there is still a need to check the reliability and validity of scales as other factors may be involved, such as the responding population, variable constructs, and structure. If the scale or items used fulfill the purpose of the question “What is it that the researcher wants to do with the measures?” or “What purpose is this research serving with these variables’ scales?” then they are a good match but still reliability and validity needs to be checked. Internal consistency reliability was checked for this study as well.

The acceptable value to report composite reliability is  $\pm \geq 0.6$  in exploratory research and 0.7 in all other studies (Richter et al., 2016). The value of internal consistency reliability should exceed the threshold value of 0.70.

In the case of an ideal situation, this value should lie between 0.70 and 0.90. All the variables for this study had values that supported the reliability of scales and variables. The findings revealed that for the 28-item questionnaire, the composite reliability (i.e., rho\_c) for all variables exceeded the cut-off value of 0.7, as also mentioned in table 4.2, demonstrating strong internal consistency. Connectedness to nature (0.889), employee mindfulness (0.882), perceived environmental effectiveness (0.884), and voluntary pro-environmental behavior (0.870).

**Table 4.2 Internal consistency reliability and convergent validity**

Constructs	Measurement item	Loadings	CR	AVE
Connectedness to Nature	CNS1	0.767	0.889	0.578
	CNS2	0.772		
	CNS3	0.698		
	CNS4	0.723		
	CNS5	0.781		
	CNS6	0.744		
Employee Mindfulness	EM1	0.764	0.882	0.573
	EM2	0.689		
	EM3	0.768		
	EM4	0.782		
	EM5	0.796		
Perceived Environmental Effectiveness	PEE1	0.742	0.884	0.590

	PEE2	0.687		
	PEE3	0.783		
	PEE4	0.821		
Voluntary Pro-Environmental Behavior	VPEB1	0.795	0.870	0.630
	VPEB2	0.780		
	VPEB3	0.783		
	VPEB4	0.694		
	VPEB5	0.810		
	VPEB6	0.706		
	VPEB7	0.768		
	VPEB8	0.865		
	VPEB9	0.870		
	VPEB10	0.701		
	VPEB11	0.708		
	VPEB12	0.811		
	VPEB13	0.711		

### ***Convergent Validity***

Convergent validity measures “the degree to which two measures of constructs that theoretically should be related, are indeed related” (*William M.K. Trochim, (2006). Convergent & Discriminant... - Google Scholar, n.d.*). It is done to check the theoretical correlation between the instruments employed and the measures of other constructs. This measurement is done to be aware of convergent validity evaluation, examining the item’s outer loadings and calculating the average variance extracted (AVE) (Hair, L.D.S. Gabriel, et al., 2019). The AVE value greater than 0.5 is preferred, which means that greater than 50 percent of the variance of reflective indicators has been accounted for by the latent variable, and a substantial coefficient of determination is a good indication of convergent validity. The value of outer loadings should be at least 0.708 or higher. An acceptable value for this is 0.5, as supported by the research (Avkiran, 2018; *Memon et al.,... - Google Scholar, n.d.*).

In this study, convergent validity was evaluated by examining the variation of each factor through the Fornell and Larcker criterion, which is the most widely used (Ab Hamid et al., 2017). If the extracted variance value is more than 0.5, convergent validity is shown (Memon et al., 2020). According to Bagozzi & Yi, (1988), values on and above 0.5 are acceptable. The table shows that the variance extracted values for all the variables is greater than 0.5. No item was removed as they fulfilled the 0.5 or 0.708 or higher value criterion. It shows that all variables have convergent validity.

### ***Discriminant Validity***

Among various types of validity evidence, organizational researchers are often required to assess the discriminant validity of their measurements (Green et al., 2016). The term “discriminant validity” was hatched by Campbell & Fiske, (1959) who gave a validation technique that tests can be invalidated by correlations that are too high with unrelated tests. It is the extent to which latent variable A discriminates from another latent variable (e.g. B, C, D). It means that a latent variable can account for more variance in the associated observed variables. Fornell and Larcker’s criterion was used to check the divergent validity in this study. According to this criterion, the square root of the average variance extracted from a construct should be larger than the correlation between the construct and other constructs in the model. The current study checked the discriminant validity by Fornell and Larcker’s criterion and did not neglect it. The results showed that the square root of the average variance extracted from each latent variable was greater than its correlation with other latent variables, as shown in the table.

**Table 4.3 Discriminant Validity (Fornell and Larcker criterion)**

	CNS	EM	PEE	VPEB
CNS	<i>0.802</i>			
Employee Mindfulness	0.763	<i>0.817</i>		
PEE	0.692	0.603	<i>0.878</i>	
VPEB	0.801	0.702	0.726	<i>0.783</i>

**Note:** Italic values on the diagonal represent the square root of AVE, while the other entries represent the correlations

### ***Structural Model***

Structured modeling is focused on providing a formal mathematical framework and computer-based environment for conceiving, representing, and manipulating various models (Geoffrion, 1987). The trend and discipline of modeling have advanced recently and very slowly compared to other disciplines, where models are solved and analyzed once they are brought into being. To address this imbalance, the trend has shifted towards structural modeling. It helps in analyzing the causal relationship between variables. For the structural model, SmartPLS 4.0 was used to test all the hypotheses: either direct, indirect, mediation, or moderation. In the structural model, researchers should report the coefficient of determination ( $R^2$ ) and describe the significance of the relationships. The  $R^2$  values indicate that connectedness to nature is 63 percent, explaining 51.3 percent of employee mindfulness, 59.8 percent of voluntary pro-environmental behavior, and 61.8 percent of perceived environmental effectiveness.  $R^2$  values are examined for this study and displayed in table 4.4.

