

Unveiling the Nexus: Pro-Environmental Behavior, Green Abilities, Motivation, and Opportunities Impacting Employee Performance

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Abstract

Purpose: This research investigates the relationships between pro-environmental behaviour, green abilities, green motivation, green opportunities, employee environmental commitment, green transformational leadership, and employee performance within health sector in the Kingdom of Saudi Arabia (KSA). The aim is to enhance understanding of the mechanisms through which individual and organizational factors influence employee engagement with environmental sustainability initiatives and their impact on organizational outcomes. **Method:** A quantitative approach was employed, utilizing a sample of 165 health sector employees in KSA. Data was collected through an online questionnaire, and analysis was conducted using SPSS. **Findings:** The study found significant positive relationships between pro-environmental behaviour, green abilities, green motivation, green opportunities, employee environmental commitment, and employee performance. Employee environmental commitment was found to mediate the relationships between pro-environmental behavior, green abilities, green motivation, green opportunities, and employee performance. Additionally, green transformational leadership was found to moderate the relationship between employee environmental commitment and employee performance. **Originality/Significance:** This research contributes to theoretical knowledge by advancing understanding of the factors influencing employee engagement with environmental sustainability initiatives and organizational outcomes. It provides practical insights for organizational leaders and policymakers seeking to promote environmental responsibility and achieve sustainable organizational success within health sector in KSA.

Keywords: Employee Environmental Commitment, Employee Performance, Pro-Environmental Behavior, Green Transformational Leadership, Green Ability, Green Motivation, Green Opportunity

Introduction

Environmental sustainability has become a global priority for organizations in recent years, as awareness of climate change, resource depletion, and environmental deterioration has increased (Huo et al., 2023). Companies are under pressure to embrace green policies and sustainable business practices due to these challenges. Due to resource utilization, waste, and carbon emissions, health sector businesses harm the environment (Han et al., 2021). Thus, industrial enterprises are increasingly required to emphasize sustainability and limit their environmental effect. Saudi Arabia (KSA)'s Vision 2030 plan leads the global sustainability movement with environmental stewardship and sustainable development. Saudi Arabia (KSA) is crucial in the global oil market, where resource extraction, energy use, and industrial processes pose environmental issues, according to Abd El-Aal et al. (2023). Research shows that environmental sustainability improves corporate performance and competitiveness. Blum et al. (2021), Lin and Zhai (2023), and Potoski and Callery (2018) found that environmental responsibility and staff sustainability save money, and improve brand reputation, morale, and innovation. Environmental sustainability boosts employee happiness, organizational commitment, and performance. (Tian, and Robertson, 2019). Environmental sustainability and organizational success are vital in the industry. Health sector businesses seek sustainability for resource use, waste, and environmental impact (Khan et al., 2021). Waste reduction, energy efficiency, and pollution prevention can boost operational efficiency, cost savings, and environmental performance in industrial organizations (Marrucci et al., 2024). Many organizations recognize the need of environmental sustainability leadership. Visionary environmental transformational leadership inspires people to adopt environmental goals, according to Li et al. (2020). Staff involvement with environmental projects and corporate outcomes improves under such leadership. Leaders may encourage environmental responsibility and change by committing to sustainability and giving the means to do so.

Previous research has showed how environmental commitment affects organizational performance. Recycling, energy conservation, and sustainable transportation make individuals more environmentally sensitive, according to Barszcz et al. (2022). Green talents study reveals that staff knowledge, skills, and competencies increase sustainable involvement (Alshurideh et al., 2023). Employees who can use sustainable practices can help the company meet environmental goals. Wells et al. (2024) found that internal and external factors motivate employees to participate in environmental sustainability programs. Employees that care about the environment are more likely to participate in sustainability efforts. Research demonstrates that offering employees sustainability opportunities and praising their environmental conservation efforts may motivate and dedicate them to sustainability objectives (Tuan, 2022). Organizations that provide staff training, tools, and sustainability projects are more likely to encourage environmental responsibility and achieve environmental goals (Ali et al., 2022). Green transformational leadership improves corporate performance and employee sustainability project engagement, according to Tosun et al. (2022). Leaders that prioritize environmental sustainability and encourage staff participation in sustainability projects may create a supportive workplace that boosts employee engagement and environmental performance.

Despite extensive research on human and organizational variables impacting environmental commitment and performance, gaps remain. A previous study examined how green talent and pro-environmental conduct impact environmental commitment. Little is known about employee environmental commitment as a mediator between these factors and organizational success (Alshurideh et al., 2023). Recent research has examined how human and organizational factors impact environmental commitment and performance. Few studies have examined how leadership moderates these effects (Wells et al., 2024). More study is needed on how leadership and human/organizational qualities impact environmental commitment and performance (O'Bryan et al., 2021). Environmental commitment's origins and

consequences have been studied, however empirical study in Saudi Arabian industrial businesses is needed (Garcia et al., 2020). Health sector have particular environmental sustainability problems and possibilities. Research for this environment may aid leaders and policymakers seeking sustainability and organizational success (Barszcz et al., 2022). This study investigates the links between pro-environmental behavior, green skills, green motivation, green opportunity, employee environmental commitment, green transformational leadership, and employee performance in Saudi Arabian industrial enterprises. This study examines how green abilities, pro-environmental behavior, and motivation effect employee environmental commitment. It also studies how employee environmental commitment affects performance and characteristics. This study also examines how green transformational leadership moderates the relationship between employee environmental commitment and performance. The study has major implications for Saudi corporate leaders and policymakers concerned with environmental sustainability and organizational performance. Create evidence-based environmental responsibility and organizational success initiatives with the findings. These findings come from identifying employee sustainability program participation and organizational performance elements. The research also increases our theoretical knowledge of how individual and organizational variables impact environmental commitment and performance. This research can help organizations enhance environmental sustainability and performance through practices, policies, and initiatives.

Literature Review

Pro-Environmental Behavior and Employee Environmental Commitment

R. Liu et al. (2023) describe pro-environmental action as reducing environmental harm or promoting sustainability. Several studies show that environmentally conscious activities boost employee environmental engagement. Recycling, energy conservation, and garbage reduction make workers more environmentally sensitive. These actions show an individual's environmental commitment and assist the organization's sustainability goals. Lim et al. (2023) suggest that workplace pro-environmental activities

may create a sense of community and belonging among like-minded people. Gusmerotti et al. (2023) found that seeing coworkers practice sustainability encourages them. Everyone becomes more environmentally conscious. Environmentally conscious conduct shapes employee adherence to corporate environmental policies and processes, according to this social effect mechanism. ecologically conscious conduct can also foster an ecologically conscious workplace (Wei et al., 2023). Ecologically responsible practices may make workers happier and more devoted to the company's environmental goals. This passion may boost sustainability efforts, proactive problem-solving, and innovative environmental solutions.

H1: Pro-environmental behavior has a significant and positive impact on employee environmental commitment.

Green Abilities and Employee Environmental Commitment

Sobaih et al. (2020) define "green abilities" as intellectual, practical, and adaptive capabilities that enable eco-friendly behavior. Research shows that greener individuals care more about organizational sustainability. Sustainable technology professionals, environmental scientists, and eco-friendly practitioners are more likely to understand and engage in sustainability projects (Kühner et al., 2024). Green competenced people may also find environmental development opportunities and implement novel solutions to corporate environmental issues (Tan & Vicente, 2019). Employees generally do both. These employees may promote environmental responsibility by proposing and implementing resource conservation, waste reduction, and energy efficiency methods (Suarez-Paba & Cruz, 2022). They use their skills and expertise. Environmentalism is valued highly in careers by environmentally conscientious people (Parker & Chung, 2018). Environmental commitment is higher with proactive sustainability. Pham et al.'s 2020 study found that green skill training and professional development improves workers' environmental commitment. Companies may empower employees to lead sustainability projects and make major environmental contributions by teaching them environmental skills (Ren et al., 2022). Human capital

investment boosts environmental management, employee engagement, and morale by making sustainability initiatives rewarded.

H2: Green abilities have a significant and positive impact on employee environmental commitment.

