

# The Effect of Environmental Leadership on Employee Green Behavior Mediated by Environmental Values: A Field Study in Government Agencies in the Kingdom of Saudi Arabia<sup>1</sup>

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## ABSTRACT

*Through the comprehensive analysis of organizational success factors, scientific research established that the integration of environmental responsibility, as a pivotal component, in the operations of an organization is indispensable for achieving its goals. This research examines environmental leadership in Saudi government agencies and its impact on the green behavior of employees to foster environmental sustainability as well as the mediating role of environmental values in the relationship. Employing probability sampling methods, this study adopts standardized scales to collect data from 395 employees of government agencies in Riyadh. This study tests the reliability of the research model and hypotheses using structural equation modeling. Findings show the significant positive effect of environmental leadership on the green behavior (eco-initiatives, eco-civic-engagement, and eco-helping) and environmental values of the employees and the significant effect of environmental values on green behavior. Furthermore, the findings show the significant partial mediating role of environmental values in the relationship between environmental leadership and green behavior. This study discusses the research results and outlines the implications.*

**Keywords:** leadership, environmental leadership, green behavior, environmental values, sustainability.

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## 1. INTRODUCTION

The development of knowledge and research fields concerning the environment and environmental sustainability led to the emergence of new and innovative terms for the environment. Such terminology includes “green economy,” “green organizations,” “green policies,” and “initiatives,” in addition to “green human resource management” (GHRM), which indicates the need for organization employees to consider all environmental standards and aspects in their behavior, practices, and job role (Mashala, 2018). Green behavior in organizations is focused on protecting and sustaining the environment. Employees will not be able to work without effective and contributing leadership, because leaders formulate visions and goals, establish directions, provide incentives in various forms, offer feedback, solve problems and obstacles, evaluate job performance, and perform other traditional functions.

Transformation into a green organization depends largely on the commitment and leadership of managers, who are in a position to implement policies and practices to improve their organization’s environmental performance (Kashmanian et al., 2010; Pearse & Dimovski, 2015). organization leaders are expected to be positive role models to employees and to encourage them to engage in environmentally supportive initiatives and behaviors and minimize risk factors that could harm the environment and deplete available resources. However, in modern organizations, leadership involves other activities as well as leaders’ roles and responsibilities to serve the environment through their administrative positions in the organization. In addition, organization leaders are expected to be positive role models to employees and to encourage them to engage in environmentally supportive initiatives and behaviors and minimize risk factors that could harm the environment and deplete available resources. Such behaviors include establishing and implementing environmental standards, developing a green vision, and creating supportive psychological convenience for employees toward the environment. Thus, the tasks of greening organizations fall largely on the shoulders of leaders and top-level managers, as they are in a position to implement policies and practices to enhance their organization’s environmental performance (Boiral et al., 2014).

Therefore, this study explores environmental leadership in government agencies in the context of Saudi Arabia and how it influences employees and their green behavior in the workplace to promote environmental sustainability, as an essential dimension of sustainable development.

## 2. RESEARCH PROBLEM

Environmental issues have garnered considerable attention worldwide and led governments and private organizations to play an active role in environmental sustainability by adopting a range of environmental policies, effective institutional measures, and strategies to encourage employees to engage in environmental behavior and initiatives (Lebrede, 2012; Tuân et al., 2014). Because they are considered to be a source of environmental pollution (Robertson & Barling, 2013). Therefore, they try to play a crucial role in addressing environmental concerns (Su et al., 2020) and strive to adopt sustainable practices that will contribute to the protection of their internal and external environments (Šimanskienė & Župerkienė, 2014).

The participation of individuals and organizations in protecting the environment by adopting behaviors and implementing activities is crucial to maintaining and supporting environmental sustainability. Sustainability refers to the integration and balance of environmental, economic, and social dimensions (Mino & Hanaki, 2013). Through their operations and activities, organizations are generally considered to be a source of environmental pollution (Robertson & Barling, 2013). Therefore, they play a crucial role in addressing environmental concerns (Su et al., 2020) and strive to adopt sustainable practices that will contribute to the protection of their internal and external environments (Šimanskienė & Župerkienė, 2014).

Given the importance of leadership in organizations and its essential role in guiding and motivating employees' behaviors, organization leaders are expected to take control of environmental issues owing to their prominent role in creating strategies that can facilitate environmental initiatives, reducing the alarming rate of environmental degradation worldwide, making sound decisions, and understanding sustainability principles and commitments (Kashmanian et al., 2010; Pearse & Dimovski, 2015). The Saudi Vision 2030 identified sustainability, sustainable performance, and air pollution reduction as key government objectives (Althnayan et al., 2022). In addition to initiating international agreements to protect the environment, Saudi government launched various environmental initiatives, such as the Riyadh Green Initiative.

However, the growing literature on employees' green behavior in the workplace, the attention paid to the impact of environmental leadership support, and the mechanisms through which it influences environmental organizational behavior is inadequate (Priyankara et al., 2018). Similarly, studies on the role of environmental leaders in formulating and managing environmental policies are limited (Niu et al., 2018), especially in the Arabic context and Saudi Arabia

(Albahairy, 2018; Ibrahim, 2018; Alhaji, 2022). Therefore, this study seeks to investigate the effect of environmental leadership on environmental values and green behavior and assess the mediating role of environmental values in the relationship between environmental leadership and green behavior.