**Table 4.4 Coefficients of determination ( $R^2$ )**

Latent constructs	Coefficient of determination $R^2$
Connectedness to Nature	0.632
Employee Mindfulness	0.513
Voluntary Pro-environmental Behavior	0.598
Perceived Environmental Effectiveness	0.618

### **Structural Model Evaluation**

A structural model helps analyze the effect-causal relationship between various constructs, whether direct or indirect. This study's hypothesized statements, including the direct, mediation, and moderation ones, were tested in SmartPLS 4.0. To check the valid results and for a two-tailed method to check the mediator, a bootstrapping technique of five thousand resamples was adopted (Hair, Sarstedt, et al., 2019).

#### ***Hypothesis Testing (Direct Effects)***

The results of the hypotheses indicate whether they are accepted or not. The result of *H1* indicates that connectedness to nature has a significant correlation with voluntary pro-environmental behavior, as hypothesized in the study (*H1*:  $\beta$  0.722, STDev: 0.034, P value < 0.001). For *H2*, the results show that connectedness to the nature of employees has a significant positive relationship with employee mindfulness (*H2*:  $\beta$  0.701, STDev: 0.060, P value < 0.001). For the third hypothesis, the results (*H3*:  $\beta$  0.613, STDev: 0.042, P value < 0.001) show that employee mindfulness has a significant positive relationship with voluntary pro-environmental behavior. The results are mentioned in the table 4.5.

#### ***Hypothesis 1: Connectedness to Nature and Voluntary Pro-Environmental Behavior***

The study found strong support for Hypothesis 1 (*H1*). The beta coefficient ( $\beta$ ) of 0.722 with a standard deviation (STDev) of 0.034 and a p-value of less than 0.001 indicates a highly significant positive relationship between connectedness to nature and voluntary pro-environmental behavior among employees. Research suggests that individuals connected to nature are more likely to perceive environmental issues as personally relevant and meaningful (Mayer & Frantz, 2004). A strong sense of connectedness to nature is associated with greater pro-environmental attitudes and behaviors, including recycling, energy conservation, and support for environmental policies (Schultz, 2001; Nisbet et al., 2009). Employees who feel connected to nature are likely to exhibit higher levels of voluntary pro-environmental behavior in workplace settings. This may include initiatives such as reducing waste, advocating for sustainable practices, and actively participating in environmental programs within the organization (Kaiser & Schultz, 2009).

#### ***Hypothesis 2: Connectedness to Nature and Employee Mindfulness***

*Bahria University Journal of Management and Technology (BJMT).2025, Volume 8, Issue 1*

The results for Hypothesis 2 (H2) indicate a beta coefficient ( $\beta$ ) of 0.701, with a standard deviation (STDev) of 0.060 and a p-value of less than 0.001. This suggests a significant positive relationship between connectedness to nature and employee mindfulness. Nature is often considered a conducive environment for fostering mindfulness. Exposure to natural settings can promote relaxation, reduce stress, and enhance cognitive functioning (Kaplan, 1995; Berman et al., 2008). Connectedness to nature may contribute to heightened attentional capacities and increased awareness of one's surroundings, which are central to mindfulness practices (Kabat-Zinn, 1994). In organizational contexts, employees who feel connected to nature may experience improved well-being and greater mindfulness. This can lead to enhanced job satisfaction, reduced burnout, and increased productivity (Ryan et al., 2010; Goodall et al., 2012).

### ***Hypothesis 3: Employee Mindfulness and Voluntary Pro-Environmental Behavior***

For Hypothesis 3 (H3), the study found a beta coefficient ( $\beta$ ) of 0.613, with a standard deviation (STDev) of 0.042 and a p-value of less than 0.001. This indicates a significant positive relationship between employee mindfulness and voluntary pro-environmental behavior. Mindfulness encourages individuals to act in accordance with their values and long-term goals. This includes fostering a sense of responsibility towards environmental sustainability and taking proactive steps to support eco-friendly initiatives (Brown & Kasser, 2005; Wamsler, 2014). Mindfulness training often enhances empathy and compassion towards others, including concern for environmental well-being and future generations (Davis et al., 2011; Hanley et al., 2015). Within organizational settings, employees who practice mindfulness are likely to engage more readily in voluntary pro-environmental behaviors. This may involve advocating for sustainable practices, participating in green initiatives, and promoting environmentally responsible actions among colleagues (Krasner et al., 2009; Reb et al., 2015).

The findings from these hypotheses underscore the interconnectedness between connectedness to nature, mindfulness, and voluntary pro-environmental behavior among employees. These relationships highlight the potential benefits of promoting environmental consciousness and mindfulness within organizational contexts, enhancing sustainability efforts, and fostering employee well-being and organizational commitment to environmental stewardship.

### ***Hypothesis Testing (Indirect Effects)***

An analysis was conducted to investigate the indirect effects by examining the mediation and moderation involved in hypotheses 4 and 5. Employee mindfulness mediates the relationship between connectedness to nature and voluntary pro-environmental behavior (H4:  $\beta$  0.601, STDev: 0.045, P value < 0.001). Similarly, perceived environmental effectiveness moderates the relationship between employee mindfulness and voluntary pro-environmental behavior (H5:  $\beta$

0.667, STDev: 0.027, P value < 0.001). Results of the structural model evaluation are listed in the form of table 4.6, along with accepted hypotheses.