Green Motivation and Employee Environmental Commitment

Islam et al. (2023) define "green motivation" as the intrinsic desire to support environmental issues or practise eco-friendliness. Multiple studies suggest that motivating employees to be environmentally friendly increases environmental commitment. Pham et al. (2019) found that inherently driven environmentalists will support company sustainability efforts. Environmental ideals motivate workers. Ecologically responsible behaviour is driven by a desire to improve the environment (Duong et al., 2023). Prabhakar et al. (2022) found that environmentally conscientious companies hire and retain more environmentally concerned workers. Employees are more inclined to support sustainability and environmental preservation if they think their company does. According to Marrucci et al. (2024), this link fosters a sense of shared purpose and environmental stewardship, promoting worker participation in sustainability goals. Kuhner et al. (2024) found that green incentives increase employee involvement, satisfaction, and environmental commitment. Employees are happier and more gratified when they contribute to environmental projects. Their positive emotional response encourages individuals to pursue environmental initiatives and achieve sustainability goals.

H3: Green motivation has a significant and positive impact on employee environmental commitment.

Green Opportunities and Employee Environmental Commitment

According to Xu et al. (2024), "green opportunities" are external circumstances or opportunities supplied by an organization or society that encourage ecologically beneficial behavior. Research shows that eco-friendly options boost employee environmental commitment. Companies that reward employees for sustainability projects have more environmentally conscious personnel.

These incentives may include training, recognition, or career progression (Capper et al., 2023). According to An et al. (2023), offering green options shows a company's commitment to sustainability. This signal may encourage employees to participate in environmental efforts. When employees believe their firm has the tools, support, and motivation for sustainable activities, they are more likely to engage. This attitude increases workers' motivation to contribute. Empowerment encourages environmental accountability and boosts employees' sustainability goals (Ruiz-Ortega et al., 2021). Green activities increase worker engagement, contentment, and environmental commitment (Marrucci et al., 2022). Sustainability initiatives and eco-friendly technologies help employees feel fulfilled and purposeful in their jobs. Because green alternatives bring out the best in people. This good emotional response reinforces their environmental goals and pushes them to continue sustainability efforts.

H4: Green opportunities have a significant and positive impact on employee environmental commitment.

Employee environmental commitment and Employee Performance

Worker environmental commitment is their dedication to the company's green policies, operations, and goals (R. Sharma & Mishra, 2021). Environmental commitment improves employee performance, according to several research. Ogwu et al. (2024) found that environmentally conscious employees are more engaged, productive, and creative. A deep commitment to the firm's environmental ideals may increase performance. According to Shampa et al. (2023), workers' environmental devotion increases the organization's civic conduct toward environmental sustainability. Jha and Dash (2023) found that employees who are passionate about environmental issues are more likely to go above and above to help sustainability efforts. Examples include environmental volunteering, resource conservation, and eco-friendly business practices. Fung Wong and Kim observed in 2020 that proactive actions like these improve workplace morale and environmental responsibility. Improves corporate performance. Employee environmental commitment may spur creativity and problem-solving, enhancing organizational success.

Sustainability-focused personnel are more likely to explore and implement green solutions, according to Story and Castanheira (2019). This promotes environmental adaptation and continued progress. This creative mindset protects the environment and increases the company's competitiveness and environmental flexibility.

H5: Employee environmental commitment has a significant and positive impact on employee performance.

Employee Environmental Commitment as a Mediator

Zizka et al. (2024) found that environmentally conscious professionals are more environmentally conscious. Dedication alters their work behavior, enhancing place of business involvement, contentment, and productiveness (Nadeem et al., 2024). Environmentally worried employees are extra dedicated and productive. This can be achieved by means of main and helping the corporation's environmental efforts. Mi et al. (2019) observed that employee environmental dedication influences seasoned-environmental behavior and organizational sustainability. Prakash et al. (2024) found that environmentally aware humans are more likely to do so. These consist of encouraging eco-friendly sports, volunteering for environmental reasons, and solving environmental troubles with coworkers. Good manners improve workplace culture, job performance, and company operations. Arshad et al. (2021) found that environmentally conscious professionals are more likely to innovate and be environmentally friendly. Sustainability-focused employees are more innovative and environmentally conscious. Creative thinking improves organizations' performance and competitiveness by helping them adapt to changing environmental demands. Kuhner et al. (2024) discovered that environmental commitment affects how environmental-trained personnel connect with the company's sustainability ethics. Environmentally conscious people volunteer, support sustainable laws, and work together to solve environmental issues. Iqbal et al. (2023) found that civic engagement improves company culture and employee performance. Staff environmental awareness links green skills to creative thinking. People with a knack for environmental concerns can find and execute green solutions. Kotsopoulos and colleagues

(2023) found that intrinsically motivated personnel support environmental goals. Workers prioritize environmental goals more. Their dedication changes their work habits, increasing engagement, contentment, and productivity. Environmentally conscientious workers are more productive and motivated. Fostering a clear purpose and linking with the firm's environmental goals promotes environmental commitment. Baberi et al. (2018) observed that environmentally conscious personnel are more proactive. These acts include promoting sustainable lifestyles, volunteering for environmental causes, and working with colleagues to solve environmental issues. Civic behaviours create a good workplace and corporate culture, improving job performance and organizational effectiveness. Employee environmental commitment also affects creativity and the motivation to act sustainably (S. Sharma et al., 2021). Sustainability-focused employees are more likely to solve environmental issues creatively. According to Burawat (2019), companies that offer career advancement, recognition, or training to motivate employees to participate in sustainability projects have more environmentally dedicated employees. This commitment affects employees' job-related attitudes and actions, improving engagement, satisfaction, and performance. According to Shyam Narain (2023), employee environmental devotion affects green opportunities and sustainability. If they think their employer supports sustainability, employees are more likely to volunteer for environmental projects, advocate for green policies, and work with coworkers to address environmental issues. Thormann et al. (2023) claim that civic exercises improve workplace culture. Job performance and organizational effectiveness improve. Green possibilities and innovation are also affected by employee environmental commitment (Neumann, 2022). Employees with green possibilities, like as sustainability efforts or eco-friendly technologies, are more likely to solve environmental problems creatively.

H6a: Employee environmental commitment mediates the relationship between pro-environmental behavior and employee performance.

H6b: Employee environmental commitment mediates the relationship between green abilities and employee performance.

H6c: Employee environmental commitment mediates the relationship between green motivation and employee performance.

H6d: Employee environmental commitment mediates the relationship between green opportunities and employee performance.

Green Transformational Leadership as a Moderation

Hanif et al. (2023) found that executives that actively support green projects are more likely to encourage staff participation with sustainability goals and increase their environmental commitment. Younis and Hussain (2023) observed that green transformational leaders provide an environment that inspires personnel to perform to their

environmental commitment. This is done through their forward-thinking, encouraging leadership. Green transformational leaders can offer workers with resources, support, and advice to be environmentally conscious and productive, according to Majali et al. (2022). Leaders who foster trust, cooperation, and innovation may improve employee environmental commitment and performance. Green revolutionary leaders have a compelling sustainability vision and clear objectives. These factors may boost environmental commitment and staff performance (Shoaib et al., 2022). Green transformational leadership may reduce barriers to workers' environmental commitment and performance. Leadership may assist staff overcome challenges and enhance sustainability project contributions by providing direction, criticism, and praise for environmentally responsible behavior.

H7: Green transformational leadership moderates the relationship between employee environmental commitment and employee performance.

Hence based on above literature we developed the following conceptual framework (Figure 1).