### **3. IMPORTANCE AND OBJECTIVES OF THE RESEARCH**

This study seeks to discuss the reality of environmental leadership in government agencies in the Saudi context and its role in motivating and encouraging employees to engage in various forms of green behavior to support environmental sustainability. Therefore, it derives its importance, in general, from the topic of the environment and the necessity of working to protect it from destruction and pollution by organizations and individuals worldwide, including public and private organizations, employees, managers, and leaders. It is among the few works that touch base to investigate green behavior in the Saudi context, as environmental leadership and green behavior are new managerial trends that have been widely investigated in the literature. Current studies in this field remain limited (Albahairy, 2018; Alhaji, 2022). From a scientific perspective, this research contributes valuable content to the Arab library on environmental management and green leadership which may inspire other researchers in Saudi Arabia and the Arab world to conduct studies that examine other variables related to the topic. Practically, this study provides significant results and recommendations for leaders in Saudi public organizations to encourage employees to undertake efforts and initiatives that support sustainability within their roles in organizations by designing programs, plans, and procedures that enhance the practice of green behavior, attracting individuals and leaders who have values and a desire to support and participate in sustainability, creating an organizational culture that supports these initiatives in government organizations, and reducing waste in resources which helps support various efforts to protect the environment. This study aims to achieve the following:

- Assess the extent to which green behavior is practiced by employees in Saudi public organizations.
- Evaluate the environmental values held by employees in public organizations.
- Analyze the prevalence of environmental leadership practices in public organizations.
- Investigate the impact of environmental leadership on green behavior, with environmental values as a mediating factor, in Saudi public organizations.

## **4. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **4.1 ENVIRONMENTAL LEADERSHIP**

Environmental leaders are characterized as having a clear vision toward sustainability, culture oriented toward their organization's sustainable development, and the ability to build on existing sustainability principles (Šimanskienė & Župerkienė, 2014). Wang et al. (2014) believed in the aforementioned notion and stated that environmental leadership involves three key characteristics: the ability to create an appealing vision to address environmental issues, change perceptions about environmental issues, and provide effective examples to demonstrate personal commitment to environmental issues.

Similarly, Lambert (2011) emphasized that the characteristics of environmental leadership include vigilance and the ability to continuously assess the environment to prevent the deterioration of the operating conditions of an organization. Meanwhile, Slankis (2006) believed that the desire to change, adaptability, and having a broad perspective, social and environmental awareness, commitment to sustainability, and the ability to persuade, communicate, and build relationships are characteristics of environmental leadership. Lee et al. (2014) added three characteristics to environmental leadership: openness to change and ability to achieve environment-related goals and make ethical decisions.

According to Hargreaves and Fink (2004), sustainable learning, resource development and diversification, and commitment to the environment are characteristics of environmental leadership. Mino and Hanaki (2013) concluded that environmental leadership should involve the ability to gain a comprehensive understanding of environmental, economic, and social aspects; develop a new perspective on environmental protection; collaborate with stakeholders to listen to their opinions and concerns; and reach collective decisions. Meanwhile, Egri and Herman (2000) argued that environmental leaders should exhibit achievement, affiliation and power, emotional maturity, and self-confidence.

According to Boiral et al. (2014), environmental leadership tasks include implementing environmental practices that can reduce pollution, waste, and other environmental impacts; responding to stakeholders' expectations; measuring the economic effects of the implementation of environmental strategies and practices; and embracing and imparting green values within the organization. Marjanović et al. (2019) added supporting environmental issues and preserving natural resources; effectively managing resources and energy; developing capabilities, strategies, structures, and systems; mobilizing community

participation efforts; and improving quality of life to environmental leadership tasks.

Boiral et al. (2009) argued that environmental leadership should be able to deal with complex environmental issues, integrate conflicting perspectives, understand and address the expectations of a wide range of stakeholders, and change organizational practices. Environmental leadership works toward fostering sustainable learning and long-term success while diversifying and enhancing environmental capacities (Venera, 2017). In a different context, Wang et al. (2014) affirmed that environmental leadership involves conserving energy, developing organizational capabilities, promoting environmentally supportive practices, enhancing technical expertise, mobilizing financial resources, developing administrative implementation processes to achieve sustainability, and developing sustainability policies.

Thus, environmental leadership is a form of leadership with distinct characteristics and features that distinguish its role in protecting the environment with a clear and long-term vision of environmental sustainability and direction, the ability to disseminate and promote such a vision, productive relationships with stakeholders, and the ability to motivate and persuade others within the organization and community to change to achieve their sustainability goals.

#### **4.2 GREEN BEHAVIOR AND LEADERSHIP**

Since the 1990s, global environmental preservation has become a major concern, and attention to environmental issues has increased significantly (Yuan & Li, 2023). In addition, organizations have adopted environmental management and transitioned to proactive environmental behavior owing to internal and external pressure factors (Berry & Rondinelli, 1998).

Green behavior is defined as employees' measurable actions and activities to contribute to environmental sustainability (Ones & Dilchert, 2012). Stern (2000) defined green behavior as intentional behavior aimed at reducing the negative impact of people's actions on the natural environment. It can take various forms, such as energy conservation, waste recycling, double-sided printing, use of environment-friendly modes of transportation, purchase of recyclable goods, reduction of water usage, elimination of pollution sources, and creation of environment-friendly products (Kurusu, 2015; Warrick, 2016).

Moreover, green practices include electronic filing (E-filing), eliminating plastic employee identification cards, job sharing, conducting virtual conferences and interviews, developing flexible and remote work arrangements, online training, reducing employees' carbon emissions, providing energy-efficient office spaces,

and adopting green payroll sheets (Bangwal & Tiwari, 2015; Markowitz et al., 2012). Green practices also include conserving resources by shutting down unnecessary electrical equipment, using stairs instead of elevators, and disposing of unnecessary waste (Warrick, 2016; Janmaimool & Denpaiboon, 2016; Farrukh et al., 2022).

It may also include moral practices, such as promoting environmental initiatives; adhering to pro-environmental policies; advocating the organization's environmental orientation; representing the organization in environmental events; adopting environmental values; implementing environmental policies, procedures, standards, and regulations; engaging in environmental activities; sharing knowledge, information, and suggestions regarding pollution prevention; launching environmental projects; acquiring skills to effectively understand environmental issues; and participating in educational programs for sustainable development (Boiral, 2009).

Researchers presented various classifications of environmental behavior in organizations. For instance, Ones and Dilchert (2012) concluded that environmental behavior involves working sustainably; avoiding harm; influencing others through awareness, education, and training for sustainability; taking the initiative by exerting pressure; engaging in different activities; forming alliances; and proposing programs.