***Hypothesis 4 Employee mindfulness mediates the relationship between connectedness to nature and voluntary pro-environmental behavior.***

The analysis found strong support for Hypothesis 4 (H4). The beta coefficient ( $\beta$ ) of 0.601, with a standard deviation (STDev) of 0.045 and a p-value of less than 0.001, indicates that employee mindfulness significantly mediates the relationship between connectedness to nature and voluntary pro-environmental behavior. Literature suggests that connectedness to nature enhances mindfulness. Nature has restorative effects on attention and cognitive function, which are key components of mindfulness (Kaplan, 1995; Berman et al., 2008). Employees who feel connected to nature will likely experience greater mindfulness, characterized by heightened awareness and presence at the moment (Kabat-Zinn, 1994; Ryan et al., 2010). Mindfulness encourages behaviors aligned with one's values and long-term goals, including environmental sustainability (Brown & Kasser, 2005; Wamsler, 2014). Mindful employees are more likely to engage in voluntary pro-environmental behaviors, such as reducing waste, conserving energy, and participating in green initiatives (Krasner et al., 2009; Reb et al., 2015).

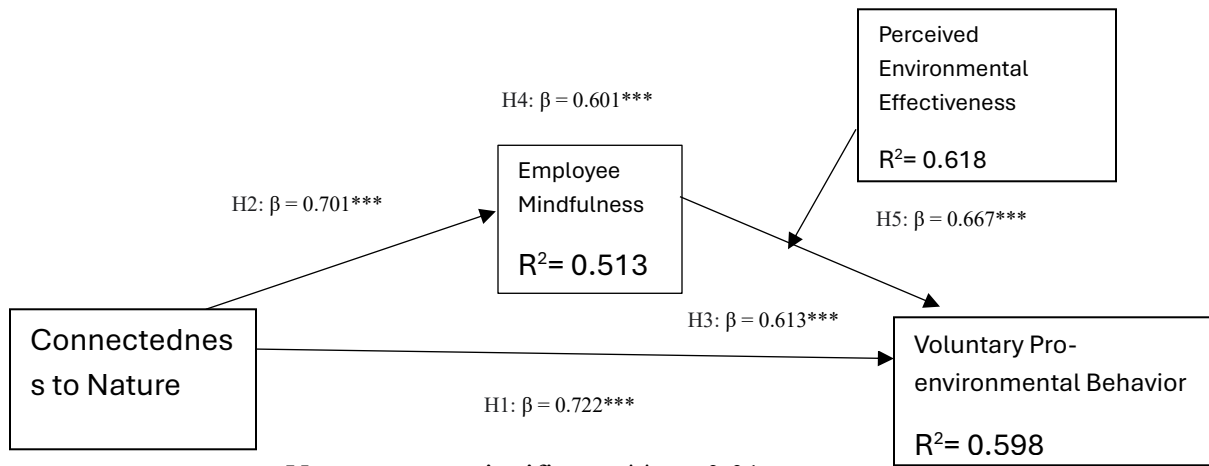
The significant mediation effect indicates that connectedness to nature influences voluntary pro-environmental behavior by enhancing employee mindfulness. This highlights the importance of fostering a connection with nature to promote sustainable behaviors in the workplace.

***Hypothesis 5: Perceived environmental effectiveness moderates the relationship between employee mindfulness and voluntary pro-environmental behavior.***

The analysis found strong support for Hypothesis 5 (H5). The beta coefficient ( $\beta$ ) of 0.667, with a standard deviation (STDev) of 0.027 and a p-value of less than 0.001, indicates that perceived environmental effectiveness significantly moderates the relationship between employee mindfulness and voluntary pro-environmental behavior. As previously discussed, mindfulness fosters pro-environmental behaviors by enhancing awareness, empathy, and alignment with environmental values (Brown & Kasser, 2005; Wamsler, 2014). Perceived environmental effectiveness refers to an individual's belief in the effectiveness of their actions to positively impact the environment (Bandura, 1997; Bamberg & Möser, 2007). Employees who perceive their environmental actions as effective are more motivated to engage in and sustain these behaviors (Homburg & Stolberg, 2006).

The significant moderation effect indicates that the positive relationship between employee mindfulness and voluntary pro-environmental behavior is stronger when employees perceive their environmental actions as effective. This suggests that fostering a sense of environmental

effectiveness can amplify the impact of mindfulness on pro-environmental behavior. Employees who believe mindful actions make a difference are likelier to engage in and promote sustainability initiatives (Schultz et al., 2007).



Note: ns, non-significant.  $^{**}p < 0.01$

Figure 4.2 Structural model

Table 4.5 Hypotheses Testing (Direct Effects)

Note:  $^{***}p < 0.001$ ; STDEV, Standard Deviation

Hypotheses	Path	Beta	STDEV	t-value	P value	Decision
H1	CNS -> VPEB	0.722	0.034	18.760	0.000	Supported
H2	CNS -> EM	0.701	0.060	18.325	0.000	Supported
H3	EM -> VPEB	0.613	0.042	12.092	0.002	Supported

Table 4.6 Hypotheses Testing (Indirect Effects)

Note:  $^{***}p < 0.001$ ; STDEV, Standard Deviation

Hypotheses	Path	Beta	STDEV	t-value	P value	Decision
H4	EM -> CNS -> VPEB	0.601	0.045	11.201	0.000	Supported
H5	PEE x EM -> VPEB	0.667	0.027	13.525	0.000	Supported

## CONCLUSION

### Research Findings

This research aimed to investigate the relationship between connectedness to nature of employees and voluntary pro-environmental behavior in Pakistan's tourism and hospitality sector. This study also examined the relationship of connectedness to the nature of employees with their employee mindfulness and the relationship of employee mindfulness with voluntary pro-environmental behavior. This study also explains the moderating role of perceived environmental effectiveness between employee mindfulness and VPEB in the context of the re-perceiving theory of mindfulness. It shows that employee mindfulness mediates connectedness to nature of employees and their VPEB.

