

Role of Biospheric Values in Linking Environmental Awareness to Workplace Environmental Citizenship Behavior via Sustainable Consumption

Vimala Venugopal Muthuswamy^{1*}, V. Nijarubini²

¹Department of Management, College of Business, King Faisal University, Al-Ahsa 31982, Saudi Arabia; ²Department of Chemistry, Dr.N.G.P. Arts and Science College, Coimbatore, Tamil Nadu, India

ABSTRACT

Purpose: Organizational sustainability depends critically on employees' voluntary pro-environmental conduct, yet the psychological and behavioral mechanisms through which environmental awareness converts into workplace environmental citizenship behavior (WECB) remain theoretically underspecified. This study examines sustainable consumption behavior as a mediating mechanism and biospheric values as a moderating boundary condition within the environmental awareness-WECB relationship, grounded in the value-belief-norm theory and norm activation model. **Method:** A structured survey was administered to 234 full-time employees. Validated scales were adopted for all four constructs. Mplus was employed for structural path analysis, including sequential mediation testing and hierarchical moderation regression with mean-centered interaction terms. **Findings:** Environmental awareness significantly predicted both WECB ($\beta = 0.664$) and sustainable consumption behavior ($\beta = 0.679$). Sustainable consumption behavior partially mediated the environmental awareness-WECB relationship (indirect effect = 0.511; 77.0% of total effect), consistent with a spillover mechanism. Biospheric values negatively moderated the sustainable consumption behavior-WECB path ($\beta = -0.107$), revealing a ceiling moderation pattern absent from prior literature. **Originality/Implications:** This study is the first to jointly test sustainable consumption behavior as a behavioral bridge and biospheric values as a dispositional boundary condition in the environmental awareness-WECB chain. The findings extend value-belief-norm theory into the organizational domain and offer actionable guidance for sustainability-oriented human resource management.

ARTICLE HISTORY

Received February 08, 2026

Accepted April 17, 2026

KEYWORDS

Environmental Awareness,
Sustainable Consumption
Behavior,
Workplace Environmental
Citizenship Behavior,
Biospheric Values

1. Introduction

Even though decades of corporate sustainability rhetoric have been in place, a large percentage of employees still restrict their environmental actions to what is required by official directives, rather than what is voluntary and discretionary pro-environmental behavior, which organizational sustainability ultimately relies on (Camacho et al., 2024). Such disconnect between environmental intent and workplace environmental citizenship behavior (WECB) the set of voluntary activities by employees that help organizations achieve environmental sustainability beyond the job specifications has attracted growing academic interest (Mandal & Pal, 2025). Although the general literature confirms that the environmental cognitions of employees determine their behavioral orientations, little is known about the underlying psychological and behavioral processes by which environmental awareness is converted to WECB and the dispositional factors that moderate this conversion (Srisathan et al., 2024).

A sequential model is provided by the norm activation model (Imaningsih et al., 2023) and the value-belief-norm theory (Hasanein & Rashwan, 2026): environmental awareness triggers personal environmental norms, which in their turn trigger pro-environmental action. It has been empirically established that environmental awareness is a predictor of general pro-environmental behavior (Haleem et al., 2025), yet whether it directly triggers WECB, a more workplace-specific form of behavior, or does so via some form of intermediate behavior has not been sufficiently addressed. Importantly, some of the researchers indicate that the awareness-behavior pathway in organizations is not automatic and unmediated, but it is mediated by behavioral dispositions that employees bring with them into the workplace across life domains (Singh et al., 2023).

One of such channels is sustainable consumption behavior (Siagian et al., 2023); those employees that practice environmentally friendly consumption behaviors on a regular basis outside the workplace are likely to transfer these behavioral standards to their work behaviors, thus implementing WECB in a spillover fashion (Farooq et al., 2026). But even with the plausibility of the theoretical consideration, the mediating effect of sustainable consumption behavior between environmental awareness and WECB has not been tested at all (Duong et al., 2025). Also missing in the literature is an analysis of biospheric values - the degree to which people have an intrinsic value of nature and all life as a restraining state on this behavioral chain (Akoto et al., 2026). Biospheric values establish the motivational richness of the translation of sustainable consumption behavior into discretionary workplace environmental behavior, but no research has empirically explored this boundary condition (Trinh et al., 2025).

This research fills these gaps by formulating and testing a moderated mediation model where the relationship between environmental awareness and WECB is mediated by sustainable consumption behavior, and the relationship between biospheric values and sustainable consumption behavior is moderated by the environmental awareness-WECB relationship. The theoretical contribution of the study is that it expands the value-belief-norm and norm activation models into a cross domain behavioral model that considers the mediating process as well as the dispositional boundary condition that determines pro environmental citizenship in the workplace.

2. Literature Review

Workplace environmental citizenship behavior (WECB) refers to voluntary and discretionary pro-environmental behavior that employees engage in, outside of their formal job responsibilities, and as a result of internalized environmental values instead of an organizational directive (Karakaş, 2024). WECB being a discretionary behavioral outcome is sensitive to the cognitive environmental orientations and value system of employees (Davaasuren & Park, 2025). The current research places WECB as its end product, and hypothesizes that environmental awareness, sustainable consumption behavior and biospheric values are its antecedents and boundary condition respectively.

