



Environmental Awareness and Green Consumption: The Mediating Role of Behavioral Intention and Moderating Role of Cultural Values

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Abstract: Environmental degradation, climate change, resource depletion, and increasing levels of unsustainable consumption have intensified the need to understand the psychological and social mechanisms that encourage consumers to adopt environmentally responsible purchasing practices. This study examines the relationship between environmental awareness and green consumption and investigates the mediating role of behavioral intention and the moderating role of cultural values. The proposed model is primarily grounded in the Theory of Planned Behavior and complemented by the Value Belief Norm framework. Environmental awareness represents consumers' understanding of environmental problems, their consequences, and the importance of sustainable consumption. Behavioral intention represents consumers' willingness and commitment to purchase environmentally friendly products and adopt sustainable consumption practices. Green consumption represents actual environmentally responsible purchasing and consumption behavior. Cultural values are proposed as a contextual moderator because values such as collectivism, environmental responsibility, social orientation, and concern for community welfare can influence how environmental awareness is translated into behavioral intentions and consumption decisions. A quantitative cross sectional survey methodology is proposed. Data are assumed to be collected through a structured questionnaire using established Likert scale measures. The proposed model can be tested through Partial Least Squares Structural Equation Modeling using SmartPLS. The measurement model should be evaluated through indicator reliability, internal consistency, convergent validity, and discriminant validity. The structural model should subsequently be examined through path coefficients, bootstrapping, coefficient of determination, effect sizes, predictive relevance, mediation analysis, and moderation analysis. For demonstration purposes, the hypothetical results indicate that environmental awareness has a positive and significant effect on behavioral intention and green consumption. Behavioral intention significantly mediates the relationship between environmental awareness and green consumption. Cultural values are also expected to strengthen the positive relationship between environmental awareness and behavioral intention, suggesting that environmentally aware consumers who possess stronger pro social and collectivist values are more likely to translate awareness into green purchasing intentions. The study contributes to sustainable consumption literature by integrating cognitive awareness, behavioral intention, and cultural context into a single framework. The findings have implications for policymakers, marketers, educational institutions, environmental organizations, and businesses seeking to encourage sustainable consumer behavior.

Keywords: Environmental Awareness, Green Consumption, Behavioral Intention, Green Purchase Intention, Cultural Values, Sustainable Consumption, Theory Of Planned Behavior, Value Belief Norm Theory, Mediation, Moderation, SmartPLS, PLS SEM

Introduction

Environmental degradation has become one of the most significant challenges facing contemporary societies. Climate change, biodiversity loss, excessive resource consumption, plastic pollution, deforestation, and increasing waste generation are closely associated with patterns of production and consumption. Consequently, sustainable consumption has emerged as an important component of environmental policy and sustainable development. Consumers increasingly encounter information concerning environmental consequences and are encouraged to select products that generate lower environmental impacts. Nevertheless, greater environmental awareness does not automatically result in environmentally responsible consumption. The persistent gap between environmental concern and actual consumption behavior represents one of the central problems in green consumer research. A recent systematic review of 207 studies identified the attitude behavior gap as a continuing challenge and emphasized the importance of examining the psychological, contextual, and demographic determinants of green consumption.

Environmental awareness refers to an individual's understanding of environmental problems, their causes, consequences, and potential solutions. It encompasses knowledge concerning environmental degradation as well as recognition of the relationship between individual consumption and environmental outcomes. Awareness can influence consumers' attitudes toward environmentally friendly products because individuals who understand the consequences of conventional consumption may perceive sustainable alternatives more positively.

However, awareness alone may not be sufficient to produce green consumption. Consumers may recognize environmental problems while continuing to purchase conventional products because of price, availability, convenience, quality perceptions, social norms, limited trust, or lack of behavioral control. This phenomenon creates an important theoretical question concerning the mechanism through which environmental awareness influences actual green consumption. Behavioral intention provides a potentially important explanation.

Behavioral intention refers to an individual's willingness, plan, or commitment to perform a particular behavior. According to the Theory of Planned Behavior, intention represents the most immediate psychological antecedent of behavior. Consumers who intend to purchase environmentally friendly products are more likely to translate environmental awareness and favorable attitudes into actual green consumption. Recent empirical research applying an extended Theory of Planned Behavior found that green consumption intention was a significant predictor of actual green consumption behavior and represented one of the strongest predictors in the model.

The mediating role of behavioral intention is therefore theoretically important. Rather than assuming that environmental awareness directly produces green consumption, the present study proposes that awareness first strengthens consumers' intention to engage in environmentally responsible purchasing and that intention subsequently increases actual green consumption. This approach helps explain why some environmentally aware consumers behave sustainably while others do not.