**Table 5.1 Summary of Hypotheses Results**

<b>Hypothesis Number</b>	<b>Hypothesis Statement</b>	<b>Decision</b>
<b>H1</b>	Connectedness to nature has a positive impact on voluntary pro-environmental behavior.	Supported
<b>H2</b>	Connectedness to nature has a positive impact on employee mindfulness.	Supported
<b>H3</b>	Employee mindfulness has a positive impact on voluntary pro-environmental behavior.	Supported
<b>H4</b>	Employee mindfulness mediates the relationship between connectedness to nature and voluntary pro-environmental behavior.	Supported
<b>H5</b>	Perceived environmental effectiveness moderates the relationship between employee mindfulness and voluntary pro-environmental behavior.	Supported

This research is based on quantitative methodology, and data collection was carried out through a 28-item survey questionnaire. Data was collected from 277 employees working in the targeted sector. Data analysis was done by using SPSS and SmarPLS 4.0. The findings of this study showed that connectedness to the nature of employees has a positive impact on the voluntary pro-environmental behavior of employees and employee mindfulness. Additionally, employee mindfulness has a positive effect on VPEB. This study also confirmed the mediation and moderation proposed in the research framework. A total of five hypotheses were proposed for this research, and all of them were accepted.

***Hypothesis 1. Connectedness to nature has a positive impact on voluntary pro-environmental behavior***

As proposed in the research framework, this study proves that connectedness to the nature of employees has a significant positive impact on the voluntary pro-environmental behavior of employees (H1). Previous literature also supports the findings of this research. L. Martin et al., (2020) highlighted in his research that visiting nature once a week or more is positively associated with general health and pro-environmental behaviors. Even the people who watched or listened to nature documentaries were reported to have higher levels of pro-environmental behaviors. Another

*Bahria University Journal of Management and Technology (BJMT).2025, Volume 8, Issue 1*

research studied this relationship by involving another construct and showed that voluntary pro-environmental behavior increases when connectedness to nature and prosocial prosperity is involved, which means CNS acts as a strong predictor to promote VPEB (Duong & Pensini, 2023). All this supporting literature shows that when employees or individuals are connected to nature, they feel more inclined towards pro-environmental behaviors. They are more likely to involve themselves in activities promoting environmental sustainability willingly. In other words, when employees in the tourism and hospitality sector or any other sector have a strong sense of connectedness to nature, they will involve themselves in activities that are good for environmental sustainability and show green behaviors that ultimately help in organizational sustainability goals and benefit the environment.

### ***Hypothesis 2. Connectedness to nature has a positive impact on employee mindfulness***

As proposed in the hypothesis, the findings of this research show that connectedness to nature has a positive impact on employee mindfulness. When employees are connected to nature, they become more mindful of their actions, behaviors, and attitudes toward it. These findings are consistent with previous findings from the literature. Ray et al. (2021) mentioned in their research that the nature group, having more connectedness to nature, showed an increased level of mindfulness compared to the control group. Another study supports this relationship, stating that higher connectedness to nature scores are consistently associated with greater mindfulness traits (Wolsko & Lindberg, 2013). Simply, when employees have a strong sense of nature connectedness, they are more mindful, which means they think about their actions, every step, and every consumption they do of material after being mindful of how it will impact the environment and nature. To summarize, employees who are connected to nature and have a strong sense of it are more mindful

### ***Hypothesis 3 Employee mindfulness has a positive impact on voluntary pro-environmental behavior***

As anticipated, this research shows that employee mindfulness positively impacts voluntary pro-environmental behavior (*H3*). Past literature shows that the meditation and mindfulness traits of employees lead to the display of pro-environmental behaviors, which means that mindful employees are more open to depicting eco-friendly behaviors and attitudes (Jacob et al., 2009). Results from qualitative studies also showed that mindfulness as a practice impacts the practitioners' or employees' perceived connectedness to nature and supports pro-environmental behaviors (Neupane, n.d.). This shows that mindfulness interventions when applied to a certain setting or workplace, can urge or lead employees to work on their eco-friendly behaviors and participate in such activities. Another study by Thiermann & Sheate, (2022) revealed that the degree to which mindfulness practices and rituals can encourage pro-environmental behaviors also depends on individual commitment toward mindfulness as a lifestyle. Being more mindful means having more inclinations towards pro-environmental behaviors voluntarily. This means that when employees working in the tourism and hospitality sector are more mindful in their lives as

individuals and as workers at their workplace, they will participate voluntarily in pro-environmental behaviors and attitudes necessary for environmental sustainability.