Organizations can achieve their goals by engaging in green behavior, such as reducing their operating costs, energy use, and production risks; enhancing their legitimacy and social responsibility; creating competitive advantages; improving their pollution management practices; mitigating the health risks faced by the local community (Stritch & Christensen, 2014); increasing their productivity (Delmas & Angeles, 2013); facilitating the development of new skills (Francoeur et al., 2019); improving their credibility and reputation among their employees, consumers, and investors; increasing their market share; and generating revenue (George & Jayakumar, 2017).

Effective leaders can serve as role models to their subordinates in organizations (Omarova & Jo, 2022). When leaders are environmentally conscious and take action to implement environmental protection practices, employees will follow their behavior, which will enhance the overall environmental performance of the organization (Su et al., 2020). From an empirical perspective, numerous studies indicated that environmentally responsible managers and leaders can directly or indirectly influence employees. Robertson and Barling (2013) found that environmentally supportive leadership behavior in the workplace can foster employees' environmental passion and lead them to adopt appropriate

behaviors. Ramus and Steger (2000) revealed that, in Vietnam, supervisory support positively influences employees' environmental initiatives. In another Vietnamese context, Tuân et al. (2014) found that leadership support influences employees' willingness to engage in and enhance environmental initiatives. Similarly, in Thailand, Afsar et al. (2016) observed that spiritual leadership can indirectly and positively affect environmentally supportive behavior through self-motivation and environmental passion.

Chen et al. (2014) determined that green transformational leadership has a positive impact on employees' green behavior and performance in electronics companies in Taiwan. In addition, Blok et al. (2015) indicated that managerial leadership is one of the factors that can stimulate employees' environmental behavior in a Dutch university. In the French context, Raineri and Paillé (2016) confirmed that one of the factors that can foster employees' commitment and environmental behavior is executive managers' appreciation and encouragement of their environmental protection practices.

In the Pakistani context, Deng et al. (2022) affirmed the impact of environmental transformational leadership on employees' environmental behavior. Furthermore, Priyankara et al. (2018) demonstrated the direct positive effect of leaders' environmental support on employees' environmental organizational citizenship behavior among 313 executives in textile and apparel factories in Sri Lanka. Meanwhile, Khan et al. (2019) reported a positive relationship between employees' perception of ethical leadership and environmental behavior in a sample of 447 employees of Chinese companies.

In Russia, Graves et al. (2019) pointed out that active environmental leadership by direct managers is positively related to employee performance. In Kazakhstan, Omarova and Jo(2022)observed the influence of environmental transformational leadership on employees' environmental behavior in several public and private organizations. Similarly, Peng et al. (2021) discussed the role of environmental transformational leadership in environmentally supportive team behaviors and found that such leadership can facilitate environmentally supportive team behaviors in organizations. In Egypt, Elshaer et al. (2022) showed that environmental transformational leadership has a positive impact on environmental organizational citizenship behavior and green innovation among employees in the hospitality sector.

Based on the above discussion, this study proposes the following hypothesis:



**H1:** Environmental leadership will have a significant positive influence on the promotion of green behavior, including among employees of Saudi government agencies.

#### 4.3 ENVIRONMENTAL LEADERSHIP AND ENVIRONMENTAL VALUES

Values are considered as criteria and standards for assessing the correctness or wrongness of objects and concepts. Every society has a set of values formed through various stages by several factors, and such values differ from one society to another (Koller, 1994). Values are generally shared among individuals and communities but vary in importance, because they serve as guiding principles.

Values can be classified as religious, political, economic, aesthetic, or environmental. Schwartz (1992) compiled a list of 11 basic human values that he believed exist in different cultures to varying degrees, namely, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, spirituality, benevolence, and universalism. The author reported that the value of universalism refers to the concept of tolerance, peaceful coexistence, protection of people's well-being, cooperation with others, and the preservation of natural resources and the environment.

Understanding environmental values is important to successful environmental management (Dutcher et al., 2007). Values can be influential when they are activated and strongly endorsed and can predict general and individual environmental behaviors (Karp, 1996). Values are fundamental beliefs that employees prioritize to protect nature and the motivation behind certain attitudes and behaviors.

Pro-environmental behavior arises from values beyond self-interest (Poortinga et al., 2004). The literature identified four core values underlying individuals' environmental beliefs: (1) hedonic values, which prioritize pleasure, comfort, and the satisfaction of desires; (2) egoistic values, which focus on personal resources; (3) altruistic values, which encompass equality, justice, peace, and concern for others and their well-being; and (4) biospheric values, which involve caring for the environment and protecting it from pollution, preserving natural resources, and living in harmony with other creatures (Bouman et al., 2018; Li et al., 2021). Organizations should consider individuals' environmental values when hiring potential employees, especially in environmentally sensitive work areas. The hiring of individuals with strong environmental values can reinforce the values of existing staff members (Graves & Sarkis, 2018).

Pro-environmental behavior is associated with various factors, such as knowledge, values, intention, social background, and demographic factors

(Ahmat Zainuri et al., 2022). Regarding the nature of the relationship between environmental leadership and values in organizations, previous studies revealed correlational and causal relationships between environmental leadership and employees' values. Individuals tend to go green when they experience an increase in protective feelings toward the environment (Kilbourne & Pickett, 2008). Furthermore, knowledge and values stemming from leadership can promote pro-environmental behavior (Wang et al., 2014). Shin et al. (2017) reported that environmental values can influence individuals' attitudes and behavior toward the environment.

In addition, individuals' values and emotions toward the environment can affect their behavior (Liu et al., 2010). Similarly, Graves and Sarkis (2018) found that employees' values can influence their response to environmental leadership, and employees with strong values express high satisfaction of their leader's environmental initiatives, as they align with their personal desires. Based on the above discussion, this study proposes the following hypothesis:

**H2:** Environmental leadership will have a positive impact on the enhancement of environmental values among employees of Saudi government agencies.