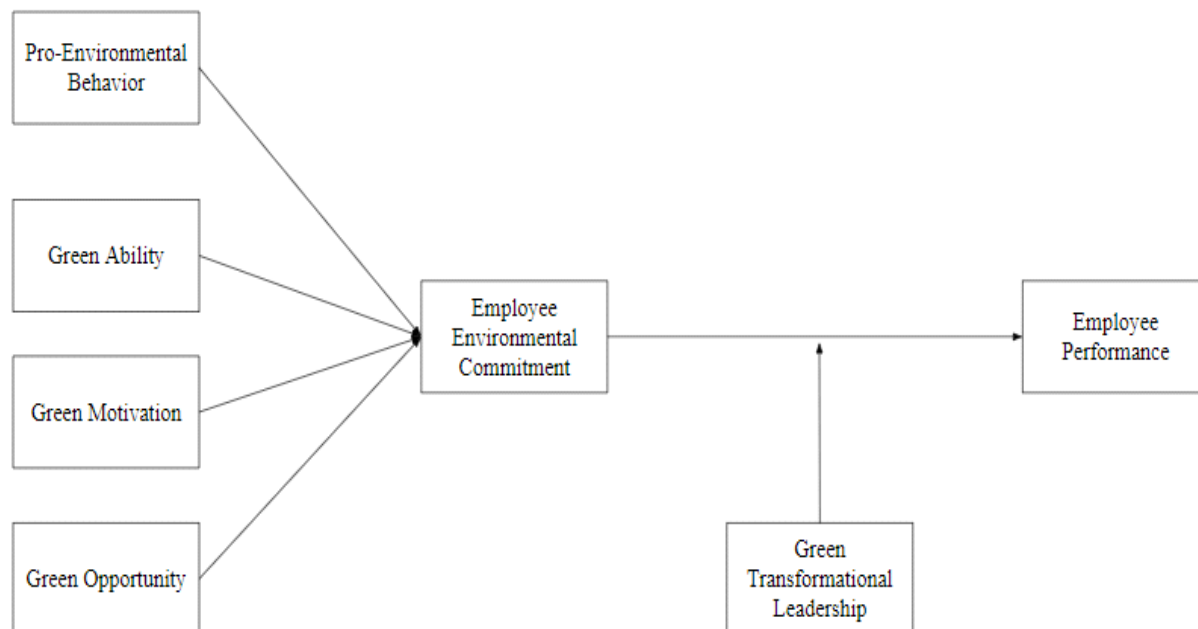


Figure 1: Conceptual Framework

Methodology

The selected research design for this study was a cross-sectional survey to examine the connections between pro-environmental behavior, green talents, green motivation, green opportunities, employee environmental commitment, and employee performance among health sector employees in the Kingdom of Saudi Arabia. This design facilitated the collection of data at a certain point in time, enabling the capture of a comprehensive overview of the variables of interest and their interrelationships within the target population for study. The research focused on health sector workers operating in various industries across different areas in Saudi Arabia. The study focused on health sector workers due to their significant contribution to the operations of the health sector and their potential impact on the implementation of environmental sustainability practices in the sector. A total of 250 questionnaires were delivered to health sector employees in the Kingdom of Saudi Arabia. This was done to establish a population-representative sample. Out of 250, 165 questionnaires were received, of which all were duly completed, yielding a response rate of approximately 66%. It satisfied the minimal requirements of the general guideline for regression analysis with several predictors or variables. Participant of the study were selected by using simple random sampling technique which ensured objectivity and randomization in recruiting target group participants. This allowed the researchers to give every Saudi industrial worker an equal chance of being studied. This method reduced selection bias and improved sample representativeness, allowing the researchers to apply their results to Saudi Arabia's industrial workforce. To collect data, an online questionnaire was used which received by the participants through email. An online questionnaire allowed for more efficient data collection in more places and reduced logistical issues compared to paper surveys (Appendix-A). Participants received a link to the questionnaire and clear instructions. Participants were given secrecy and anonymity to encourage honesty. A seven-item scale adapted from Suleman et al. (2023) was used to measure employee environmental commitment. Pro-environmental behaviour was measured by using a

four-item scale adopted from Liu et al. (2020). Employee performance was measured using a three-item adopted from Afrin et al. (2023). A six-item scale from Mittal and Dhar (2016) was used to measure green transformational leadership. Six items for green ability, four items for green motivation and three items for green opportunities were adapted from Sobaih et al. (2020). SPSS was used for descriptive statistics, correlation analysis, and regression analysis on this study's data. To summarize the key points, descriptive statistics were developed. The independent, dependent, mediating, and moderating relations were examined using regression analysis.

Results

Table 1's descriptive statistics reveal the research variables' central tendency, variability, and distribution among Saudi health sector workers. Employee environmental engagement had a high mean score of 4.098, suggesting great commitment to sustainable activities. The high mean score of 4.123 for employee performance reinforced this commitment, demonstrating a favorable association between environmental dedication and work effectiveness. With a mean score of 4.020, pro-environmental conduct showed that employees were ecologically conscious, contributing to the organization's environmental ethos. In addition, green transformational leadership, with a mean score of 4.070, was shown to inspire and motivate people to adopt sustainability measures. This leadership style may encourage environmental commitment and performance improvement. However, green ability had a lower mean score of 2.294, suggesting employees' environmental sustainability knowledge and abilities might be improved. Green motivation and opportunity had moderate mean values of 3.970 and 4.042, respectively, showing space for improvement in employees' personal desire and organizational support for sustainability. The standard deviation values across all measures reveal substantial heterogeneity in answers, suggesting that while the overall trend is consistent, individual views and behaviors involving environmental commitment and associated dimensions are nevertheless diverse. Skewness and kurtosis values around 0 indicate that most variables have bell-shaped curves and close to normal distributions.

Table 1: Descriptive Statistic

	Mini	Maxi	Mean	Std. Deviation	Skewness	Kurtosis
Employee Environmental Commitment	1	5	4.098	0.778	-1.131	1.598
Employee Performance	1	5	4.123	0.809	-1.012	0.957
Pro-Environmental Behavior	1	5	4.020	0.707	-0.572	0.098
Green Transformational Leadership	1	5	4.070	0.747	-0.754	0.818
Green Ability	1	5	2.294	0.401	-0.491	0.363
Green Motivation	1	5	3.970	0.700	-0.441	0.647
Green Opportunity	1	5	4.042	0.748	-0.773	0.901

Table 2 shows the Cronbach's alpha coefficients for the study variables, revealing the measurement scales' internal consistency and reliability among Saudi Arabian industrial workers. Most research constructs had high Cronbach's alpha values, indicating great internal reliability. Employee environmental commitment had a high Cronbach's alpha coefficient of 0.903, indicating good internal consistency among measurements of workers' commitment to sustainable activities. With a Cronbach's alpha of 0.873, employee performance exhibited internal consistency. Pro-environmental conduct had 0.848 Cronbach's alpha, indicating excellent internal reliability. This shows that the scale evaluating employees' environmental responsibility is credible. Green transformational leadership has a

Cronbach's alpha of 0.896, suggesting that its items on environmental sustainability leadership are consistent. Internal reliability was high for green ability and opportunity, with Cronbach's alpha values of 0.898 and 0.809. This shows that assessments of employees' environmental sustainability knowledge, abilities, and organizational possibilities are trustworthy. Note that green motivation had a lower Cronbach's alpha coefficient of 0.776. This rating implies adequate internal consistency, but it reveals that employees' inner motivation towards environmental sustainability may vary. Differences in environmental values, attitudes, and motives may explain this heterogeneity.

Table 2: Cronbach's Alpha

	Cronbach's Alpha
Employee Environmental Commitment	0.903
Employee Performance	0.873
Pro-Environmental Behavior	0.848
Green Transformational Leadership	0.896
Green Ability	0.898
Green Motivation	0.776
Green Opportunity	0.809

The Pearson correlation coefficients between research variables are shown in Table 3, revealing construct linkages. The correlation coefficients vary from -1 to 1, with values closer to 1 indicating a strong positive association, -1 suggesting a strong negative correlation, and 0 showing no link. Employee environmental commitment (EEC) positively correlates with employee performance

(EP), pro-environmental behavior (PEB), green transformational leadership (GTL), green ability (GA), green motivation (GM), and green opportunity. This suggests that higher employee environmental commitment is linked to higher performance, pro-environmental behavior, supportive leadership, perceived ability to engage in sustainable practices, intrinsic motivation for

sustainability, and perceived organizational sustainability opportunities. Employee performance is positively correlated with pro-environmental behavior, green transformational leadership, green ability, green motivation, and green opportunity, indicating that higher levels of performance are associated with greater engagement in pro-environmental behavior, perception of supportive leadership, perceived opportunity, intrinsic motivation, and organizational opportunities for sustainability. Green transformational leadership, ability,

motivation, and opportunity are strongly correlated with pro-environmental behavior, indicating that higher levels of engagement are associated with perception of supportive leadership, ability, intrinsic motivation, and organizational sustainability. Positive correlations between green transformational leadership, green ability, green motivation, and green opportunity show that supportive leadership is linked to employee ability, intrinsic motivation, and organizational sustainability.