***Hypothesis 4 Employee mindfulness mediates the relationship between connectedness to nature and voluntary pro-environmental behavior***

This study established the mediating role of employee mindfulness between connectedness to nature and voluntary pro-environmental behavior (*H5*). Previous research has seen and proven the mediation role of employee mindfulness at the workplace with different constructs or closely related ones. This study shows that employee mindfulness mediates the relationship positively between CNS and VPEB, which means that when employees are mindful, they are more connected to nature and thus show more eco-friendly behaviors. Employees working in the tourism and hospitality industry are mindful; it changes the whole scenario and shows that their sense of connectedness to nature strengthens and leads them to demonstrate voluntary pro-environmental behaviors willingly. Green mindfulness of employees works as an association to generate green organizational citizenship behavior, which means that VPEB, a part of it, is also impacted positively by mindfulness. (C. Chen et al., 2023). Another study showed that employee mindfulness positively influences the VPEB at the workplace, and CNS also intervenes in this relationship (Kumar et al., 2022). This study establishes that employees in the tourism and hospitality sectors are more inclined towards nature connectedness and VPEB when they are mindful of their actions

***Hypothesis 5 Perceived environmental effectiveness moderates the relationship between employee mindfulness and voluntary pro-environmental behavior***

Lastly, this research established the moderating role of perceived environmental effectiveness in the relationship between employee mindfulness and voluntary pro-environmental behavior (*H5*). Past literature has proven the moderating role of perceived environmental effectiveness in different contexts and constructs. In their research, Lv & Liu (2022) investigated the moderating role of perceived environmental effectiveness in the context of e-commerce platform research. The results showed that PEE moderates the relationship by reducing the effect of cognitive dissonance on online return intention. Another research has investigated the moderating effect of perceived effectiveness on the awareness of behavioral relationships, which means that perceived environmental effectiveness or perceived policy effectiveness makes individuals aware of their environmental behavior, which further includes environmental concern, attitude, knowledge, behavior, and intention (Fu et al., 2020). This means that perceived environmental effectiveness moderates the relationship, and with the presence of it, employees become more mindful and show VPEB as they show concern about which of their behaviors or actions contributes to environmental effectiveness.

## **Policy Implementations**

Current research enforces the idea that when employees within the hospitality and tourism sector are given green training and development, they feel more connected to nature, leading to voluntary pro-environmental behaviors. Institutes in the tourism and hospitality sector either public or private, should display their environmental commitment and policies clearly and train and provide information to their employees so they can develop environment-friendly behaviors at work, e.g., energy conservation, waste reduction, water conservation, sustainable transportation, green certifications, sustainable landscaping, recycling initiatives; in return, organizations can also improve their environmental performance, having a long-term impact (Saifulina & Carballo-Penela, 2017).

Organizations and corporate heads that want to achieve a pro-environment culture, sustainable policies, and mindful employees of their surroundings should start taking initiatives to develop employee mindfulness and a sense of connectedness to nature through different training and workshops (Kumar et al., 2022). The findings of this research also support the idea that to develop a sense of connectedness to nature in employees, it is necessary to indulge them in activities that urge that behavior. This might include developing hiking groups, creating teams to plant trees, making teams to collect waste monthly, having competitions between teams, and rewarding those who use less paper and electricity.

Another role that the hospitality and tourism industry can perform is corporate social responsibility, which can be used to promote the pro-environmental behavior of employees by engaging them in different PB-related activities in the name of corporate social responsibility (Hongxin et al., 2022). Other measures that should be taken include energy conservation; turning off room appliances when not in use, shifting to natural lighting when required; reducing paper use, digital check-ins, e-communications, sustainable commuting, eco-friendly transport, carpooling, supporting green initiatives; green teams, environmental events, minimizing waste, eco-friendly purchasing and conservation of resources. Both sectors should also take initiatives by implementing policies that recruit talent with their perception and motivations for environmental effectiveness that are rightful (Ali et al., 2021).

## **Limitations**

This research was conducted within a short time span; hence, future research can opt for longitudinal studies and collect data to obtain more delicate information. The scale used for voluntary pro-environmental behavior is detailed, and more brief scales can be used in future research.

## **Future Research Recommendations**

This study opens avenues for further research on green human resource management and pro-environmental behaviors. This research opens the door for future researchers to add other constructs to the framework to study these variables. Variables like voluntary pro-environmental behavior and employee mindfulness should be researched as major variables to study their role.

Future studies can focus on collecting data only from the hotels and travel agencies that are either government-registered or focus on private ones. Future studies can also consider the data collection from the sites and locations of Pakistan that come under more tourist attraction sites such as northern areas, Hunza, Sakardu, Gilgit, etc. Moreover, future research can also focus on only one industry, such as picking only tourism, so that it can be helpful to understand better how employees feel about their connectedness to nature in a specific location and their perception of environmental effectiveness.

## REFERENCES

- Ab Hamid, M. R., Sami, W., & Mohmad Sidek, M. H. (2017). Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion. *Journal of Physics: Conference Series*, 890, 012163. <https://doi.org/10.1088/1742-6596/890/1/012163>
- Ali, Q., Sheikh, M. F., & Latif, B. (2021). How Much Does the Recruitment Channel Really Matter: Recruiters' and Applicants' Behaviors in the South Asian Context. *Journal of Management and Research*. <https://doi.org/10.29145/jmr/81/080101>
- Andersen, J. (2017). *Minding the gap between awareness and behavior: Roles of mindfulness and connectedness to nature in fostering ecological behavior*.
- Arshad, M. I., Iqbal, M. A., & Shahbaz, M. (2018). Pakistan tourism industry and challenges: A review. *Asia Pacific Journal of Tourism Research*, 23(2), 121–132. <https://doi.org/10.1080/10941665.2017.1410192>
- Avkiran, N. K. (2018). An in-depth discussion and illustration of partial least squares structural equation modeling in health care. *Health Care Management Science*, 21(3), 401–408. <https://doi.org/10.1007/s10729-017-9393-7>
- Babu, V., Kumar, A., & Kumar, V. (2022). Exploring Mindfulness and Leadership Development: Lessons Learnt Using Grounded Theory Through the Study of the Performing Arts. *FIIB Business Review*, 231971452210886. <https://doi.org/10.1177/23197145221088643>
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94. <https://doi.org/10.1007/BF02723327>
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56(2), 81–105. <https://doi.org/10.1037/h0046016>
- Carlson, L. E., & Brown, K. W. (2005). Validation of the Mindful Attention Awareness Scale in a cancer population. *Journal of Psychosomatic Research*, 58(1), 29–33. <https://doi.org/10.1016/j.jpsychores.2004.04.366>