#### **4.4 ENVIRONMENTAL VALUES AND GREEN BEHAVIOR**

Personal values are an essential aspect of individual and social identities, and individuals behave in a way that reflects their values and the underlying goals behind such values. The impact of personal values on individuals' preferences, behaviors, and decisions has received significant attention because specific values can result in preferences and behaviors that align with such values (Sagiv & Roccas, 2021). In this context, the theory of planned behavior developed by Ajzen (1991) explains the nature of the relationship between values and human behavior. The theory assumes that individuals' beliefs and attitudes toward a specific behavior can shape their behavioral intention to engage in the behavior. Several studies discussed the role of values in engagement in and the promotion of environmentally supportive behaviors, including religious values that encourage the protection of the environment for all creatures. Such studies indicated the positive impact of environmental values on green behavior (Ahmat Zainuri et al., 2022; Bangwal & Tiwari, 2015; De Groot & Stege, 2008; Deng et al., 2022; Foroughi et al., 2022; Karp, 1996; Kim, 2011; Markowitz et al., 2012; Poortinga et al., 2004; Race, 2006; Sabbir & Taufique, 2022; Tamar et al., 2020; Tan et al., 2022; Wang & Udall, 2023). Based on the above discussion, this study proposes the following hypothesis:

**H3:** Environmental values will have a significant positive impact on the promotion of green behavior (environmental initiatives, participation, and assistance) among employees of Saudi government agencies.

#### **4.5 ENVIRONMENTAL VALUES AS A MEDIATING VARIABLE IN THE RELATIONSHIP BETWEEN ENVIRONMENTAL LEADERSHIP AND GREEN BEHAVIOR**

Values play an influential role in the relationship between leadership and employees' behavior. The more the employees embody the values desired by the organization, which are also favored by the leaders, the easier the leaders can shape and guide the employees' behavior to attain the organization's goals. In this context, Graves and Sarkis (2018) pointed out that employees' values can influence their perception of environmental leadership. When leaders' values and employees' values align, it will facilitate their understanding of environmental goals and increase the leaders' chances of developing the employees' capacity to solve environmental problems, which will make the leaders highly effective for the employees who are committed to environmental protection.

Furthermore, Hameed et al. (2019) examined the mediating role of green values in the relationship between GHRM and green employee empowerment as independent variables and green organizational citizenship behavior as a dependent variable. The study found that the relationship is strong when green values are high. Moreover, Al-Swidi et al. (2021) confirmed the influence of environmental concern and environmental leadership behavior on green organizational culture and observed a significant positive relationship between green organizational culture, green employee behavior, and organizational environmental performance. The study also indicated that green organizational culture mediates the relationship between environmental concern, green leadership behavior, and green employee behavior. Based on the above discussion, this study proposes the following hypothesis:

**H4:** Environmental values will have a mediating effect on the relationship between environmental leadership and green behavior among employees of Saudi government agencies.

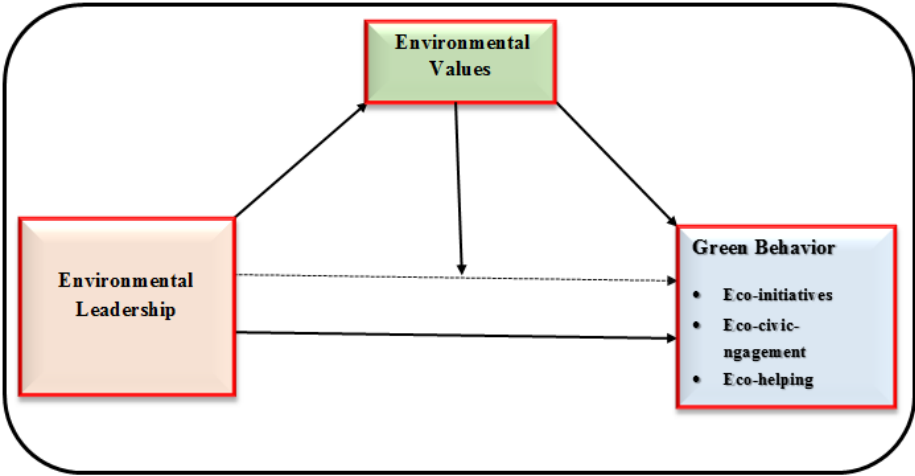


Figure 1: Theoretical model

5. METHODOLOGY

5.1 Population and Research Sample

This study is a quantitative cross-sectional research that adopted descriptive analytical methods to achieve its objectives. A cross-sectional design is preferred in social science research, as it can facilitate data collection and respondent-related aspects at one point in time (Creswell, 2012). The research population consisted of employees of Saudi government agencies and a few ministries, namely, the Ministry of National Guard, Ministry of Defense, Ministry of Interior, and Ministry of Foreign Affairs, which are located in the capital city of Riyadh. The city is home to all the ministries and public institutions of the country, which employ a total of 461,647 individuals, accounting for 37% of the total number of employees in the public administrative system in Saudi Arabia (General Authority for Statistics, 2024). To select the study sample, a rigorous method was used to ensure the representation of the study Population. Recognizing the pivotal role played by the Ministry of Human Resources as the foremost authoritative body overseeing employee affairs within government agencies, deliberate communications were initiated with the HR Ministry. This collaborative effort aimed to elucidate the study's justifications and its objectives, thereby securing a well-defined sampling frame. Within this framework, a total of 650 employees were chosen to participate in the study through a rigorous random process. The questionnaire was subsequently disseminated via email to the identified cohort of 650 employees. As a follow-up, a single reminder was sent to encourage prompt completion of the questionnaire. This process led to the acquisition of 395 complete and valid responses, indicative of a substantial and satisfactory engagement rate (Wu et al., 2022). The determination of the

sample size was underpinned by a thorough review of scholarly literature, which underscored the adequacy of the chosen sample size for conducting structural equation modeling (Hair et al., 2019; Kline, 2015).