Table 3: Correlation Matrix

	EEC	EP	PEB	GTL	GA	GM	GO
Employee Environmental Commitment	1						
Employee Performance	.853**	1					
Pro-Environmental Behavior	.820**	.789**	1				
Green Transformational Leadership	.741**	.705**	.846**	1			
Green Ability	.715**	.702**	.768**	.867**	1		
Green Motivation	.674**	.655**	.728**	.807**	.936**	1	
Green Opportunity	.694**	.694**	.702**	.760**	.903**	.791**	1

Table 4 shows the outer loadings for each construct's measurement items, demonstrating the intensity of the observed variable-latent construct link. In a reflective measurement model, outer loadings are each item's standardized regression coefficient on its concept. All goods have high outside loadings for employee environmental commitment (EEC) from 0.705 to 0.802. The observed behaviors or attitudes are strongly correlated with the latent concept of employee environmental commitment, suggesting that each item successfully

assesses it. Also, measurement item outer loadings range from 0.675 to 0.830. These large outer loadings show that the items capture the constructs, indicating a significant link between observable variables and latent structures. GA4 and GO3 have lower exterior loadings than other elements in the build. This shows that these items may have weaker construct links than other scale items. These components may still contribute to the construct's measurement, but their lower outer loadings suggest they may be less informative.

Table 4: Outer Loadings

Variables	Items	Outer loading
Employee Environmental Commitment	EEC1	0.705
	EEC2	0.730
	EEC3	0.724
	EEC4	0.705
	EEC5	0.802
	EEC6	0.715
	EEC7	0.747

Variables	Items	Outer loading
Employee Performance	EP1	0.718
	EP2	0.807
	EP3	0.682
Pro-Environmental Behavior	PEB1	0.785
	PEB2	0.675
	PEB3	0.800
	PEB4	0.749
Green Transformational Leadership	GTL1	0.705
	GTL2	0.830
	GTL3	0.806
	GTL4	0.748
	GTL5	0.711
	GTL6	0.788
Green Ability	GA1	0.773
	GA2	0.714
	GA3	0.677
	GA4	0.597
	GA5	0.712
	GA6	0.702
Green Motivation	GM1	0.766
	GM2	0.696
	GM3	0.689
	GM4	0.673
Green Opportunity	GO1	0.705
	GO2	0.743
	GO3	0.540

Based on the regression analysis, Table 5 shows the beta, T, and P-values for each hypothesis evaluated in the study. Regression analysis examined the relationships between pro-environmental behavior, green ability, green motivation, green opportunity, and employee environmental commitment, as well as employee performance. H1 suggested that employee environmental commitment increases with pro-environmental behavior. The regression analysis shows a significant beta value of 0.473 ($T = 18.278$, $p < 0.001$), demonstrating that pro-environmental behavior enhances employee environmental commitment. This study confirms H1, demonstrating that pro-environmental personnel are more likely to show a

strong commitment to environmental sustainability ability inside the business. H2 proposed a favorable association between green ability and employee environmental engagement. The regression study shows a substantial positive correlation between green ability and employee environmental commitment ($\beta = 0.274$, $T = 3.063$, $p < 0.001$). Thus, H2 is supported, indicating that personnel with better environmental sustainability knowledge and abilities are more environmentally committed. H3 hypothesized a favorable association between green motivation and employee environmental commitment. At a significant beta value of 0.479 ($T = 11.659$, $p < 0.001$), the regression analysis indicates that green motivation

enhances employee environmental commitment. So, H3 is supported, showing that intrinsically driven personnel are more likely to be committed to environmental sustainability. H4 revealed a favorable association between green opportunity and employee environmental engagement. The regression analysis shows a significant beta value of 0.217 ($T = 12.291$, $p < 0.001$), demonstrating that green opportunity enhances employee environmental commitment. Thus, H4 is supported, showing that

employees who perceive organizational support and sustainability possibilities are more likely to commit to environmental sustainability. This hypothesis explored the association between employee environmental commitment and employee performance. Employee environmental commitment favorably impacts employee performance, as shown by a significant beta value of 0.484 ($T = 2.906$, $p < 0.001$). Thus, H5 is supported.

Table 5: Regression Analysis

Hypothesis		Beta value	T value	P value
H1	PEB -> EEC	0.473	18.278	0.000
H2	GA -> EEC	0.274	3.063	0.000
H3	GM -> EEC	0.479	11.659	0.000
H4	GO -> EEC	0.217	12.291	0.000
H5	EEC -> EP	0.484	2.906	0.000

Table 6 shows how employee environmental commitment mediates the indirect effects of pro-environmental behavior, green ability, green motivation, and green opportunity on employee performance. Each hypothesis investigated in the study has beta, T, and P-values. Theoretically, pro-environmental behavior indirectly affects employee performance through environmental commitment. Mediation analysis shows a substantial indirect impact with a beta value of 0.590 ($T = 4.000$, $p = 0.001$). Employee environmental commitment moderates the link between pro-environmental behavior and employee performance, supporting H6a. Green ability indirectly affected employee performance through environmental commitment, according to Hypothesis 6b (H6b). The mediation analysis shows a substantial indirect impact with a beta value of 0.379 ($T = 3.322$, $p = 0.001$). We support H6b, which suggests that employee environmental commitment partially mediates the connection between

green ability and employee performance. Green motivation indirectly affects employee performance through environmental commitment, according to Hypothesis 6c (H6c). The mediation analysis demonstrates a significant indirect impact with a beta value of 0.167 ($T = 2.678$, $p = 0.008$). Since employee environmental commitment partially mediates the link between green motivation and employee performance, H6c is supported. Finally, Hypothesis 6d (H6d) evaluated how green opportunity indirectly affects employee performance through environmental commitment. Mediation analysis shows a substantial indirect impact with a beta value of 0.212 ($T = 3.598$, $p = 0.004$). H6d is supported, showing that employee environmental commitment partially mediates the association between green opportunity and employee performance.

Table 6: Mediation Analysis

Hypothesis		Beta value	T value	P value
H6a	PEB -> EEC -> EP	0.590	4.000	0.001
H6b	GA -> EEC -> EP	0.379	3.3220	0.001
H6c	GM -> EEC -> EP	0.167	2.678	0.008
H6d	GO -> EEC -> EP	0.212	3.598	0.004

Table 7 shows how green transformational leadership (GTL) moderates the relationship between employee environmental commitment and employee performance. The hypothesis evaluated in the study has beta, T, and P values. The link between employee environmental commitment and employee performance is moderated by green transformational leadership, according to hypothesis

7. The moderation analysis shows a significant interaction effect with a beta value of 0.073 (T = 1.961, p = 0.042). The association between employee environmental commitment and employee performance is thus reinforced by H7, indicating that green transformational leadership moderates this relationship.

Table 7: Moderation Analysis

Hypothesis		Beta value	T value	P value
H7	GTL x EEC -> EP	0.073	1.961	0.042

Discussion:

The discussion portion of this research aims to help readers comprehend and contextualize the findings within environmental sustainability, organizational behavior, and performance management literature. A thorough study examined the complex relationship between pro-environmental behavior, green skills, green motivation, green opportunity, employee environmental commitment, green transformational leadership, and employee performance. This study substantially supports hypothesis H1, that pro-environmental behavior positively affects employee environmental commitment. Previous studies showed that individual actions promote environmental stewardship in commercial enterprises. Employees who recycle, reduce energy consumption, and promote sustainable practices show a deeper commitment to the firm's environmental ideals. Several variables may explain the link between environmentally responsible conduct and employee environmental devotion. Ecologically responsible conduct can raise environmental awareness

and comprehension of sustainability. Employees should feel more responsible for environmental preservation as they grow more aware of their behaviors' environmental impacts. Businesses that promote environmental sustainability benefit from workers' environmentally conscientious habits, which provide a feeling of social identity and belonging. When they believe their coworkers and managers value and promote environmental responsibility, employees are more likely to follow business norms. This group identification boosts their commitment to environmental goals and creates a common purpose in workplace sustainability. Eco-conscious behavior may represent environmental ideals. Visual actions by workers indicate their environmental commitment and impact company culture and sustainability. By employing this symbol of environmental responsibility, individuals may improve their environmental commitment and encourage others, creating a ripple effect across the firm.

Environmentally conscious personnel may understand

their actions' environmental implications and choose sustainable methods. This understanding helps enhance workplace culture and implement solutions. Advantageous H2. Improved waste reduction, energy savings, and pollution avoidance can help the organization meet its sustainability targets (Kühner et al., 2024). Green skills help employees adapt to environmental changes and embrace sustainable technologies and approaches. This educates workers about the environment. Companies seeking competitiveness and environmental responsibility in fast-changing technology and stricter environmental regulations require green staff. Innovation and problem-solving while tackling sustainability challenges increase the company's resilience and environmental development. Green skills foster community and environmental stewardship by providing a common vocabulary and understanding of environmental issues inside the firm. Green workers cooperate more, exchange best practices, and promote sustainability (Sobaih et al., 2020). It will highlight how individual operations influence the company's environmental performance. This collaborative environmental management strategy promotes learning and innovation. Improve the atmosphere using employee skills.