- Chen, C., Rasheed, A., & Ayub, A. (2023). Does Green Mindfulness Promote Green Organizational Citizenship Behavior: A Moderated Mediation Model. *Sustainability*, *15*(6), 5012. <https://doi.org/10.3390/su15065012>
- Chen, J., Huang, Y., Wu, E. Q., Ip, R., & Wang, K. (2023). How does rural tourism experience affect green consumption in terms of memorable rural-based tourism experiences, connectedness to nature and environmental awareness? *Journal of Hospitality and Tourism Management*, *54*, 166–177. <https://doi.org/10.1016/j.jhtm.2022.12.006>
- Duong, M., & Pensini, P. (2023). The role of connectedness in sustainable behaviour: A parallel mediation model examining the prosocial foundations of pro-environmental behaviour. *Personality and Individual Differences*, *209*, 112216. <https://doi.org/10.1016/j.paid.2023.112216>
- Escario, J.-J., Rodriguez-Sanchez, C., & Casaló, L. V. (2020). The influence of environmental attitudes and perceived effectiveness on recycling, reducing, and reusing packaging materials in Spain. *Waste Management*, *113*, 251–260. <https://doi.org/10.1016/j.wasman.2020.05.043>
- Fu, L., Sun, Z., Zha, L., Liu, F., He, L., Sun, X., & Jing, X. (2020). Environmental awareness and pro-environmental behavior within China's road freight transportation industry: Moderating role of perceived policy effectiveness. *Journal of Cleaner Production*, *252*, 119796. <https://doi.org/10.1016/j.jclepro.2019.119796>
- Gärtner, C. (2013). Enhancing Readiness for Change by Enhancing Mindfulness. *Journal of Change Management*, *13*(1), 52–68. <https://doi.org/10.1080/14697017.2013.768433>
- Geoffrion, A. M. (1987). An Introduction to Structured Modeling. *Management Science*, *33*(5), 547–588. <https://doi.org/10.1287/mnsc.33.5.547>
- Green, J. P., Tonidandel, S., & Cortina, J. M. (2016). Getting Through the Gate: Statistical and Methodological Issues Raised in the Reviewing Process. *Organizational Research Methods*, *19*(3), 402–432. <https://doi.org/10.1177/1094428116631417>
- Hair, J. F. (n.d.). *Multivariate Data Analysis*. Retrieved July 11, 2024, from <https://digitalcommons.kennesaw.edu/facpubs/2925>
- Hair, J. F., L.D.S. Gabriel, M., da Silva, D., & Braga Junior, S. (2019). Development and validation of attitudes measurement scales: Fundamental and practical aspects. *RAUSP Management Journal*, *54*(4), 490–507. <https://doi.org/10.1108/RAUSP-05-2019-0098>
- Hair, J. F., Sarstedt, M., & Ringle, C. M. (2019). Rethinking some of the rethinking of partial least squares. *European Journal of Marketing*, *53*(4), 566–584. <https://doi.org/10.1108/EJM-10-2018-0665>
- Hongxin, W., Khan, M. A., Zhenqiang, J., Cismaş, L.-M., Ali, M. A., Saleem, U., & Negruţ, L. (2022). Unleashing the Role of CSR and Employees' Pro-Environmental Behavior for

Organizational Success: The Role of Connectedness to Nature. *Sustainability*, 14(6), 3191. <https://doi.org/10.3390/su14063191>

Howell, A. J., Dopko, R. L., Passmore, H.-A., & Buro, K. (2011). Nature connectedness: Associations with well-being and mindfulness. *Personality and Individual Differences*, 51(2), 166–171. <https://doi.org/10.1016/j.paid.2011.03.037>

Jacob, J., Jovic, E., & Brinkerhoff, M. B. (2009). Personal and Planetary Well-being: Mindfulness Meditation, Pro-environmental Behavior and Personal Quality of Life in a Survey from the Social Justice and Ecological Sustainability Movement. *Social Indicators Research*, 93(2), 275–294. <https://doi.org/10.1007/s11205-008-9308-6>

Kim, J. H. (2019). Multicollinearity and misleading statistical results. *Korean Journal of Anesthesiology*, 72(6), 558–569. <https://doi.org/10.4097/kja.19087>

Kline, R. B. (2023). *Principles and practice of structural equation modeling*. Guilford publications.

Kumar, S., Panda, T. K., & Pandey, K. K. (2020). *Promoting employees' pro-environmental behaviour: Exploring the role of mindfulness and connectedness to nature*.