2.1 Environmental Awareness and Workplace Environmental Citizenship Behavior

Environmental awareness describes the level of environmental awareness of a person, which refers to the awareness of ecological issues and human activities that lead to or worsen them (Gomes et al., 2023). This cognitive recognition is the precondition in the norm activation model (Al Mamun et al., 2025) whereby the personal moral norms are activated to generate pro-environmental behavioral responses. At the organizational level, it is theorized that environmentally conscious workers will feel a moral responsibility to act by using the behavioral avenues they have in the workplace the avenues that make up WECB (Amrutha & Geetha, 2024). Guan et al. (2023) affirmed that environmental awareness is a major predictor of voluntary green behaviors of employees in the organizational context, whereas Van Tonder et al. (2023) also established that highly environmentally aware employees were always more likely to engage in organizational citizenship behaviors aimed at environmental sustainability. This convergent evidence notwithstanding (Schlapp et al., 2025), the particular predictive association between environmental consciousness and WECB has been studied as a constituent element of more comprehensive attitudinal models, but not as a pathway of interest in its own right, to the subject of boundary conditions (Nguyen et al., 2024). This restricts the knowledge of the timing and the strength of the environmental awareness in activating WECB in the absence of other attitudinal factors (Srivastava & Bhandari, 2025). The theoretical gap is filled by positioning environmental awareness as the upstream cognitive driver in a moderated mediation architecture.

H1: Environmental awareness significantly influences the workplace environmental citizenship behavior.

2.2 Environmental Awareness and Sustainable Consumption Behavior

Sustainable consumption behavior is the conscious use of consumption patterns that reduce ecological impact such as consumption of environmentally friendly products, conservation of resources and reduction of wastes (Nejat et al., 2025). The value-belief-norm framework (Onel, 2024) places environmental awareness as a belief-level antecedent that, by shedding light on the impacts of consumption decisions, develops personal norms that guide behavior towards sustainability. This pathway is empirically supported by Canlas and Karpudewan (2023), who show that environmental conscious individuals have a significantly higher chance of adopting sustainable consumption behavior since awareness makes the environmental costs of traditional consumption psychologically salient. Manuel et al. (2024) also demonstrated that environmental awareness triggers expected guilt of environmentally damaging decisions, which is a self-regulatory process that guides the behavioral dispositions towards environmentally friendly consumption options (Mehmood et al., 2024). Nevertheless, in the context of employee groups, in particular, this route has not been given much specific consideration (Chua et al., 2024): researchers have either analyzed sustainable consumption behavior in general consumer settings or have included it within more comprehensive pro-environmental behavioral scales without isolating the

relationship between environmental awareness-sustainable consumption behavior among working adults (Petricli et al., 2024). Since employees are a population, the consumption orientations of which are likely to be influenced by personal values and organizational environmental norms, a direct test of this relationship in this population is theoretically justified.

H2: Environmental awareness significantly influences the sustainable consumption behavior.

2.3 Sustainable Consumption Behavior as Mediator

The behavioral spillover theorizes sustainable consumption behavior as a behavioral intermediary between environmental awareness and WECB between environmental awareness and behavioral spillover (Ullah et al., 2026): the consistent application of pro-environmental behavior in one area of behavior, consumption, strengthens an individual pro-environmental self-identity and internalizes environmental norms that spill over into other areas of behavior (Cyfert et al., 2025). This process is triggered by environmental awareness, which encourages sustainable consumption as an immediate behavioral reaction; sustainable consumption, when internalized, reinforces environmental identity to the point where it becomes discretionary, role-transcending, and the space of WECB (Wong et al., 2023). Supporting evidence was presented by Camacho et al. (2024) that sustainable consumption behavior is a generalized pro-environmental orientation that has cross-domain coverage, and Srisathan et al. (2024) indicated that consumption-based environmental norms are transferred to organizational behavioral repertoires (Hasanein & Rashwan, 2026). What remains missing is a formal mediation test that positions sustainable consumption behavior as the explicit intermediary through which environmental awareness activates WECB, rather than treating it as a standalone predictor or co-predictor in multivariate models.

H3: Sustainable consumption behavior significantly mediates the relationship between environmental awareness and workplace environmental citizenship behavior.

2.4 Moderating Role of Biospheric Values

Biospheric values are the extent to which people assign intrinsic moral value to nature, vegetation, and all living species regardless of their usefulness to human beings (Singh et al., 2023). These values also serve as upstream motivational orientations in value-belief-norm framework, which influence the intensity and steadiness of pro-environmental behavioral involvement (Siagian et al., 2023). Importantly, the behavioral implications of biospheric values have been theorized to be asymmetric in terms of value levels: high biospheric values individuals have a pervasive, value-based pro-environmental behavioral profile that is comparatively non-responsive to particular behavioral antecedents like sustainable consumption behavior (Duong et al., 2025). In their case, commitment to intrinsic values is what sustains WECB irrespective of the level of consumption behavior (Trinh et al., 2025). Conversely, low biospheric value individuals do not have this independent motivational substrate, in their case, the sustainable consumption behavior is the major activator of the environmental behavioral norms, and thus, the sustainable consumption behavior-WECB relationship is much stronger (Davaasuren & Park, 2025). This difference means that there is a negative interaction, as the higher the biosphere values the lower the marginal contribution of sustainable consumption behavior to WECB, and vice versa (Al Mamun et al., 2025). Though the biospheric values have been studied as predictors of pro-environmental attitudes (Guan et al., 2023), their moderating effect on the sustainable consumption behavior-WECB relationship in organizational setups has not been tested empirically.

H4: Biospheric values significantly moderate the relationship between sustainable consumption behavior and workplace environmental citizenship behavior.

3. Methodology

The research design used in this study was a quantitative cross-sectional survey. The target population included full-time employees of manufacturing and service-sector companies where environmental sustainability is an organizational issue at work - a criterion that guarantees respondents have significant chances to engage in WECB and are exposed to organizational environmental stimuli pertinent to the constructs of interest. The sample was collected using a purposive sampling approach which focused on employees working at organizations that had environmental policies or sustainability reporting, providing 234 questionnaire responses, which were considered useful. This is a sufficient sample size to statistically identify medium effect sizes with sufficient statistical power in regression-based path analyses. In order to reduce common method bias in single-source, self-report data, the outcome variable (WECB) items were placed in a psychologically different part of the questionnaire disconnected with predictor items, which is also in line with procedural remedies.