## **5.2 Measurement**

This study utilized a questionnaire as the research tool for collecting data, and the variable identification was based mainly on the relevant literature. The measurement of the variables using the research questionnaire involved consulting the research of relevant authors. Specifically, to measure environmental leadership (EL), a five-item scale developed by Chen (2011) was adopted, which was also used in other studies, such as Su et al. (2020). To measure green behavior (GB), a scale consisting of three dimensions developed by Paillé and Boiral (2013) was adopted, which was also used in other research (Boiral et al., 2018; Raineri & Paillé, 2016; Temminck et al., 2013). The three dimensions of the scale were eco-initiatives, which consisted of three items; eco-civic-engagement, which consisted of four items; and eco-helping, which consisted of three items. A four-item scale developed by Kaiser et al. (1999) and Graves and Sarkis (2018) was employed to measure environmental values (EV), and the items selected were suitable to the Arabic and Islamic contexts.

The questionnaire was translated into Arabic, after consultations with experts, followed by back translation to ensure the suitability of the questionnaire statements and comprehension of the respondents and thus enhance the validity of the translated instrument. A five-point Likert scale was employed as the data collection tool, which allowed the respondents to express their opinions and attitudes through varying degrees of agreement or disagreement.

To ensure the validity of the research tool, human resource experts from Saudi universities were consulted to examine the statements and wording as well as the translation process, and revisions were made based on their suggestions. To investigate the reliability of the research tool, a pilot study was conducted to ensure that the respondents understood the research tool and its content. The Cronbach's alpha of the variables was satisfactory; thus, the research tool was considered to be reliable and suitable for the data collection (Hair et al., 2006).

## **5.3 Data Analysis Tools**

The statistical tools employed in this study included: frequencies, percentages, averages, standard deviations, Cronbach's alpha coefficient, Pearson's correlation coefficient, confirmatory factor analysis, methods for measuring the normal distribution of data and structural equation modeling (SEM).

### 6. RESULTS AND ANALYSIS

After conducting statistical analysis of the data, a number of results were obtained, as follows:

#### - Descriptive Statistics

As shown in Table 1, in the study sample, the number of male employees (68.1%) was nearly twice the number of female employees (31.9%). In terms of marital status and education, the majority of the employees was married (80%) and had undergraduate qualifications (57.7%). In addition, 64.3% of the employees reported undergoing environment training.

**Table 1: Demographic characteristics**

Variable		N = 395	
		F	%
Gender	Male	269	68.1
	Female	126	31.9
Marital status	Married	316	80.0
	Single	63	15.90
	Separated	16	4.1
Qualification	Secondary education	38	9.60
	Undergraduate	228	57.7
	Postgraduate	129	32.7
Received environment training	Yes	141	35.70
	No	254	64.30

Source: Data analysis

For EL, the average value of the responses ranged from 3.953 to 4.152, which indicated that EL was common in government agencies in the Saudi context (overall mean = 4.058). This finding was also confirmed by the low standard deviation values. For EV, the average value of the responses ranged from 3.814 to 4.119, which indicated that the employees of the government agencies in the Saudi context commonly had EV. The homogeneity was confirmed by the low standard deviation values (overall mean = 3.936; Table 2).

The GB of the employees of the Saudi government agencies was investigated, and the results indicated that the average value of the responses to the three variables, namely, eco-initiatives, eco-civic-engagement, and eco-helping, was 4.152, 4.068, and 4.129, respectively, with the homogeneity confirmed by the low standard deviation values. This finding implied that the employees are highly engaged in GB (overall mean = 4.116), which is in line with the Saudi Vision 2030 toward sustainable development (Table 2).

## - The Normality Test

The results of the assessment of the kurtosis and skewness of the responses were between +1 and -1, which indicated that the data did not show a departure of the multivariate normality area (Bentler, 2005). Hence, the data were appropriate for the CB-SEM (Hair et al., 2006). Furthermore, multicollinearity was assessed, which is considered to be a serious problem that may affect the outcome. The assessment was based on the investigation of the variance inflation factor, which was satisfactory, that is, below 5, with a tolerance higher than 0.2. This result indicated that the data were free from the problem of multicollinearity (Hair et al., 2019; Kline, 2015).

## - Validity and Reliability of Scales

### Confirmatory factor analysis

Table 2: Convergent Reliability

Item		Mean	SD	Std. Est.	Alpha	CR	AVE	
EL		EL1	4.152	0.681	0.921	0.901	0.87	0.74
		EL2	4.061	0.749	0.88			
		EL3	3.958	0.640	0.852			
		EL4	4.092	0.665	0.86			
		EL5	4.029	0.709	0.776			
Environmental values		VI1	3.867	0.879	0.896	0.829	0.80	0.79
		VI2	4.119	0.958	0.904			
		VI3	3.945	0.901	0.887			
		VI4	3.814	0.872	0.861			
GB	Eco-initiatives	EI1	4.187	0.708	0.764	0.798	0.76	0.66
		EI2	4.112	0.753	0.904			
		EI3	4.158	0.679	0.762			
	Eco-civic-engagement	EN1	4.062	0.612	0.857	0.873	0.85	0.61
		EN2	4.068	0.766	0.764			
		EN3	4.101	0.683	0.756			
		EN4	4.041	0.664	0.746			
	Eco-helping	EH1	4.153	0.712	0.817	0.857	0.83	0.65
		EH2	4.107	0.746	0.831			
		EH3	4.128	0.801	0.774			