The results support hypothesis H3, that green motivation increases employee environmental commitment. Self-motivated environmentalists love sustainability. Protecting natural resources and the environment for future generations drives them. Staff are motivated to improve the environment personally and professionally. Motivated internally, they act (Pham et al., 2019). Green motivation provides workers purpose and integrates their career and environmental aims. Environmentally motivated workers feel their work is significant and influential, which boosts job satisfaction and engagement. These objective drives personnel to support corporate sustainability and environmental goals. Green motivation promotes a healthy company culture that encourages eco-friendly conduct (Islam et al., 2023). When they think their company values sustainability, employees feel appreciated and inspired, which improves their environmental activism. Business practices that support sustainability may encourage employees to be environmentally responsible.

Green possibilities encompass several company policies and activities that promote staff environmental responsibility. Environmental sustainability education, eco-friendly materials and technology, active engagement in sustainability initiatives, and recognition for environmental achievements may be benefits. Thus, H4 stands. By offering sustainability programs to employees, companies demonstrate their environmental responsibility. This practice aligns employee behaviour with organizational goals. When employees believe their company supports environmental sustainability, they are more likely to support environmental goals. Green possibilities show employees that the company values environmental sustainability and values their contributions. This acknowledgment gives personnel pride and accountability, inspiring them to take environmental action. Green opportunities provide employees the skills and tools to make significant changes and protect the environment. Training and resources improve employees' knowledge of sustainable procurement, energy efficiency, and waste reduction. This helps them make educated judgments and execute environmental solutions. Participation in sustainability efforts and projects allows employees to cooperate, produce new ideas, and grow individually, boosting their ecological accountability and organizational attachment. Moreover, employees' environmental commitment helps incorporate green habits and skills into quantifiable performance outcomes that support Hypothesis 5. Employees that are passionate about environmental preservation are more likely to incorporate green practices into their work and decision-making. Commitment motivates individuals to perform well and achieve corporate goals. This dedication also instills employee ownership and accountability. Another factor is that workers' environmental commitment affects their performance and how they promote sustainability in the company. Environmentally conscious employees are more likely to volunteer for sustainability efforts, endorse eco-friendly activities, and advocate for eco-friendly policies. Corporate culture and job performance improve with good citizenship. Environmental devotion also helps employees identify with the company's beliefs and goals, which boosts job satisfaction, motivation, and loyalty. When an

employee believes their firm supports environmental sustainability, they are more likely to feel connected and engaged in their job and contribute to organizational goals. This boosts employee morale, well-being, work performance, and organizational success by giving them a feeling of purpose and belonging.

Employee devotion to the environment turns green motivation and opportunity into performance results. Employees that care about the environment are more likely to practice green habits. This is because environmentally minded employees are deeply committed to environmental goals. Employees who believe their employer offers sustainability efforts are more likely to be devoted to environmental goals and perform well. By encouraging innovation and environmental growth, employees' environmental commitment affects their performance. Employees that care about the environment are more proactive. These activities include creatively solving environmental issues, working with colleagues on sustainability, and pushing for green legislation. Efficiency, cost reductions, and environmental impact reduction improve organizational performance and competitiveness. Employees' environmental commitment boosts job satisfaction, motivation, and engagement, improving performance. Employees that are devoted to environmental goals feel more connected to their work, which boosts job satisfaction and corporate goals. Dedicated employees are more likely to work hard to meet organizational goals and offer excellent work, which improves job performance because they are more aligned with their work.

Green transformational leaders encourage and engage people to accept environmental sustainability goals and actively participate in organizational sustainability programs (Hanif et al., 2023). This competency distinguishes ecologically conscious leaders. These leaders show a deep commitment to environmental ideals by modeling environmentally mindful conduct. Leadership is shown by deeds. Visionary leadership gives employees a sense of purpose and collective identity, pushing them to align their actions with the company's goals. This supports H7. Green transformational leaders also provide a supportive and motivating workplace that helps employees

succeed in environmentally mindful tasks. These leaders guide, equip, and inspire their staff to achieve environmental goals (Majali et al., 2022). They do this by effectively communicating with employees, giving direction and support, and implementing professional development programs. Green transformational leaders inspire workers to lead sustainability efforts and create a trusting, collaborative, and innovative workplace. Green transformational leaders also help overcome obstacles to turning employee environmental commitment into outcomes. They are crucial to this function. These leaders tackle challenges and focus continual progress, removing organizational barriers and helping individuals promote sustainability. By encouraging and rewarding environmentally responsible behavior, green transformational leaders boost staff commitment to sustainability goals and performance criteria.

Conclusion

Environmental sustainability and organizational effectiveness in Saudi Arabian industrial firms are examined in this study. The study found that green skills and environmentally conscious behavior increase employee environmental initiative participation. Participating in sustainability initiatives and learning the necessary skills boosts employees' environmental commitment. Staff must get continuing education and professional development and learn about environmental issues to succeed. Incentives and chances to engage in environmentally conscious conduct boost environmental commitment and corporate performance, according to research. When an employee cares about the environment and sees their employer's commitment to sustainability, they work harder to meet environmental goals. Environmental responsibility, sustainability, and corporate goals that support environmental aims may motivate people. The research suggests that good leadership affects firm success and employee participation in environmental sustainability projects. Green leaders foster environmental sustainability, offer a supportive environment, and help employees turn their environmental enthusiasm into environmental successes. Green transformational leadership may help companies become more

environmentally conscious and sustainable. This promotes corporate innovation and transformation.

Implications

Practical Implications

This study has several implications for Saudi Arabian industrial companies seeking to increase performance and sustainability. This study can help firms teach people to be environmentally friendly. Companies can encourage employees to participate in sustainability and environmental projects. This is done by training workers in waste minimization, energy saving, and sustainability. CEOs may encourage environmental stewardship and workplace motivation using the data. Leaders may encourage staff to participate in sustainability projects and follow business goals. Clear communication of the company's environmental sustainability commitment, staff engagement in sustainability initiatives, and eco-friendly behavior rewards can achieve this. Companies can benefit from green transformational leadership that models sustainability. Companies can benefit from this method. Leaders may motivate staff to accept environmental goals and make positive changes. This may be done by showing personal commitment to sustainability, encouraging open communication and cooperation, and enabling staff to lead sustainability efforts. Organizations may also use environmental devotion to translate sustainability activities into performance results. By encouraging ownership and alignment with the company's values, leaders may boost employee commitment to environmental sustainability, work performance, corporate citizenship, and effectiveness. Companies may promote sustainability by giving staff opportunity to participate in sustainability projects, initiatives, and innovation. By fostering employee involvement, cooperation, and ideation, companies may boost performance and acquire a competitive edge which helps organizations find and deploy sustainable solutions.

Theoretical Implications

This study improves environmental sustainability, organizational behavior, and leadership literature by revealing how individual and organizational variables affect employee participation with sustainability projects

and corporate performance. This is done by improving our mechanical knowledge. This study's first contribution is to emphasize individual-level elements in employee environmental commitment, expanding theoretical frameworks. Environmentalism, green skills, and drive are factors. This study illuminates the cognitive, motivational, and behavioral mechanisms that drive corporate employee engagement with environmental sustainability. It explores how these components affect employee performance. The research also emphasizes the effects of green transformational leadership on employees' environmental commitment and company success, improving leadership theoretical models. The research illuminates leadership mechanisms that turn corporate principles and goals into performance results. By showing how leadership affects staff sustainability efforts, this is done. The research also shows that environmental commitment mediates the link between human and organizational qualities and employee performance, improving organizational sustainability theories. The report stresses the importance of employee involvement and sustainability goals for organizational performance. Employee environmental participation is key to how sustainability projects generate corporate results. The report also emphasizes the importance of contextual elements like industry and company culture when evaluating sustainability initiatives in organizations. This study seeks to understand how leadership behaviors, human and organizational characteristics, and environmental sustainability affect employee engagement and performance. This is done by investigating how green transformational leadership moderates this connection.