Kumar, S., Panda, T. K., & Pandey, K. K. (2022a). The effect of employee's mindfulness on voluntary pro-environment behaviour at the workplace: The mediating role of connectedness to nature. *Benchmarking: An International Journal*, 29(10), 3356–3378. <https://doi.org/10.1108/BIJ-05-2021-0237>

Kumar, S., Panda, T. K., & Pandey, K. K. (2022b). The effect of employee's mindfulness on voluntary pro-environment behaviour at the workplace: The mediating role of connectedness to nature. *Benchmarking: An International Journal*, 29(10), 3356–3378. <https://doi.org/10.1108/BIJ-05-2021-0237>

Leary, R. B., Vann, R. J., Mittelstaedt, J. D., Murphy, P. E., & Sherry, J. F. (2014). Changing the marketplace one behavior at a time: Perceived marketplace influence and sustainable consumption. *Journal of Business Research*, 67(9), 1953–1958. <https://doi.org/10.1016/j.jbusres.2013.11.004>

Liang, T.-C., Situmorang, R. O. P., Liao, M.-C., & Chang, S.-C. (2020). The Relationship of Perceived Consumer Effectiveness, Subjective Knowledge, and Purchase Intention on Carbon Label Products—A Case Study of Carbon-Labeled Packaged Tea Products in Taiwan. *Sustainability*, 12(19), 7892. <https://doi.org/10.3390/su12197892>

Luong, R. (2022). Factor structure, measurement equivalence, and reliability of the Nature Relatedness Scale Short Form (NR-6) across males and females. *Journal of Environmental Psychology*, 82, 101828. <https://doi.org/10.1016/j.jenvp.2022.101828>

Lv, J., & Liu, X. (2022). The Impact of Information Overload of E-Commerce Platform on Consumer Return Intention: Considering the Moderating Role of Perceived Environmental

Effectiveness. *International Journal of Environmental Research and Public Health*, 19(13), 8060. <https://doi.org/10.3390/ijerph19138060>

Madonna, J. (2018). Mindfulness Practitioners Clarify the Concept of “Re-Perceiving”: A Qualitative Interview Study. *The Graduate Review*, 3(1), 111–133.

Manoj, M., Ram Das, A., Chandran, A., & Mandal, S. (2020). Antecedents of environmental engagement and environmental learning behaviour. *Journal of Hospitality and Tourism Insights*, 3(4), 431–450. <https://doi.org/10.1108/JHTI-01-2020-0001>

Manosuthi, N., Lee, J.-S., & Han, H. (2024). Green behavior at work of hospitality and tourism employees: Evidence from IGSCA-SEM and fsQCA. *Journal of Sustainable Tourism*, 32(1), 85–107. <https://doi.org/10.1080/09669582.2022.2115051>

Martin, L., White, M. P., Hunt, A., Richardson, M., Pahl, S., & Burt, J. (2020). Nature contact, nature connectedness and associations with health, wellbeing and pro-environmental behaviours. *Journal of Environmental Psychology*, 68, 101389. <https://doi.org/10.1016/j.jenvp.2020.101389>

Memon, M. A., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample Size for Survey Research: Review and Recommendations. *Journal of Applied Structural Equation Modeling*, 4(2), i–xx. [https://doi.org/10.47263/JASEM.4\(2\)01](https://doi.org/10.47263/JASEM.4(2)01)

Memon, M. A., Ting, H., Ramayah, T., Chuah, F.,... - Google Scholar. (n.d.). Retrieved June 30, 2024, from [https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C5&q=+Memon%2C+M.+A.%2C+Ting%2C+H.%2C+Ramayah%2C+T.%2C+Chuah%2C+F.%2C+%26+Cheah%2C+J.+H.+%282017%29%2C+%22A+review+of+the+methodological+misconceptions+and+guidelines+related+to+the+application+of+structural+equation+modeling%3A+A+Malaysian+scenario%22%2C+Journal+of+Applied+Structural+Equation+Modeling%2C+Vol.+1+No.+1%2C+pp.+i-xiii.&btnG=](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=+Memon%2C+M.+A.%2C+Ting%2C+H.%2C+Ramayah%2C+T.%2C+Chuah%2C+F.%2C+%26+Cheah%2C+J.+H.+%282017%29%2C+%22A+review+of+the+methodological+misconceptions+and+guidelines+related+to+the+application+of+structural+equation+modeling%3A+A+Malaysian+scenario%22%2C+Journal+of+Applied+Structural+Equation+Modeling%2C+Vol.+1+No.+1%2C+pp.+i-xiii.&btnG=)

Neupane, N. (n.d.). *From Intentional Awareness to Environmental Action: The Relationship Between Mindfulness and Pro-Environmental Behaviors*. <https://doi.org/10.7275/18945627>

Nisar, Q. A., Zafar, A., Shoukat, M., & Ikram, M. (2017). Green Transformational Leadership and Green Performance: The mediating role of Green Mindfulness and Green Self-efficacy. *International Journal of Management Excellence*, 9(2), 1059–1066. <https://doi.org/10.17722/ijme.v9i2.916>

Nisbet, E. K., & Zelenski, J. M. (2013). The NR-6: A new brief measure of nature relatedness. *Frontiers in Psychology*, 4. <https://doi.org/10.3389/fpsyg.2013.00813>

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The Nature Relatedness Scale: Linking Individuals' Connection With Nature to Environmental Concern and Behavior. *Environment and Behavior*, 41(5), 715–740. <https://doi.org/10.1177/0013916508318748>

Patel, T., & Holm, M. (2018). Practicing mindfulness as a means for enhancing workplace pro-environmental behaviors among managers. *Journal of Environmental Planning and Management*, 61(13), 2231–2256. <https://doi.org/10.1080/09640568.2017.1394819>

Ray, T. N., Franz, S. A., Jarrett, N. L., & Pickett, S. M. (2021). Nature Enhanced Meditation: Effects on Mindfulness, Connectedness to Nature, and Pro-Environmental Behavior. *Environment and Behavior*, 53(8), 864–890. <https://doi.org/10.1177/0013916520952452>