Source: Data analysis

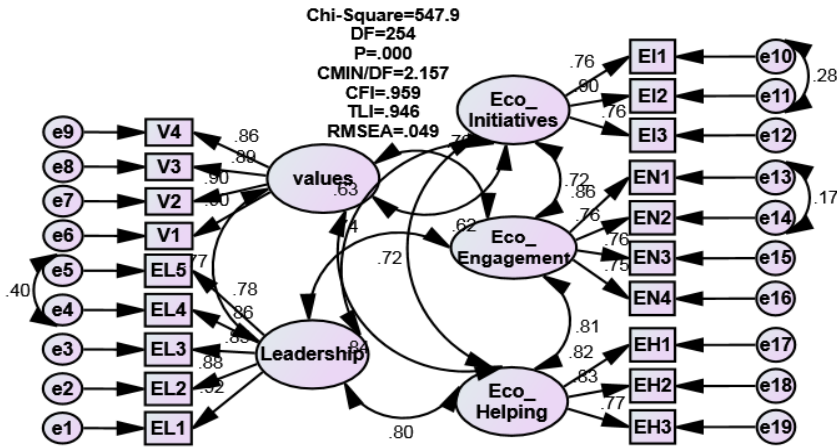


Figure 2: Measurement Model

To ensure the convergent reliability, standardized estimates, Cronbach’s alpha and convergent reliability of the variables should exceed 0.70 to be considered satisfactory (Hair et al., 2019), which is confirmed accordingly (Hair et al., 2006) (Table 2; Figurer). Further, the AVE values were higher than 0.50, which confirmed the adequate reliability of the research model (Bagozzi & Yi, 1988).

Table 3: Discriminant Validity

#	Variable	1	2	3	4	7
1	EL	0.860				
2	Environmental values	0.590	0.889			
3	Eco-initiatives	0.400	0.380	0.812		
4	Eco-civic-engagement	0.550	0.570	0.520	0.781	
5	Eco-helping	0.640	0.540	0.510	0.650	0.806

Discriminant validity assesses the correlation between variables which should be as low as possible (Anderson & Gerbing, 1988; Bagozzi & Phillips, 1982). To do so, the criterion developed by Fornell and Larcker (1981) was used ensure the square root of the AVE are higher than the relevant correlation value of each item. The correlational values ranged from 0.38 to 0.64 which is less than the square root values of AVE confirming that no high correlation, which may cause multicollinearity, existed across the variables (Table 3). Finally, the model fit was assessed and found satisfactory according to (Forza & Filippini, 1998; Greenspoon & Saklofske, 1998; Hair et al., 2010) (Table4).



Table 4: Model fit indices

Index	CMIN/DF	P	GFI	AGFI	NFI	CFI	TLI	RMR	RMSEA
Value	2.157	0	0.869	0.817	0.901	0.959	0.946	0.074	0.049

- Hypothesis Testing

For the first hypothesis, EL was the independent variable, and the dimensions of GB were the dependent variables (Figure 2). In terms of how the dimensions of GB were influenced by EL in the government agencies in the Saudi context, EL had a significant positive impact on the three dimensions of GB, that is, eco-initiatives ( $\beta = 0.764$ ,  $p = 0.001$ ), eco-civic-engagement ( $\beta = 0.807$ ,  $p = 0.001$ ), and eco-helping ( $\beta = 0.829$ ,  $p = 0.001$ ; Table 5). Thus, H<sub>1</sub> was supported. Moreover, EL in the government agencies contributed the most to eco-helping ( $R^2 = 72\%$ ), followed by eco-civic-engagement ( $R^2 = 69\%$ ) and eco-initiatives ( $R^2 = 50\%$ ).

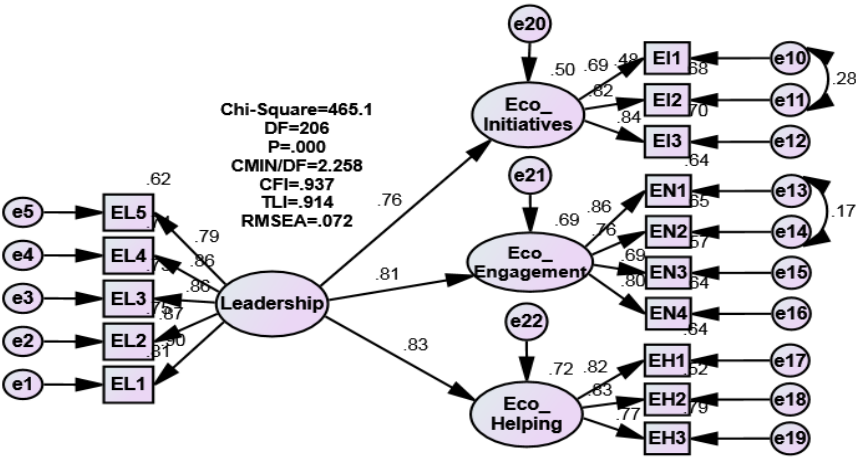


Figure 3: Hypothesis testing (H<sub>1</sub>)

Table 5: Hypothesis Testing (H<sub>1</sub>)

Hypothesis	Path			Std. Est.	Std. Error	CR	Sig.
H <sub>1</sub>	EL	→	Eco-initiatives	0.764	0.045	10.806	0.001
	EL	→	Eco-civic-engagement	0.807	0.059	12.188	0.001
	EL	→	Eco-helping	0.829	0.049	15.657	0.001

The second hypothesis measures the effect of EL on environmental values. As shown in Figure 3, EL significantly and positively impacted EV among the employees of the government agencies in the Saudi context ( $\beta = 0.773$ , standardized error = 0.065, CR = 16.424,  $p = 0.001$ ). Further, it could explain

more than half (60%) of the variance in environmental values. This result implied that sustainable and effective environmental leadership was necessary to impart environmental values to the employees of government agencies. Hence H<sub>2</sub> is supported.

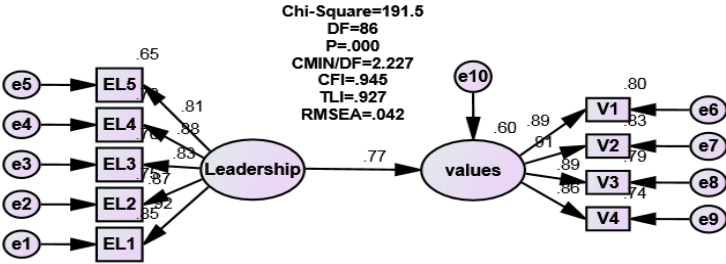


Figure 4: Hypothesis Testing (H<sub>2</sub>)

For the third hypothesis in the investigation on how environmental values were affected by the dimensions of GB, the results showed the significant positive impact of environmental values on the dimensions of GB in the government agencies in the Saudi context, that is, eco-initiatives ( $\beta = 0.618$ ,  $p = 0.001$ ), eco-civic-engagement ( $\beta = 0.790$ ,  $p = 0.001$ ), and eco-helping ( $\beta = 0.813$ ,  $p = 0.001$ ). When it come to explaining variance, the impact of environmental values on eco-helping was the highest ( $R^2 = 73\%$ ) followed by the effect on eco-civic-engagement ( $R^2 = 69\%$ ) and eco-civic-initiatives ( $R^2 = 39\%$ ). Thus, H<sub>3</sub> was supported.