Measurement scales were all validated previous research. The environmental awareness was assessed using four questions that (D'Arco & Marino, 2022) modified based on the Onwezen et al. (2013) scale, which included the awareness of employees about environmental issues and their anthropogenic factors. Four items of Matharu et al. (2020) adapted based on Xiao and Li (2011) were used to measure sustainable consumption behavior, which is deliberate pro-

environmental consumption behavior. WECB was operationalized using six items modified by D'Arco and Marino (2022) which encompassed discretionary workplace environmental behaviors. Biospheric values were assessed using four questions of De Groot and Steg (2008) and Steg et al. (2014), which tapped intrinsic valuation of nature and living ecosystems. Everything was measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Confirmatory reliability checks were made after which composite scores were calculated as item means.

All statistical tests were conducted using Mplus version 8.10, which was chosen due to its ability to estimate direct, indirect, and moderated pathways simultaneously in a single modeling framework. Ordinary least squares (OLS) path estimation was used. The procedure of hypothesis testing was conducted in several steps: the descriptive statistics and Cronbach alpha reliability were evaluated, and then Pearson correlation analysis was performed. Simple regression was used to test direct effects (H1, H2); mediation (H3) was evaluated using the Baron and Kenny (1986) sequential regression model that requires the direct effect to be significant and the attenuation of the direct effect to be less in the presence of the mediator. Although the current methodological standard of mediation is the bootstrapped confidence intervals (Preacher and Hayes, 2008), the Baron and Kenny approach is used in this report due to the limitations of the current analysis. In the case of H4, mean-centering of SCB and biospheric values preceding the calculation of the interaction term was done to minimize multicollinearity and hierarchical moderation regression was performed with the interaction term as the last entry.

4. Results

4.1 Descriptive Statistics and Reliability

The descriptive statistics of all four composite constructs calculated using the average of the corresponding Likert-scale items are shown in Table 1. The means of all means were between 4.06 and 4.14 on a five-point scale, which suggests that there were generally positive perceptions of the 234 respondents. The mean of Environmental Awareness (EA) was 4.067 (SD = 0.705), Sustainable Consumption Behavior (SCB) was 4.064 (SD = 0.770), Workplace Environmental Citizenship Behavior (WECB) was 4.100 (SD = 0.713), and Biospheric Values (BV). The distributions were quite symmetric with no extreme values, which proved the suitability of parametric inferential methods to be used in the further analysis.

Table 1: Descriptive Statistics of Composite Constructs

Construct	Items	N	Mean	SD	Min	Max
Environmental Awareness (EA)	4	234	4.067	0.705	1.00	5.00
Sustainable Consumption Behavior (SCB)	4	234	4.064	0.770	1.00	5.00
Workplace Env. Citizenship Behavior (WECB)	6	234	4.100	0.713	1.17	5.00
Biospheric Values (BV)	4	234	4.136	0.706	1.00	5.00

Note. N = 234. All constructs measured on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Composite scores computed as item means.

Cronbach alpha (α) was used to determine the reliability as indicated in Table 2. SCB ($\alpha = 0.815$) and WECB ($\alpha = 0.825$) demonstrated good reliability ($\alpha \geq 0.80$), while EA ($\alpha = 0.751$) and BV ($\alpha = 0.752$) exhibited acceptable reliability ($\alpha \geq 0.70$), consistent with Nunnally's (1978) recommended thresholds. These values confirm the internal consistency of all the measurement scales, and the reliability of the data can be used to test the hypothesis using regression.

Table 2: Reliability Statistics - Cronbach's Alpha

Construct	Items	Cronbach's α	Reliability Level
Environmental Awareness (EA)	4	0.751	Acceptable ($\alpha \geq 0.70$)
Sustainable Consumption Behavior (SCB)	4	0.815	Good ($\alpha \geq 0.80$)
Workplace Env. Citizenship Behavior (WECB)	6	0.825	Good ($\alpha \geq 0.80$)
Biospheric Values (BV)	4	0.752	Acceptable ($\alpha \geq 0.70$)

Note. α = Cronbach's alpha. Acceptable reliability: $\alpha \geq 0.70$; Good: $\alpha \geq 0.80$ (Nunnally, 1978). All constructs meet the minimum threshold.

4.2 Bivariate Correlation Analysis

Table 3 shows the Pearson correlation of all constructs. The inter-construct correlations were all positive and significant at $p < .001$. The most significant correlation was between SCB and WECB ($r = 0.813$), which is an initial indicator of the mediation pathway. EA correlated significantly with WECB ($r = 0.656$), SCB ($r = 0.622$), and BV ($r = 0.492$). BV was strongly correlated with WECB ($r = 0.667$) and moderately correlated with SCB ($r = 0.546$), which is why it can be considered a moderating variable. These correlations offer preliminary evidence of the suggested correlations before multivariate analysis.