Limitations and Future Direction

Limitations

This study provides valuable insights into the relationship between environmental commitment and organizational performance in health sector in the Kingdom of Saudi Arabia (KSA), but its limitations may limit its interpretation and generalizability. Cross-sectional data makes causal inference difficult. Longitudinal research approaches give stronger causal evidence and allow for the study of these connections across time. However, the data supports the predictions. Using self-reported metrics in the

study may also include common method bias, when respondents give biased or socially preferred answers. Response bias can still be present despite efforts to reduce it by gathering anonymous data and assuring confidentiality. Future study can improve results validity by using objective measurements or several data sources to triangulate conclusions. This research's concentration on Saudi Arabian industrial firms may restrict its applicability to other fields or cultures. Environmental commitment and performance results may be affected by organizational processes, industry norms, and cultural values when switching contexts. Thus, extending results to organizations in different industries or geographies is risky. While the study explored various human and organizational elements that affect environmental devotion and effectiveness, other significant variables may have been overlooked. Organizational structure, legal frameworks, and stakeholder expectations can also affect sustainability practices and performance. Future study may examine these areas to better understand how environmental commitment and performance in organizations are affected. Although calculated using a heuristic, the study's sample size is low. Even with representative sampling, increasing the sample size would increase statistical power and make the findings more relevant to the whole population. Next research may replicate the study with larger and more varied populations to confirm the findings and strengthen the conclusions.

Future Direction

This study suggests several research avenues to further our understanding of environmental commitment, organizational factors, and performance outcomes in Saudi Arabian health sector organizations. The long-term effects of environmental commitment on organizational goals may be studied using longitudinal methods. Researchers can employ longitudinal studies to determine how environmental commitment affects organizational performance. These studies illuminate corporate sustainability dynamics. Future research may study how other human and organizational factors impact environmental commitment and performance. Business culture, leadership styles, and external environmental

constraints may affect employee sustainability program participation and company success. Researchers can enhance organizational environmental commitment and performance models by adding factors. Further research may study how environmental commitment affects creativity, productivity, and financial performance. Through organizational citizenship behavior, job satisfaction, and organizational commitment, researchers can assess how environmental commitment affects organizational performance. Additionally, studies may analyze the dimensions and aspects that impact these relationships to understand what characteristics increase or impede company sustainability. How individual, organizational, and environmental elements impact environmental commitment and performance may be studied from several levels. Researchers can comprehend how sector features, regulatory frameworks, and socio-economic trends impact corporate sustainability by examining macro-level components. Due to cultural differences in environmental beliefs and actions, study may reveal ways to increase environmental dedication and effectiveness. Academics can also test ways to boost commercial enterprises' environmental performance. How training, leadership, and organizational policies impact sustainability can help academics advise firms on environmental responsibility and success. More study may assist Saudi Arabian and global industrial enterprises improve environmental sustainability through evidence-based strategies.

References:

- Abd El-Aal, A., Abdullah, G. M. S., Al- Metwaly, W. M., & AbdelMaksoud, K. M. (2023). Geological and archeological heritage resources assessment of the Najran Province; towards the 2030 vision of Saudi Arabia. *Resources Policy*, 85, 104061. <https://doi.org/10.1016/j.resourpol.2023.104061>
- Afrin, S., Asyraf Bin Mohd Kassim, M., Yusof, M. F., Hassan, M. S., Islam, M. A., & Khairuddin, K. N. B. (2023). Investigating the Determinants of Employee Performance for Sustainability: A Study on the Bangladesh Insurance Industry. *Sustainability* 2023,

- Vol. 15, Page 5674, 15(7), 5674. <https://doi.org/10.3390/SU15075674>
- Ali, Q., Salman, A., & Parveen, S. (2022). Evaluating the effects of environmental management practices on environmental and financial performance of firms in Malaysia: the mediating role of ESG disclosure. *Heliyon*, 8(12), e12486. <https://doi.org/10.1016/j.heliyon.2022.e12486>
 - Alshurideh, M. T., Al Kurdi, B., Alzoubi, H. M., Akour, I., Obeidat, Z. M., & Hamadneh, S. (2023). Factors affecting employee social relations and happiness: SM-PLUS approach. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(2), 100033. <https://doi.org/10.1016/j.joitmc.2023.100033>
 - An, Z., Zhao, Y., & Zhang, Y. (2023). Mineral exploration and the green transition: Opportunities and challenges for the mining industry. *Resources Policy*, 86, 104263. <https://doi.org/10.1016/j.resourpol.2023.104263>
 - Arshad, M., Abid, G., Ahmad, J., Anum, L., & Khan, M. M. (2021). Impact of Employee Job Attitudes on Ecological Green Behavior in Hospitality Sector. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 31. <https://doi.org/10.3390/joitmc7010031>
 - Bameri, N., Keshtegar, A., Mehdibeigi, N., Professor, -Assistant, & of Sistan, U. (2018). Investigating the Effect of e-HRM functions on Organizational Innovation by the Mediating role of Knowledge Management Capabilities. *Public Management Researches*, 11(41), 139–164. <https://doi.org/10.22111/JMR.2018.4454>
 - Barszcz, S. J., Oleszkowicz, A. M., Bk, O., & Słowi ska, A. M. (2022). The role of types of motivation, life goals, and beliefs in pro-environmental behavior: The Self-Determination Theory perspective. *Current Psychology*. <https://doi.org/10.1007/S12144-022-02995-2/FULLTEXT.HTML>
 - Blum, S., Buckland, M., Sack, T. L., & Fivenson, D. (2021). Greening the office: Saving resources, saving money, and educating our patients. *International Journal of Women's Dermatology*, 7(1), 112–116. <https://doi.org/10.1016/j.ijwd.2020.04.013>
 - Burawat, P. (2019). The relationships among transformational leadership, sustainable leadership, lean manufacturing and sustainability performance in Thai SMEs manufacturing industry. *International Journal of Quality and Reliability Management*, 36(6), 1014–1036. <https://doi.org/10.1108/IJQRM-09-2017-0178>
 - Capper, T. S., Williamson, M., & Chee, R. (2023). How is cultural safety understood and translated into midwifery practice? A scoping review and thematic analysis. *Nurse Education in Practice*, 66, 103507. <https://doi.org/10.1016/j.nepr.2022.103507>
 - Duong, C. D., Nguyen, T. H., & Nguyen, H. L. (2023). How green intrinsic and extrinsic motivations interact, balance and imbalance with each other to trigger green purchase intention and behavior: A polynomial regression with response surface analysis. *Heliyon*, 9(10), e20886. <https://doi.org/10.1016/j.heliyon.2023.e20886>
 - Fung Wong, A. K., & Kim, S. (Sam). (2020). Development and validation of standard hotel corporate social responsibility (CSR) scale from the employee perspective. *International Journal of Hospitality Management*, 87, 102507. <https://doi.org/10.1016/j.ijhm.2020.102507>
 - Gusmerotti, N. M., Todaro, N. M., Tosi, D., & Testa, F. (2023). Green work climate, work meaningfulness and supervisor environmental priority: A social exchange perspective on employees' eco-initiatives. *Journal of Cleaner Production*, 415, 137889. <https://doi.org/10.1016/j.jclepro.2023.137889>
 - Han, B., Niang, J., Rao, H., Lyu, N., Oda, H., Sakamoto, S., Yang, Y., & Sablier, M. (2021). Paper fragments from the Tibetan Samye Monastery: Clues for an unusual sizing recipe implying wheat starch and milk in early Tibetan papermaking. *Journal of*