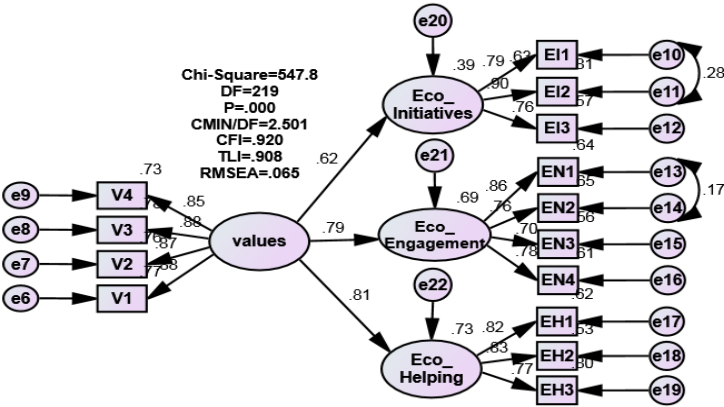


Figure 5: Hypothesis Testing (H<sub>3</sub>)

Table 6: Hypothesis Testing (H<sub>3</sub>)

Hypothesis	Path			Std. Est.	Std. Error	CR	Sig.
H <sub>3</sub>	EV	→	Eco-initiatives	0.618	0.073	14.367	0.001
	EV	→	Eco-civic-engagement	0.790	0.068	18.705	0.001
	EV	→	Eco-helping	0.813	0.056	20.453	0.001

This study aimed to explore the mediating role of EL in the relationship between EL and GB. In line with the Hair et al. (2019) suggestion, the indirect effect of EL on the aforementioned GB dimensions through environmental values was assessed (Figure 5).

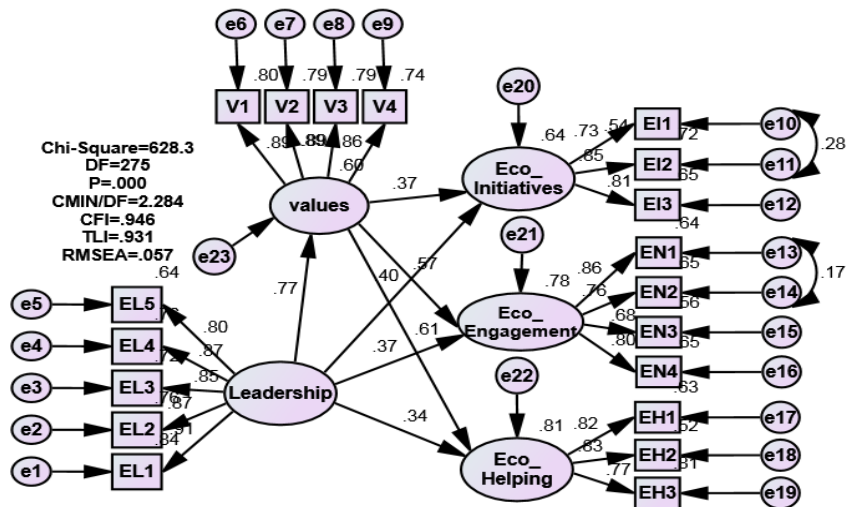


Figure 6: Hypothesis Testing (H<sub>4</sub>)

Table 7: Hypothesis Testing (H<sub>4</sub>)

H	Path					Direct Effect	Sig.	Indirect Effect	Sig.
H <sub>4</sub>	EL	→	EV	→	Eco-initiatives	0.400	0.001	0.285	0.004
	EL	→	EV	→	Eco-civic-engagement	0.365	0.001	0.441	0.001
	EL	→	EV	→	Eco-helping	0.338	0.001	0.477	0.001

The findings provided compelling evidence on the hypothesized mediating effect. The results revealed the significant positive indirect effect of EL on eco-initiatives ( $\beta = 0.285$ ,  $p = 0.004$ ), eco-civic-engagement ( $\beta = 0.441$ ,  $p = 0.001$ ), and eco-helping ( $\beta = 0.477$ ,  $p = 0.001$ ) through environmental values. The outcome indicated that environmental values played a crucial role in mediating

the relationship between EL and the various dimensions of GB (Table 7). Hence, H<sub>4</sub> was supported. The findings showed the significant positive direct effect of EL on the dimensions of GB, that is, eco-initiatives ( $\beta = 0.400$ ,  $p = 0.001$ ), eco-civic-engagement ( $\beta = 0.365$ ,  $p = 0.001$ ), and eco-helping ( $\beta = 0.338$ ,  $p = 0.001$ ). The results indicated that EL played a crucial role in directly promoting GB in the government agencies and a partial mediating role in the dimensions of GB. The findings also revealed that environmental leadership, along with environmental values, can explain 64%, 78%, and 81% of the variance in eco-initiatives, eco-civic-engagement, and eco-helping, respectively, which indicated that when adopted in government agencies, environmental leadership and values can contribute to promoting green behavior.

## 7. DISCUSSION

The results indicated that the practice of environmental leadership in Saudi government agencies (overall mean = 4.058); green behavior (overall mean = 4.129) and environmental values (overall mean = 3.936) is high, which aligns with the sustainable development practices adopted and encouraged by the government.