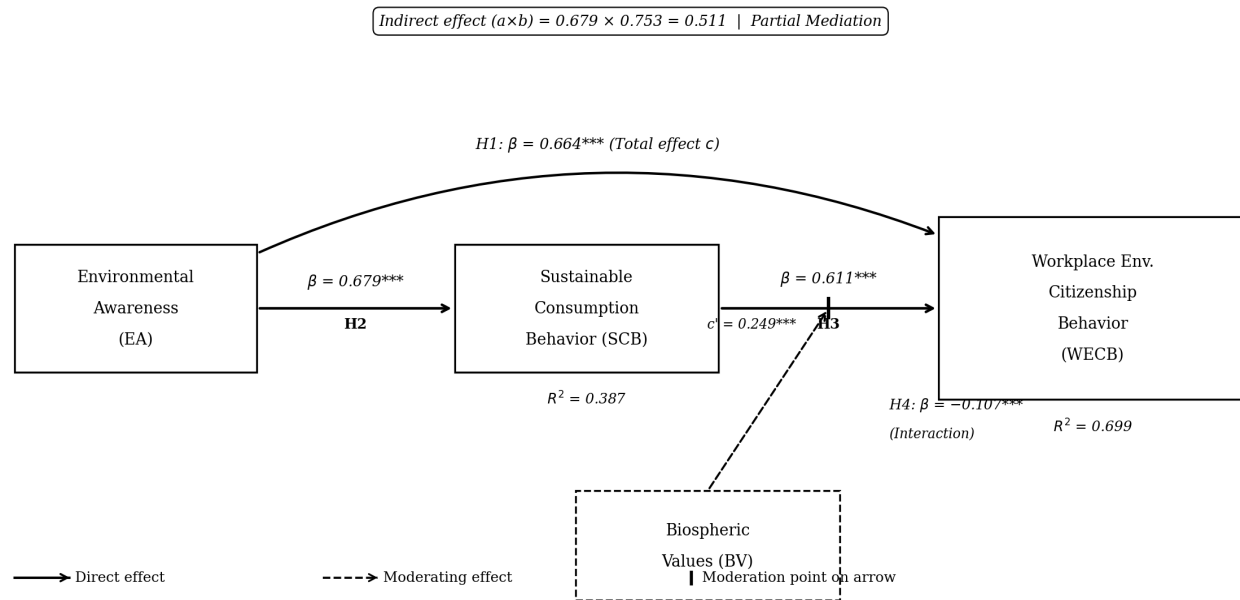
Table 3: Pearson Correlation Matrix

Construct	1. EA	2. SCB	3. WECB	4. BV
1. Environmental Awareness (EA)	-	0.622***	0.656***	0.492***
2. Sustainable Consumption Behavior (SCB)		-	0.813***	0.546***
3. Workplace Env. Citizenship Behavior (WECB)			-	0.667***
4. Biospheric Values (BV)				-

Note. *** $p < .001$ (two-tailed). Dashes on the diagonal represent the identity. All correlations statistically significant at the 0.001 level.

4.3 Hypothesis Testing

Figure 1 shows the entire structural path model with regression coefficients indicated on the pathways. There are EA as the exogenous predictor, SCB as the mediating variable, WECB as the outcome, and BV as a moderator of the SCB-WECB relationship. The regression-based procedures outlined in the methodology were used to test all four hypothesized paths.

**Figure 1:** Full Structural Path Model with Standardized Coefficients

Note. Solid arrows = direct effects (H1, H2, H3). Dashed arrow with vertical bar (|) = moderating effect of BV on the SCB → WECB relationship (H4). Values on paths are unstandardized regression coefficients. R^2 values appear beneath each endogenous variable. *** $p < .001$.

4.3.1 H1: Environmental Awareness → Workplace Environmental Citizenship Behavior

H1 suggested that EA has a significant impact on WECB. Simple regression confirmed EA as a significant positive predictor ($\beta = 0.664$, $SE = 0.050$, $t = 13.243$, $p < .001$), explaining 43.0% of variance in WECB ($R^2 = 0.430$, $F [1, 232] = 175.37$, $p < .001$). The hypothesis H1 is accepted and it proves that the more environmentally aware employees are, the more likely they are to take voluntary pro-environmental citizenship in the workplace.

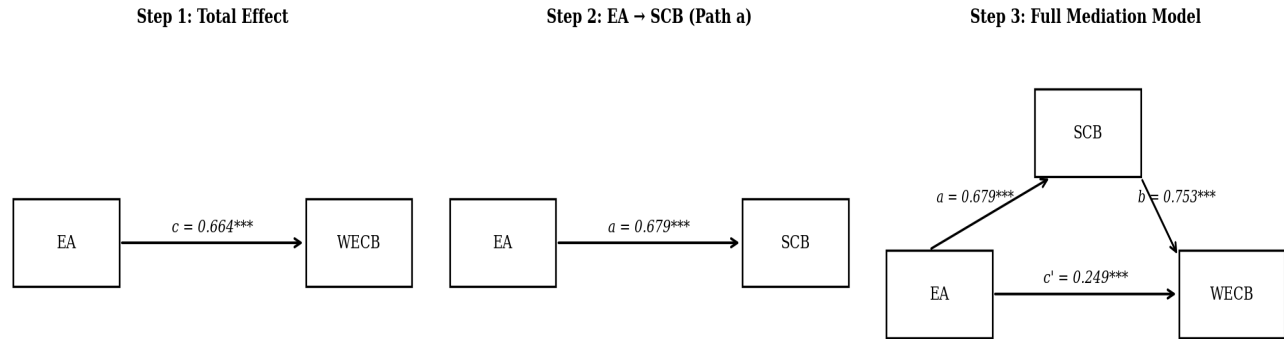
4.3.2 H2: Environmental Awareness → Sustainable Consumption Behavior

H2 was that EA has a significant effect on SCB. Regression confirmed EA as a significant positive predictor of SCB ($\beta = 0.679$, $SE = 0.056$, $t = 12.097$, $p < .001$), with the model explaining 38.7% of variance ($R^2 = 0.387$, $F [1, 232] = 146.34$, $p < .001$). H2 is supported. This is the same path as Path a in the mediation chain that is tested under H3.

4.3.3 H3: Mediation of SCB in the EA-WECB Relationship

H3 tested the mediating role of SCB in the relationship between EA and WECB by the Baron and Kenny (1986) sequential method (Figure 2). The total effect of EA on WECB was significant ($c = 0.664$, $p < .001$). EA significantly predicted SCB ($a = 0.679$, $p < .001$), and SCB significantly predicted WECB ($b = 0.753$, $p < .001$). SCB was still significant ($\beta = 0.611$,

$p < .001$) and the direct EA effect was still significant ($c' = 0.249$, $p < .001$) in the full mediation model. The indirect effect ($a \times b = 0.679 \times 0.753 = 0.511$) accounted for 77.0% of the total effect, confirming partial mediation. H3 is supported.