- Archaeological Science: Reports, 36, 102793. <https://doi.org/10.1016/j.jasrep.2021.102793>
- Hanif, S., Ahmed, A., & Younas, N. (2023). Examining the impact of Environmental Management Accounting practices and Green Transformational Leadership on Corporate Environmental Performance: The mediating role of Green Process Innovation. *Journal of Cleaner Production*, 414, 137584. <https://doi.org/10.1016/j.jclepro.2023.137584>
 - He, S., Luo, Y., Qu, Y., & Hu, X. (2024). Does it work? Exploring the influence mechanism of financial incentives in cultivating pro-environmental behavior among college students. *Journal of Cleaner Production*, 436, 140695. <https://doi.org/10.1016/j.jclepro.2024.140695>
 - Huo, W., Zaman, B. U., Zulfiqar, M., Kocak, E., & Shehzad, K. (2023). How do environmental technologies affect environmental degradation? Analyzing the direct and indirect impact of financial innovations and economic globalization. *Environmental Technology & Innovation*, 29, 102973. <https://doi.org/10.1016/j.eti.2022.102973>
 - Iqbal, R., Shahzad, K., & Donia, M. B. L. (2023). Environmentally specific transformational leadership and employee green attitude and behavior: An affective events theory perspective. *Journal of Environmental Psychology*, 92, 102181. <https://doi.org/10.1016/j.jenvp.2023.102181>
 - Iriyadi, Setiawan, B., & Puspitasari, R. (2023). Consumer intentions to reduce food waste in all-you-can-eat restaurants based on personal norm activation. *Heliyon*, 9(2), e13399. <https://doi.org/10.1016/j.heliyon.2023.e13399>
 - Islam, J. U., Nazir, O., & Rahman, Z. (2023). Sustainably engaging employees in food wastage reduction: A conscious capitalism perspective. *Journal of Cleaner Production*, 389, 136091. <https://doi.org/10.1016/j.jclepro.2023.136091>
 - Jha, A., & Dash, S. B. (2023). Does doing good help employees perform well? Understanding the consequences of CSR on industrial sales employees. *Journal of Cleaner Production*, 383, 135337. <https://doi.org/10.1016/j.jclepro.2022.135337>
 - Khan, N. U., Saufi, R. B. A., & Obaid, A. (2021). Do Green HRM Practices Matter in Shaping Sustainable Performance Among ISO 14001-Certified Malaysian Manufacturing Firms? A Mixed-Method Approach. In *New Horizons in Management, Leadership and Sustainability* (pp. 219–236). Springer, Cham. https://doi.org/10.1007/978-3-030-62171-1_11
 - Kotsopoulos, D., Bardaki, C., & Pramataris, K. (2023). How to motivate employees towards organizational energy conservation: Insights based on employees perceptions and an IoT-enabled gamified IS intervention. *Heliyon*, 9(5), e16314. <https://doi.org/10.1016/j.heliyon.2023.e16314>
 - Kühner, C., Stein, M., & Zacher, H. (2024). A person-environment fit approach to environmental sustainability in the workplace. *Journal of Environmental Psychology*, 102270. <https://doi.org/10.1016/j.jenvp.2024.102270>
 - Li, W., Bhutto, T. A., Xuhui, W., Maitlo, Q., Zafar, A. U., & Ahmed Bhutto, N. (2020). Unlocking employees' green creativity: The effects of green transformational leadership, green intrinsic, and extrinsic motivation. *Journal of Cleaner Production*, 255, 120229. <https://doi.org/10.1016/j.jclepro.2020.120229>
 - Lim, X.-J., Cheah, J.-H., Ngo, L. V., Chan, K., & Ting, H. (2023). How do crazy rich Asians perceive sustainable luxury? Investigating the determinants of consumers' willingness to pay a premium price. *Journal of Retailing and Consumer Services*, 75, 103502. <https://doi.org/10.1016/j.jretconser.2023.103502>
 - Lin, H., & Zhai, X. (2023). Energy efficiency through user adoption of the sharing economy leading to environmentally sustainable development. *Journal of Innovation & Knowledge*, 8(1), 100315. <https://doi.org/10.1016/j.jik.2023.100315>

- Liu, P., Teng, M., & Han, C. (2020). How does environmental knowledge translate into pro-environmental behaviors?: The mediating role of environmental attitudes and behavioral intentions. *Science of The Total Environment*, 728, 138126. <https://doi.org/10.1016/J.SCITOTENV.2020.138126>
- Liu, R., Yue, Z., Ijaz, A., Lutfi, A., & Mao, J. (2023). Sustainable Business Performance: Examining the Role of Green HRM Practices, Green Innovation and Responsible Leadership through the Lens of Pro-Environmental Behavior. In *Sustainability* (Vol. 15, Issue 9). <https://doi.org/10.3390/su15097317>
- Majali, T., Alkaraki, M., Asad, M., Aladwan, N., & Aledeinat, M. (2022). Green Transformational Leadership, Green Entrepreneurial Orientation and Performance of SMEs: The Mediating Role of Green Product Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(4), 191. <https://doi.org/10.3390/joitmc8040191>
- Marrucci, L., Daddi, T., & Iraldo, F. (2022). The circular economy, environmental performance and environmental management systems: the role of absorptive capacity. *Journal of Knowledge Management*, 26(8), 2107–2132. <https://doi.org/10.1108/JKM-06-2021-0437>
- Marrucci, L., Daddi, T., & Iraldo, F. (2024). Creating environmental performance indicators to assess corporate sustainability and reward employees. *Ecological Indicators*, 158, 111489. <https://doi.org/10.1016/j.ecolind.2023.111489>
- Mi, L., Gan, X., Xu, T., Long, R., Qiao, L., & Zhu, H. (2019). A new perspective to promote organizational citizenship behaviour for the environment: The role of transformational leadership. *Journal of Cleaner Production*, 239, 118002. <https://doi.org/10.1016/j.jclepro.2019.118002>
- Mittal, S., & Dhar, R. L. (2016). Effect of green transformational leadership on green creativity: A study of tourist hotels. *Tourism Management*, 57, 118–127. <https://doi.org/10.1016/J.TOURMAN.2016.05.007>
- Nadeem, K., Wong, S. I., Za, S., & Venditti, M. (2024). Digital transformation and industry 4.0 employees: Empirical evidence from top digital nations. *Technology in Society*, 76, 102434. <https://doi.org/10.1016/j.techsoc.2023.102434>
- Neumann, T. (2022). Impact of green entrepreneurship on sustainable development: An ex-post empirical analysis. *Journal of Cleaner Production*, 377, 134317. <https://doi.org/10.1016/j.jclepro.2022.134317>
- O'Bryan, E. M., Beadel, J. R., McLeish, A. C., & Teachman, B. A. (2021). Assessment of intolerance of uncertainty: Validation of a modified anagram task. *Journal of Behavior Therapy and Experimental Psychiatry*, 73, 101671. <https://doi.org/10.1016/j.jbtep.2021.101671>
- Ogwu, M. C., Malikia, C. N., Stansfield, A., Gonzalez-Torres, A. D., & Izah, S. C. (2024). Chapter 28 - Sustainable food processing waste management for environmental protection. In A. L. Srivastav, A. S. Grewal, Markandeya, & T. D. B. T.-R. of G. C. in E. R. to A. E. S. Pham (Eds.), *Advances in Pollution Research* (pp. 291–299). Elsevier. <https://doi.org/10.1016/B978-0-443-15291-7.00010-9>
- Parker, L. D., & Chung, L. H. (2018). Structuring social and environmental management control and accountability: Behind the hotel doors. *Accounting, Auditing and Accountability Journal*, 31(3), 993–1023. <https://doi.org/10.1108/AAAJ-04-2016-2513/FULL/PDF>
- Pham, N. T., Vo Thanh, T., Tu ková, Z., & Thuy, V. T. N. (2019). The role of green human resource management in driving hotel's environmental performance: Interaction and mediation analysis. *International Journal of Hospitality Management*. <https://doi.org/10.1016/j.ijhm.2019.102392>
- Pham, N. T., Vo Thanh, T., Tu ková, Z., & Thuy, V. T. N. (2020). The role of green human resource management in driving hotel's environmental performance: Interaction and mediation analysis.