The results reveal the significant positive effect of environmental leadership on the green behavior dimensions at the 0.001 significance level, which indicates that the role played by managers is associated with environmental responsibility. Managers can encourage employees to engage in green behavior by initiating environment-friendly activities, participate in initiatives, and provide environmental assistance to solve the environmental issues encountered by the government agencies. This finding is in line with that of previous research that confirmed the significant effect of environmental leadership on green behavior (Robertson & Barling, 2013) in Australia, (Ramus & Steger, 2000; Tuan et al., 2014) in Vietnam, (Deng et al., 2022) in Pakistan, (Chen et al., 2014) in Taiwan, (Blok et al., 2015) in Netherlands, (Chen et al., 2014) in Thailand, (Priyankara et al., 2018) in Sri Lanka, (Khan et al., 2019) in China, (Omarova & Jo, 2022) in Kazakhstan, (Elshaer et al., 2022) in Egypt.

This finding implied that effective leadership in government agencies was directed toward the environment and environmental sustainability, which was reflected by the responsible behaviors of the respondents. Hence, the promotion of environmental activities, along with initiatives and participation, will promote the adoption of general green behavior in government agencies. Effective leaders who have a vision toward the environment and environmental sustainability and implement it can promote employees' green behavior by increasing environmental initiatives, engagement, and assistance through their positions.

The results also confirm the significant positive effect of environmental leadership on environmental values at the 0.001 significance level. This finding indicates that environmental leaders play a crucial role in cultivating values related to environmental sustainability and implementing daily activities that can promote the environment, which can create opportunities for passing such values and practices to employees within the Saudi context. This finding is in line with that of previous research that investigated the same relationship within the industry (Graves & Sarkis, 2018) and restaurant contexts (Jang et al., 2018).

The research findings also reveal that the green behavior dimensions are significantly influenced by environmental values at the 0.001 significance level, which leads to the conclusion that among the employees of government agencies, having a set of environmental values that is applied on a regular basis, along with beliefs in the need to protect the environment, can promote green behavior. This finding aligns with that of other research in different environments (Poortinga et al., 2004) in the Netherlands, (Rice, 2006) in Egypt, (Tamar et al., 2020) in Indonesia, (Deng et al., 2022) in Pakistan, (Xu et al., 2022) in China.

The findings also show the significant mediating role of environmental values in the relationship between environmental leadership and green behavior, which implies that among the employees, having new environmental values can facilitate the role of environmental leaders in encouraging green behavior. In other words, the promotion of environmental values in government agencies can facilitate the improvement of green behavior through the role of environmental leadership in such agencies. This finding is in line with that of previous research in other contexts (Graves & Sarkis, 2018), such as the United States (Hameed et al., 2019), Pakistan (Al-Swidi et al., 2021), and Qatar.

The direct effect highlighted the importance of effective leadership in fostering environmentally responsible actions in government agencies and suggested that environmental leaders can directly influence and encourage employees to engage in environmental initiatives, participate in environmental activities, and provide environmental assistance. The indirect effect through environmental values emphasized the complementary role of the promotion of environmental values alongside environmental leadership. The findings underscored the significance of cultivating a supportive environment that can foster environmental values and benefit from the direct influence of environmental leadership to promote green behavior.

## **8. CONCLUSION AND RECOMMENDATIONS**

This study highlights the promising level of environmental leadership and green behavior in Saudi government agencies but emphasizes the need for improvement to align with the Saudi 2030 Vision. The findings emphasize the significant role of leaders in promoting environmental responsibility and encouraging green practices among employees. Based on the research outcome, this study recommends increasing green environmental training programs and implementing “green recruitment” practices in government agencies. Encouraging knowledge exchange with leading organizations, and prioritizing the transition to GHRM can enhance environmental awareness and behaviors. Comprehensive training programs and regular evaluations are essential for fostering a dedicated approach to environmental protection and sustainability.

## **9. DIRECTION FOR FUTURE RESEARCH**

The following are some suggestions for Future research:

- Conducting a study to identify the role of environmental leadership in creating a green culture within Saudi public organizations.
  - Performing a study that includes in its model mediating variables such as green training - green reward - environmental awareness Environmental-knowledge- etc. to determine their impact on the relationship between green environmental leadership and green behavior.
  - Conducting a similar study on private sector organizations in the Kingdom of Saudi Arabia.
- o I declare that there are no conflicts of interest in this research.

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## أثر القيادة البيئية في السلوك الأخضر للموظفين بوساطة القيم البيئية: دراسة ميدانية في الأجهزة الإدارية الحكومية بالمملكة العربية السعودية

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### ملخص البحث باللغة العربية

من خلال التحليل الشامل لعوامل نجاح المنظمات، أثبتت الأبحاث العلمية أن دمج المسؤولية البيئية في عمليات المنظمة تمثل عنصراً حيوياً لتحقيق أهدافها المختلفة. وفي هذا السياق، سعت هذه الدراسة إلى فحص أثر القيادة البيئية في السلوك البيئي للموظفين بوساطة القيم البيئية من خلال التطبيق على عينة بلغ حجمها (395) موظفاً من الأجهزة الإدارية الحكومية في المملكة العربية السعودية، وذلك باستخدام نمذجة المعادلات الهيكلية (SEM)؛ لغرض اختبار نموذج البحث وفرضياته. أظهرت النتائج أثراً إيجابياً جوهرياً للقيادة البيئية في السلوك البيئي للموظفين بأبعاده الثلاثة (المبادرات البيئية، المشاركة البيئية، والمساعدة البيئية)، وكذلك في القيم البيئية للموظفين. ومن ناحية أخرى، أبانت النتائج وجود أثر إيجابي جوهري للقيم البيئية في السلوك البيئي. علاوة على ذلك، أكدت النتائج الدور الجزئي الجوهري للقيم البيئية الذي يتوسط العلاقة بين القيادة البيئية والسلوك البيئي للموظفين. وفي الختام، ناقشت هذه الدراسة النتائج والآثار المترتبة على ذلك.

**الكلمات الدالة:** القيادة، القيادة البيئية، السلوك الأخضر، القيم البيئية، الاستدامة البيئية.

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