Indirect effect ($a \times b$) = $0.679 \times 0.753 = 0.511$ (76.9% of total effect). Partial mediation confirmed.

Figure 2: Baron and Kenny Mediation Steps — SCB as Mediator of EA → WECB (H3)

Note. Panel 1: Total effect ($c = 0.664^{***}$). Panel 2: Path a — EA → SCB ($a = 0.679^{***}$). Panel 3: Full mediation model — direct effect ($c' = 0.249^{***}$) and Path b — SCB → WECB ($b = 0.753^{***}$). Indirect effect ($a \times b$) = 0.511 (77.0% of total). Partial mediation confirmed. *** $p < .001$.

4.3.4 H4: Moderating Role of Biospheric Values on SCB → WECB

The H4 hypothesis was that BV mediates the SCB-WECB relationship. Mean-centering of SCB and BV was done prior to the calculation of the interaction term. The interaction was statistically significant and negative ($\beta = -0.107$, $SE = 0.029$, $t = -3.757$, $p < .001$), confirming moderation. The full model explained 74.7% of variance in WECB ($R^2 = 0.747$, $F[3, 230] = 226.20$, $p < .001$). The negative correlation shows that, in employees having high BV, the slope of SCB-WECB decreases - a ceiling effect where BV alone maintains high WECB regardless of the level of SCB. This interaction is shown in figure 3. H4 is supported.

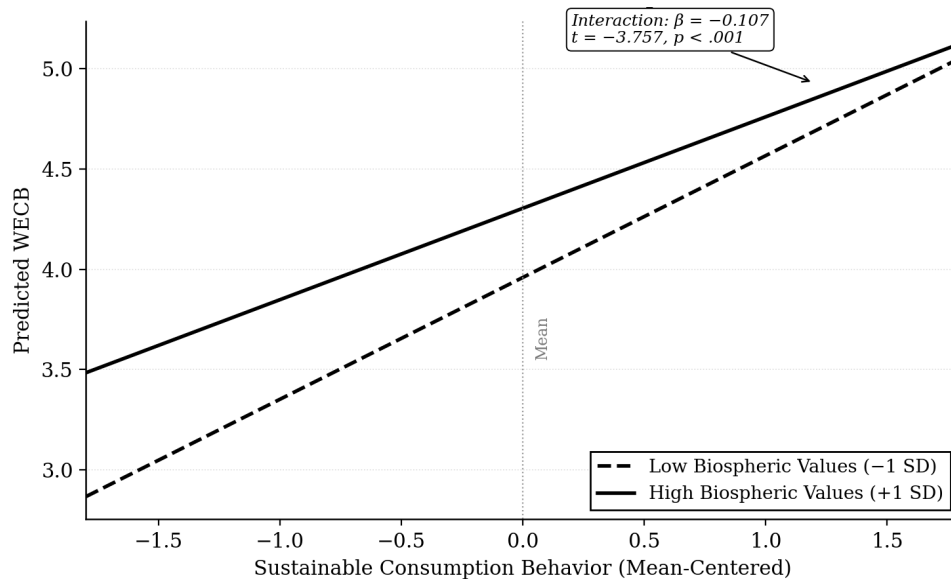


Figure 3: Interaction Plot: Moderating Effect of Biospheric Values on SCB → WECB (H4)

Note. Predicted WECB plotted against mean-centered SCB at low (-1 SD, dashed) and high (+1 SD, solid) levels of BV. Line convergence at high SCB reflects the negative interaction ($\beta = -0.107$, $p < .001$). Predictions from the moderation model ($R^2 = 0.747$).

4.4 Summary of Hypothesis Testing

All results are summarized in Table 4. All the four hypotheses were confirmed. H1 confirmed the direct EA-WECB effect ($\beta = 0.664$, $R^2 = 0.430$). H2 confirmed EA as a predictor of SCB ($\beta = 0.679$, $R^2 = 0.387$). H3 confirmed partial mediation via SCB (indirect effect = 0.511; 77.0% of total; $R^2 = 0.697$). H4 confirmed negative moderation by BV ($\beta = -0.107$; $R^2 = 0.747$).

Table 4: Summary of Hypothesis Testing Results

H	Relationship	β	t	p	R^2	Decision
H1	EA $\rightarrow$ WECB (Direct)	0.664	13.243	<.001	0.430	Supported ***
H2	EA $\rightarrow$ SCB	0.679	12.097	<.001	0.387	Supported ***
H3	EA $\rightarrow$ SCB $\rightarrow$ WECB	0.511	-	-	0.697	Supported
H4	SCB $\times$ BV $\rightarrow$ WECB	-0.107	-3.757	<.001	0.747	Supported ***

Note. β = unstandardized regression coefficient. For H3, β = indirect effect ($a \times b$). R^2 for H3 = full mediation model. *** $p < .001$. All hypotheses supported.

5. Discussion

The current research aimed to map the behavioral and value-based architecture in which environmental awareness triggers WECB in organizational contexts a question that previous literature had answered in a partial and isolated manner. The results provide a more comprehensive and theoretically integrated explanation of employee pro-environmental citizenship than any of the literature contributions had provided to date, by testing the mediating role of sustainable consumption behavior (SCB) and the moderating role of biospheric values (BV) simultaneously. The four hypotheses supported together follow a logical sequential process of environmental awareness to SCB to WECB, conditional at its last level by the biospheric value orientation of the employees.