Raza, A., Farrukh, M., Iqbal, M. K., Farhan, M., & Wu, Y. (2021). Corporate social responsibility and employees' voluntary pro-environmental behavior: The role of organizational pride and employee engagement. *Corporate Social Responsibility and Environmental Management*, 28(3), 1104–1116. <https://doi.org/10.1002/csr.2109>

Reb, J., Chaturvedi, S., Narayanan, J., & Kudesia, R. S. (2019). Leader Mindfulness and Employee Performance: A Sequential Mediation Model of LMX Quality, Interpersonal Justice, and Employee Stress. *Journal of Business Ethics*, 160(3), 745–763. <https://doi.org/10.1007/s10551-018-3927-x>

Rezapouraghdam, H., Karatepe, O. M., & Enea, C. (2023). Sustainable recovery for people and the planet through spirituality-induced connectedness in the hospitality and tourism industry. *Journal of Hospitality and Tourism Insights*, 6(5), 1776–1795. <https://doi.org/10.1108/JHTI-03-2022-0103>

Richter, N. F., Sinkovics, R. R., Ringle, C. M., & Schlägel, C. (2016). A critical look at the use of SEM in international business research. *International Marketing Review*, 33(3), 376–404. <https://doi.org/10.1108/IMR-04-2014-0148>

Saifulina, N., & Carballo-Penela, A. (2017). Promoting Sustainable Development at an Organizational Level: An Analysis of the Drivers of Workplace Environmentally Friendly Behaviour of Employees. *Sustainable Development*, 25(4), 299–310. <https://doi.org/10.1002/sd.1654>

Saifulina, N., Carballo-Penela, A., & Ruzo-Sanmartín, E. (2023). Effects of personal environmental awareness and environmental concern on employees' voluntary pro-environmental behavior: A mediation analysis in emerging countries. *Baltic Journal of Management*, 18(1), 1–18. <https://doi.org/10.1108/BJM-05-2022-0195>

Saleem, S., Humayun, S., Latif, B., Iftikhar, U., & Sharif, I. (2020). Identities Hidden in Challenges: The Sequential Mediation of Thriving at Work and Employee Investment. *Frontiers in Psychology*, 11, 555420. <https://doi.org/10.3389/fpsyg.2020.555420>

Schultz, P. P., Ryan, R. M., Niemiec, C. P., Legate, N., & Williams, G. C. (2015). Mindfulness, Work Climate, and Psychological Need Satisfaction in Employee Well-being. *Mindfulness*, 6(5), 971–985. <https://doi.org/10.1007/s12671-014-0338-7>

Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62(3), 373–386. <https://doi.org/10.1002/jclp.20237>

Tanveer, M. I., Yusliza, M. Y., & Fawehinmi, O. (2024). Green HRM and hospitality industry: Challenges and barriers in adopting environmentally friendly practices. *Journal of Hospitality and Tourism Insights*, 7(1), 121–141. <https://doi.org/10.1108/JHTI-08-2022-0389>

Thiermann, U. B., & Sheate, W. R. (2022). How Does Mindfulness Affect Pro-environmental Behaviors? A Qualitative Analysis of the Mechanisms of Change in a Sample of Active Practitioners. *Mindfulness*, 13(12), 2997–3016. <https://doi.org/10.1007/s12671-022-02004-4>

William M.K. Trochim, (2006). *Convergent & Discriminant...* - Google Scholar. (n.d).

Retrieved June 30, 2024, from

[https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C5&q=William+M.K.+Trochim%2C+%282006%29.+Convergent+%26+Discriminant+Validity.+Research+Methods%3A+Knowledge+Base.+URL%3A+http%3A%2F%2Fwww.socialresearchmethods.net%2Fkb%2Fconvdisc.php+&btnG=](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=William+M.K.+Trochim%2C+%282006%29.+Convergent+%26+Discriminant+Validity.+Research+Methods%3A+Knowledge+Base.+URL%3A+http%3A%2F%2Fwww.socialresearchmethods.net%2Fkb%2Fconvdisc.php+&btnG=)

Wolsko, C., & Lindberg, K. (2013). Experiencing Connection With Nature: The Matrix of Psychological Well-Being, Mindfulness, and Outdoor Recreation. *Ecopsychology*, 5(2), 80–91. <https://doi.org/10.1089/eco.2013.0008>

Yu, Y., Xu, S. T., & Li, G. (2023). Abusive supervision and emotional labour on a daily basis: The role of employee mindfulness. *Tourism Management*, 96, 104719. <https://doi.org/10.1016/j.tourman.2023.104719>

Yusoff, Y. M., Nejati, M., Kee, D. M. H., & Amran, A. (2020). Linking Green Human Resource Management Practices to Environmental Performance in Hotel Industry. *Global Business Review*, 21(3), 663–680. <https://doi.org/10.1177/0972150918779294>

Zahid, R. (2023, March 21). Tourism Industry in Pakistan: A Review - Policy Brief. *Imarat Institute of Policy Studies – IIPS*. <https://iips.com.pk/tourism-industry-in-pakistan-a-review-policy-brief/>

Zhang, H., Cai, L., Bai, B., Yang, Y., & Zhang, J. (2023). National forest park visitors' connectedness to nature and pro-environmental behavior: The effects of cultural ecosystem service, place and event attachment. *Journal of Outdoor Recreation and Tourism*, 42, 100621. <https://doi.org/10.1016/j.jort.2023.100621>