- International Journal of Hospitality Management, 88, 102392. <https://doi.org/10.1016/j.ijhm.2019.102392>
- Potoski, M., & Callery, P. J. (2018). Peer communication improves environmental employee engagement programs: Evidence from a quasi-experimental field study. *Journal of Cleaner Production*, 172, 1486–1500. <https://doi.org/10.1016/j.jclepro.2017.10.252>
 - Prabhakar, C. G., Anand Babu, K., Kataraki, P. S., & Reddy, S. (2022). A review on natural fibers and mechanical properties of banyan and banana fibers composites. *Materials Today: Proceedings*, 54, 348–358. <https://doi.org/10.1016/j.matpr.2021.09.300>
 - Prakash, G., Sharma, S., Kumar, A., & Luthra, S. (2024). Does the purchase intention of green consumers align with their zero-waste buying behaviour? An empirical study on a proactive approach towards embracing waste-free consumption. *Heliyon*, 10(3), e25022. <https://doi.org/10.1016/j.heliyon.2024.e25022>
 - Ren, S., Jiang, K., & Tang, G. (2022). Leveraging green HRM for firm performance: The joint effects of CEO environmental belief and external pollution severity and the mediating role of employee environmental commitment. *Human Resource Management*, 61(1), 75–90.
 - Ruiz-Ortega, M. J., Parra-Requena, G., & García-Villaverde, P. M. (2021). From entrepreneurial orientation to sustainability orientation: The role of cognitive proximity in companies in tourist destinations. *Tourism Management*, 84, 104265. <https://doi.org/10.1016/j.tourman.2020.104265>
 - Shampa, M. T. A., Shimu, N. J., Chowdhury, K. M. A., Islam, M. M., & Ahmed, M. K. (2023). A Comprehensive Review on Sustainable Coastal Zone Management in Bangladesh: Present Status and the Way Forward. *Heliyon*, e18190. <https://doi.org/10.1016/j.heliyon.2023.e18190>
 - Sharma, R., & Mishra, D. K. (2021). An analysis of thematic structure of research trends in occupational health and safety concerning safety culture and environmental management. *Journal of Cleaner Production*, 281, 125346. <https://doi.org/10.1016/j.jclepro.2020.125346>
 - Sharma, S., Prakash, G., Kumar, A., Mussada, E. K., Antony, J., & Luthra, S. (2021). Analysing the relationship of adaption of green culture, innovation, green performance for achieving sustainability: Mediating role of employee commitment. *Journal of Cleaner Production*, 303, 127039. <https://doi.org/10.1016/j.jclepro.2021.127039>
 - Shoaib, M., Nawal, A., Záme ník, R., Korsakien , R., & Rehman, A. U. (2022). Go green! Measuring the factors that influence sustainable performance. *Journal of Cleaner Production*, 366, 132959. <https://doi.org/10.1016/J.JCLEPRO.2022.132959>
 - Shyam Narain, R. (2023). Recent advancements and challenges in green material technology: Preparing today for nourishing tomorrow. *Materials Today: Proceedings*. <https://doi.org/10.1016/j.matpr.2023.02.218>
 - Sobaih, A. E. E., Hasanein, A., & Elshaer, I. (2020). Influences of Green Human Resources Management on Environmental Performance in Small Lodging Enterprises: The Role of Green Innovation. *Sustainability* 2020, Vol. 12, Page 10371, 12(24), 10371. <https://doi.org/10.3390/SU122410371>
 - Story, J. S. P., & Castanheira, F. (2019). Corporate social responsibility and employee performance: Mediation role of job satisfaction and affective commitment. *Corporate Social Responsibility and Environmental Management*, 26(6), 1361–1370. <https://doi.org/10.1002/CSR.1752>
 - Suarez-Paba, M. C., & Cruz, A. M. (2022). A paradigm shift in Natech risk management: Development of a rating system framework for evaluating the performance of industry. *Journal of Loss Prevention in the Process Industries*, 74, 104615. <https://doi.org/10.1016/j.jlp.2021.104615>
 - Suleman, A. R., Amponsah-Tawiah, K., & Ametorwo,

- A. M. (2023). The role of employee environmental commitment in the green HRM practices, turnover intentions and environmental sustainability nexus. Benchmarking, ahead-of-print(ahead-of-print). <https://doi.org/10.1108/BIJ-06-2022-0393/FULL/PDF>
- Tan, T. A. G., & Vicente, A. J. (2019). An innovative experiential and collaborative learning approach to an undergraduate marketing management course: A case of the Philippines. *The International Journal of Management Education*, 17(3), 100309. <https://doi.org/10.1016/j.ijme.2019.100309>
 - Thormann, L., Neuling, U., & Kaltschmitt, M. (2023). Opportunities and challenges of the European Green Deal for the chemical industry: An approach measuring circularity. *Cleaner and Circular Bioeconomy*, 5, 100044. <https://doi.org/10.1016/j.clcb.2023.100044>
 - Tian, Q., & Robertson, J. L. (2019). How and When Does Perceived CSR Affect Employees' Engagement in Voluntary Pro-environmental Behavior? *Journal of Business Ethics*, 155(2), 399–412. <https://doi.org/10.1007/S10551-017-3497-3>
 - Tosun, C., Parvez, M. O., Bilim, Y., & Yu, L. (2022). Effects of green transformational leadership on green performance of employees via the mediating role of corporate social responsibility: Reflection from North Cyprus. *International Journal of Hospitality Management*, 103, 103218. <https://doi.org/10.1016/j.ijhm.2022.103218>
 - Tuan, L. T. (2022). Promoting employee green behavior in the Chinese and Vietnamese hospitality contexts: The roles of green human resource management practices and responsible leadership. *International Journal of Hospitality Management*, 105, 103253. <https://doi.org/10.1016/j.ijhm.2022.103253>
 - Wei, F., Abbas, J., Alarifi, G., Zhang, Z., Adam, N. A., & Queiroz, M. J. de. (2023). Role of green intellectual capital and top management commitment in organizational environmental performance and reputation: Moderating role of pro-environmental behavior. *Journal of Cleaner Production*, 405, 136847. <https://doi.org/10.1016/j.jclepro.2023.136847>
 - Wells, V. K., Ciocirlan, C. E., Manika, D., & Gregory-Smith, D. (2024). Green, keen, and somewhere in between: An employee environmental segmentation study. *Journal of Cleaner Production*, 445, 141296. <https://doi.org/10.1016/j.jclepro.2024.141296>
 - Xu, T., Zheng, X., Ji, B., Xu, Z., Bao, S., Zhang, X., Li, G., Mei, J., & Li, Z. (2024). Green recovery of rare earth elements under sustainability and low carbon: A review of current challenges and opportunities. *Separation and Purification Technology*, 330, 125501. <https://doi.org/10.1016/j.seppur.2023.125501>
 - Younis, Z., & Hussain, S. (2023). Green Transformational Leadership: Bridging the gap between Green HRM Practices and Environmental Performance through Green Psychological Climate. *Sustainable Futures*, 6, 100140. <https://doi.org/10.1016/j.sfr.2023.100140>
 - Zizka, L., Dias, Á., HO, J. A., Simpson, S. B., & Singal, M. (2024). From extra to Extraordinary: An academic and practical exploration of Extraordinary (E) Pro Environmental Behavior (PEB) in the hotel industry. *International Journal of Hospitality Management*, 119, 103704. <https://doi.org/10.1016/j.ijhm.2024.103704>

Appendix-A Questionnaire

Employee environmental commitment

1. I really care about the environmental concern of this organisation.
2. I would feel guilty about not supporting the environmental efforts of this organisation.
3. The environmental concern of this organisation means a lot to me.
4. I feel a sense of duty to support the environmental efforts of this organisation.
5. I really feel like this organisation's environmental problems are my own.
6. I feel personally attached to the environmental concern of this organisation.
7. I strongly value the environmental efforts of this organisation.

Pro-Environmental behavior

1. Do you often specifically classify glass, aluminum cans, plastics or newspapers for easy recycling?
2. Will you reduce the consumption of energy or fuel such as oil, gas, electricity, etc. in your home to protect the environment?
3. Do you often save or reuse water for environmental protection?
4. Do you often avoid buying certain products for the sake of environmental protection?

Employee Performance

1. My performance is better than that of my colleagues with the same qualifications
2. I am satisfied with my performance because most of it is very good
3. My performance is better than that of employees in other companies who have the same qualifications

Green transformational Leadership

1. The leader inspires the organisation members with the environmental plans.

2. The leader provides a clear environmental vision for the members to follow.
3. The leader gets the organisation members to work together for the same environmental goals.
4. The leader encourages the organisation members to achieve the environmental goals.
5. The leader acts with considering environmental beliefs of the organisation members.
6. The leader stimulates the organisation members to think about green ideas.

Green Abilities

1. Great effort goes in to select the right person
2. Hiring only those who possess environmental values
3. Considerable importance given to green staffing process
4. Every employee undergoes mandatory environmental training
5. Environmental training is designed to enhance employee's environmental skills and knowledge
6. Employees use environmental training in their jobs.

Green Motivation

1. Performance appraisal records environmental performance
2. Performance appraisal includes environmental incidents, responsibilities, concerns and policy
3. Employee gets reward for environmental management
4. Employee gets reward for acquiring specific environmental competencies

Green Opportunities

1. Employees are involved in becoming environmentally friendly
2. Using teamwork for resolving environmental issues
3. Employees discuss environmental issues in team meetings