The direct influence of EA on WECB ($= 0.664$, $= 0.430$) supports the theoretical primacy of environmental awareness as a cognitive antecedent of discretionary environmental behavior at the workplace, which is predicted by the norm activation model that awareness of consequences is the entry point through which behavioral norms are activated (Wang & Chang, 2026). This correlation was expected by (Wang & Chang, 2026), and current statistics verify it with a significant level of accuracy. It is also informative how the strength of the effect of EA on SCB is almost identical ($\beta = 0.679$, $R^2 = 0.387$): it does not selectively activate any of the behavioral domains: EA simultaneously sensitizes employees to the environmental impact at the consumption level and the citizenship responsibilities at the workplace level. This concomitant activation is theoretically compatible with the value-belief-norm framework (Lee et al., 2026) which locates environmental awareness as a belief that mobilizes behavioral norms on a domain-wide basis, rather than on a domain-specific basis. In the context of organizational sustainability practice, this means that the awareness-raising interventions will produce pro-environmental behavioral returns on more than one employee behavioral register simultaneously.

The most theoretically consequential result of the study is the partial mediation of SCB (indirect effect = 0.511; 77.0% of total effect). SCB conveys the majority of the effects of EA on WECB, which lends empirical evidence to the hypothesis of spillover (Sugandini et al., 2026): the internalization of pro-environmental consumption norms by employees translates into a more powerful environmental self-identity that spills into the discretionary behavioral domain of the workplace. The large retention value of a direct EA-WECB path ($c' = 0.249$, $p < .001$) suggests that the mediation is partial, i.e., some employees are directly translating environmental awareness to WECB without the mediating variable of sustainable consumption - it may be that workplace-specific norm activation by organizational green culture or peer modeling (Tran & Nguyen, 2026). This direct route implicates that SCB is the leading route but not the only route through which EA can access WECB.

The large negative SCB-BV ($= -0.107$, $p = .001$) interaction presents a theoretically subtle boundary condition, which elucidates the times when SCB is most strongly activating WECB. WECB is maintained at close to ceiling levels among employees with high BV those who strongly believe in the intrinsic value of nature - regardless of the degree of SCB, as biospheric values serve as an independent, diffuse motivational driver that sustains pro-environmental citizenship behavior regardless of the presence of particular behavioral cues (Partsali et al., 2026). The slope of the SCB-WECB thus flattens at high BV yielding the ceiling moderation pattern as indicated by the convergence of lines in Figure 3. In contrast, in the case of low BV employees, every increase in SCB is a more effortful, conscious claim to environmental commitment that is not yet internalized into a fixed value-based behavioral identity - and has a greater marginal impact on WECB. This asymmetry has direct consequences on targeting: sustainability interventions that focus on SCB are most effective where BV is minimal, and organizations need to tailor their environmental behavior change programs based on the value profile of their employees, as opposed to using standard programs.

Integrating the four hypotheses, the results show that WECB is not a direct, simple byproduct of environmental

awareness but the result of a cascade where awareness triggers SCB as a behavioral manifestation, SCB generalizes to workplace citizenship behavior via identity spillover, and the extent of this generalization is conditional on the extent to which biospheric values of employees independently support pro-environmental behavioral orientations. This combined view takes the value-belief-norm and norm activation models into an organizationally-based, cross-domain model which explains the behavioral process as well as the dispositional moderator that influences employee environmental citizenship.

6. Implications of the Study

This paper builds on the value-belief-norm theory (Stern, 2000) and the norm activation model by extending their explanatory reasoning to a formally tested, cross-domain model of organizational behavior. The most important theoretical contribution is the empirical demonstration of the SCB as a behavioral mediator - not a predictor or correlate - of the EA-WECB relationship, and the finding of BV as a boundary condition that regulates the magnitude of the effect of SCB on WECB. These results contribute to the theoretical body of knowledge on pro-environmental citizenship by showing that workplace discretionary environmental behavior is influenced by a cascade of cognitive, behavioral, and value-based processes that interact with each other, and not by any one antecedent alone.

Organizationally, the results back a differentiated, value sensitive employee sustainability programming. Since EA is the cause of both SCB and WECB, structured environmental awareness programs training, communication of environmental impact and role-modeling by green champions should be considered as core investments with cross-domain returns. In order to engage the SCB-WECB spillover, organizations need to institutionalize the norms of sustainable consumption by introducing green procurement policies, commuting incentives which are environmentally friendly and sustainability challenges among employees. Importantly, as the SCB-WECB pathway is most robust in low-BV employees, organizations must focus SCB-activating interventions on this group and BV-cultivation interventions, like nature-based team building or biospheric value reflection exercises, on employees with moderate BV levels where value development remains susceptible to environmental stimulus.

7. Limitations and Future Research Directions

There are a number of shortcomings that should be mentioned. First, the cross-sectional design does not allow causal inference; longitudinal designs are required to establish the temporal relationship between EA, SCB and WECB. Second, the sampling was focused on one organizational setting, which restricts the generalizability; the next study should use probability-based sampling in many different industries and cultural backgrounds. Third, mediation was evaluated through the (Baron & Kenny, 1986) sequential method, which is known to have low ability of quantifying indirect effects with confidence limits; future research ought to utilize bootstrapped mediation (Preacher & Hayes, 2008) to make more solid inferences. Fourth, single-source self-report data are vulnerable to common method bias; future studies ought to include multi-source designs or objective behavioral measures of WECB. Fifth, BV can be moderated by hedonic and altruistic values as other moderators and should be explicitly empirically addressed.

8. Conclusion

Environmental awareness is converted into environmental citizenship behavior at the workplace by a structured value-conditioned process and not by a direct route. The current research has shown that SCB is the main behavioral intervening variable by which EA elicits WECB, and communicates 77.0% of the overall effect via a spillover mechanism that projects consumption-level pro-environmental norms into the discretionary behavioral domain of the workplace. The final step of this process is moderated by BV, which dampens the SCB-WECB relationship at high value levels - a ceiling effect which demonstrates the motivational self-sufficiency of strongly held biospheric value orientations. All four hypotheses were empirically validated across 234 employees, which offers a coherent and theoretically integrated explanation of antecedents and boundary conditions of WECB. In addition to its concrete empirical contributions, this research is an indication of a more general theoretical necessity: pro-environmental action in organizations cannot be properly theorized or predicted by single-antecedent models. The interaction of cognitive orientations (EA), behavioral habits (SCB) and deep value structures (BV) is a multi-layered system where each component has a unique and non-redundant contribution. Subsequent research ought to expand on this framework by adding other dimensions of value, investigating cross-cultural differences in the mediation and moderation routes, and longitudinal testing of the model to determine causal precedence. Companies that are determined to develop WECB would be well advised to not consider environmental awareness, sustainable consumption behavior, and biospheric value development as separate leverages but rather as complementary components of an integrated approach to environmental behavior change.

9. Funding

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant Number KFU262343].

10. References

- Akoto, E. J. K., Alfa, A. A., Aryee, R., Akoto, J. O. A., & Damoah, O. B. O. (2026). Circular Economy and Organizational Citizenship Behaviors: Exploring the Mediating Impact of Employee Socially Responsible Behaviors and the Moderating Influence of Social Value Orientation. *Business Strategy and the Environment*.
- Al Mamun, A., Yang, M., Hayat, N., Gao, J., & Yang, Q. (2025). The nexus of environmental values, beliefs, norms and green consumption intention. *Humanities and Social Sciences Communications*, 12(1), 1-14.
- Amrutha, V. N., & Geetha, S. N. (2024). Green employee empowerment for environmental organization citizenship behavior: a moderated parallel mediation model. *Current Psychology*, 43(6), 5685-5702.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.
- Camacho, L. J., Litheko, A., Pasco, M., Butac, S. R., Ramírez-Correa, P., Salazar-Concha, C., & Magnait, C. P. T. (2024). Examining the role of organizational culture on citizenship behavior: The mediating effects of environmental knowledge and attitude toward energy savings. *Administrative Sciences*, 14(9), 193.
- Canlas, I. P., & Karpudewan, M. (2023). The continuum of pro-environmental behaviour in the context of the value-belief-norm theory of environmentalism: implications towards sustainable development. *International Journal of Sustainable Development*, 26(1), 22-50.
- Chua, B.-L., Chi, X., Wichupankul, S., Lee, J.-S., Meng, B., & Han, H. (2024). Promoting individual and organization-oriented sustainable behaviors among employees in tourism and hospitality. *Journal of Retailing and Consumer Services*, 79, 103822.
- Cyfert, S., Górka, J., Piórkowska, K., Dyduch, W., Glabiszewski, W., & Batko, R. (2025). Shaping sustainable development of tomorrow: generation Z competencies, green consumption values and the role of knowledge acquisition sources. *Central European Management Journal*, 33(5), 719-735.
- D'Arco, M., & Marino, V. (2022). Environmental citizenship behavior and sustainability apps: An empirical investigation. *Transforming Government: People, Process and Policy*, 16(2), 185-202.
- Davaasuren, T., & Park, Y. (2025). The Impact of Environmental Awareness on Sustainable Consumption: The Mediating Role of Personal Norm and the Moderating Effects of Government's Role and Brand Sustainability. *경영과학*, 42(3), 45-70.
- De Groot, J. I. M., & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behavior: How to measure egoistic, altruistic, and biospheric value orientations. *Environment and behavior*, 40(3), 330-354.
- Duong, T. T., Le, M. T. T., Nguyen, C. H., & Do, L. T. (2025). Revisiting Pro-Environmental Consumption Intention From the Perspectives of Biospheric Value Orientation. *Social Marketing Quarterly*, 15245004261442159.
- Farooq, K., Muhammad, Z., Yusliza, M. Y., Yong, J. Y., & Ramayah, T. (2026). Towards Sustainable Minds and Workplaces: Linking Environmental Knowledge to Employee Well-Being Through Attitude, Awareness, Consciousness and Employee Ecological Behaviour. *Corporate Social Responsibility and Environmental Management*.
- Gomes, J. F. S., Sabino, A., & Antunes, V. (2023). The effect of green human resources management practices on employees' affective commitment and work engagement: The moderating role of employees' biospheric value. *Sustainability*, 15(3), 2190.
- Guan, X., Ahmad, N., Sial, M. S., Cherian, J., & Han, H. (2023). CSR and organizational performance: the role of pro-environmental behavior and personal values. *Corporate Social Responsibility and Environmental Management*, 30(2), 677-694.
- Haleem, F., Jehangir, M., Khan, A., & Sajak, A. B. A. B. (2025). The fusion of green work climate, environmental awareness and personal values for promoting sustainable employee green behavior. *Discover Environment*, 3(1), 248.

- Hasanein, A. M., & Rashwan, K. A. (2026). Sustainable consumption behavior: unveiling the influence of awareness, attitudes, emotions and organizational behavior. *Journal of Hospitality and Tourism Insights*, 9(4), 1755-1775.
- Imaningsih, E. S., Yusliza, M. Y., Hamdan, H., Marlapa, E., & Shiratina, A. (2023). Towards green behavior: Egoistic and biospheric values enhance green self-identities. *Jurnal Manajemen*, 27(3), 449-470.
- Karakas, G. (2024). Investigation of sustainable water consumption behavior within the framework of value belief norm. *Environment, Development and Sustainability*, 26(11), 28465-28483.
- Lee, M.-T., Lee, M.-C., & Yang, S.-L. (2026). Exploring market segments for sustainable aviation fuel: Evidence from passenger willingness to pay and environmental values. *Journal of Air Transport Management*, 136, 103033.
- Mandal, V., & Pal, D. (2025). Sustainable leadership: empowering green organizational citizenship behaviour through employee green value in the Indian healthcare sector. *Journal of Asia Business Studies*, 19(1), 79-102.
- Manuel, C. D., Magalhães, C. R., Huber, C. M., Smerek, L., Costa, A. F., & Alves, J. R. (2024). Cross-cultural adaptation of a questionnaire measuring organizational citizenship behavior towards the environment. *Administrative Sciences*, 14(3), 57.
- Matharu, M., Jain, R., & Kamboj, S. (2020). Understanding the impact of lifestyle on sustainable consumption behavior: a sharing economy perspective. *Management of Environmental Quality: An International Journal*, 32(1), 20-40.
- Mehmood, K., Jabeen, F., Iyanna, S., Zhang, H., Piccardi, P., & Nehra, N. S. (2024). Exploring drivers of behavioral willingness to reduce plastic consumption and socially responsible consumption behavior: a stimulus-organism-behavior-consequence paradigm based environmental management perspective. *Corporate Social Responsibility and Environmental Management*, 31(4), 3098-3118.
- Nejat, M., Motahari, S., Behbahani, A., & Rezaei, M. (2025). Responsible Citizen Behavior Modeling in Urban Waste Management. *Anthropogenic Pollution*, 9(2).
- Nguyen, H. V., Thanh Do, L., & Thu Le, M. T. (2024). From environmental values to pro-environmental consumption behaviors: the moderating role of environmental information. *Current Psychology*, 43(4), 3607-3620.
- Onel, N. (2024). Transforming consumption: The role of values, beliefs, and norms in promoting four types of sustainable behavior. *Journal of Consumer Behaviour*, 23(2), 491-513.
- Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of economic psychology*, 39, 141-153.
- Partsalis, I., Delistavrou, A., & Tilikidou, I. (2026). Are Values the Roots of Pro-Environmental and/or Pro-Labour Intentions Regarding the Preference or Avoidance of a Hotel? *Sustainability*, 18(3), 1455.
- Petricli, G., Inkaya, T., & Emel, G. G. (2024). Identifying green citizen typologies by mining household-level survey data. *Renewable and Sustainable Energy Reviews*, 189, 113957.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods*, 40(3), 879-891.
- Schlapp, P. M., Rojon, C., & Schwarz, S. (2025). The impact of organizational support and individual green values on pro-environmental behavior in the workplace. *Corporate Social Responsibility and Environmental Management*, 32(5), 6897-6911.
- Siagian, N., Ridayani, Andrias, Kamsinah, Maryanti, E., Fatmawati, E., Adi Pramono, S., & Fajri, I. (2023). The effect of environmental citizenship and spiritual norms as mediators on students' environmental behaviour. *International Journal of Adolescence and Youth*, 28(1), 2231511.
- Singh, P., Yadav, M., & Pandey, K. K. (2023). Developing Employees' Environmental Values and Green Organizational Climate to Promote Employee'Organizational Citizenship Behaviors. *International Journal of Business*, 28(3).
- Srisathan, W. A., Malai, K., Narathawaranan, N., Coochampoo, K., & Naruetharadhol, P. (2024). The impact of citizen science on environmental attitudes, environmental knowledge, environmental awareness to pro-environmental citizenship behaviour. *International Journal of Sustainable Engineering*, 17(1), 360-378.
- Srivastava, V., & Bhandari, N. (2025). Unlocking the path to green customer citizenship behaviour: interplay of values,

- attitude, and green brand equity. *Journal of Consumer Marketing*, 42(3), 272-286.
- Steg, L., Perlaviciute, G., Van der Werff, E., & Lurvink, J. (2014). The significance of hedonic values for environmentally relevant attitudes, preferences, and actions. *Environment and behavior*, 46(2), 163-192.
- Sugandini, D., Effendi, M. I., Sukarno, A., Yodhatama, M., Pamuji, W. A., & Adisti, T. (2026). Do Smart Destinations and Biosphere Values Influence Pro-Environmental Behavior? A Study of Tourism Villages. *Review of Integrative Business and Economics Research*, 15(1), 355-370.
- Tran, M. L., & Nguyen, T. P. L. (2026). Environmental values, attitude and employee green behaviour in industrial parks: the moderating role of perceived policy effectiveness. *International Journal of Organizational Analysis*, 1-18.
- Trinh, A. K., Tran, M. D., & Adomako, S. (2025). Environmental knowledge and sustainable consumption behavior: Evidence from Vietnam. *Sustainable Development*, 33, 577-593.
- Ullah, I., Donald, W. E., Alhejji, H., Fiaz, M., & Bo, W. (2026). Leading for green: the role of eco-centric leadership in shaping External organisational citizenship behaviour for the environment. *Management Decision*, 1-24.
- Van Tonder, E., Fullerton, S., De Beer, L. T., & Saunders, S. G. (2023). Social and personal factors influencing green customer citizenship behaviours: The role of subjective norm, internal values and attitudes. *Journal of Retailing and Consumer Services*, 71, 103190.
- Wang, S.-T., & Chang, S.-C. (2026). Influence of altruistic and biospheric values on vegetarians' intentions to repurchase plant-based foods. *British Food Journal*, 1-18.
- Wong, W. M., Qu, M., Nunualvuttiwong, C., & Ngamcharoenmongkhon, K. (2023). Environmental concerns, sustainable consumption, and COVID-19 fear in online consumers: A research exploration. *Theoretical and Practical Research in Economic Fields*, 14(2), 246-257.
- Xiao, J. J., & Li, H. (2011). Sustainable consumption and life satisfaction. *Social indicators research*, 104(2), 323-329.