Cultural values provide another important explanation for differences in green consumption. Consumption behavior is not determined solely by individual cognition. Individuals operate within cultural environments that influence values, social expectations, identity, responsibility, and perceptions

of appropriate behavior. Collectivist values, for example, emphasize group welfare, social harmony, and concern for others, potentially increasing willingness to adopt behaviors that generate collective environmental benefits.

Recent research provides empirical support for the importance of culture in green consumption. A 2024 study examining cultural and generational differences found that environmental concern, attitudes, subjective norms, and perceived behavioral control influenced green purchase intention and that the relationship between environmental concern and green purchase intention differed across cultural contexts. More recent cross cultural evidence comparing Pakistan and China similarly demonstrates that environmental factors influence green purchase intentions in both settings while cultural characteristics such as collectivism interact with green marketing influences.

Cultural values may therefore moderate the process through which awareness becomes intention. Consumers with stronger collectivist or environmentally responsible values may interpret environmental information in terms of collective consequences and social responsibility. Consequently, environmental awareness may produce stronger behavioral intentions among consumers whose cultural values emphasize community welfare and responsibility toward others.

The present study integrates these arguments into a unified framework. Environmental awareness is positioned as the independent variable, green consumption as the dependent variable, behavioral intention as the mediator, and cultural values as the moderator. The model seeks to answer not only whether environmental awareness encourages green consumption but also **how and under what cultural conditions** this relationship becomes stronger.

The research is particularly relevant for emerging economies such as Pakistan, where environmental challenges are increasing while green markets and sustainable consumption practices remain developing. Recent Pakistani research has found significant relationships between environmental consciousness and green purchasing behavior using PLS SEM, while environmental concerns and personality characteristics have also been shown to play mediating and moderating roles. Research involving Pakistani farmers has likewise demonstrated that adding environmental awareness and environmental beliefs to the Theory of Planned Behavior improves the explanation of sustainable behavioral intentions.

Therefore, this study aims to develop a comprehensive model explaining green consumption through environmental awareness, behavioral intention, and cultural values. The findings can assist businesses and policymakers in designing culturally appropriate strategies that move consumers beyond environmental awareness toward actual sustainable consumption.

Literature Review

Environmental Awareness

Environmental awareness represents the degree to which individuals understand environmental conditions, recognize environmental problems, and appreciate the consequences of human activities for ecological systems. It is commonly conceptualized through environmental knowledge, awareness of environmental consequences, and recognition of individual responsibility.

Environmental awareness is important because consumers cannot easily make environmentally informed decisions without some understanding of environmental consequences. Awareness may influence product evaluation by increasing the perceived importance of sustainability and encouraging consumers to consider environmental attributes alongside price, quality, and convenience.

Recent research confirms that environmental awareness has become an increasingly important variable in green consumer research. A 2024 systematic review of green consumption literature identified environmental concern and awareness among important determinants of green purchase intention.

Recent empirical evidence also supports the direct relationship between environmental consciousness and green purchasing behavior. Research involving Pakistani consumers of energy efficient electronic products found that environmental consciousness significantly influenced green purchasing behavior and that environmental concerns helped explain this relationship.

Environmental awareness may influence consumption through both cognitive and moral mechanisms. Cognitively, awareness helps consumers understand why environmentally friendly products are desirable. Morally, awareness can increase recognition of personal responsibility for environmental consequences. This argument is consistent with the Value Belief Norm framework, which proposes that awareness of environmental consequences can activate personal norms and environmentally responsible action.

Green Consumption

Green consumption refers to purchasing and consumption practices intended to reduce negative environmental consequences. It can include purchasing energy efficient products, selecting recyclable products, avoiding excessive packaging, purchasing organic or sustainable products, reducing waste, conserving resources, and considering environmental information when making purchasing decisions.

Green consumption has become an increasingly important research area because household consumption contributes significantly to environmental pressures. However, consumers frequently express favorable attitudes toward sustainability without consistently purchasing green products. This creates what researchers commonly describe as the green attitude behavior or intention behavior gap.

A recent systematic literature review examined 207 articles published between 1993 and 2023 and found that green consumption research has expanded substantially but continues to identify gaps between positive attitudes and actual purchasing behavior.

Recent empirical research has also emphasized the distinction between green purchase intention and actual green consumption. A 2025 extended Theory of Planned Behavior study found that green consumption intention significantly predicted green consumption behavior and was one of the strongest determinants in the model.

This evidence suggests that understanding intention is essential for explaining actual green consumption. Awareness may be necessary, but intention may represent the psychological mechanism through which awareness is transformed into action.

Behavioral Intention

Behavioral intention refers to an individual's conscious willingness to perform a behavior. In the context of green consumption, it reflects the likelihood that consumers intend to purchase environmentally friendly products, select sustainable alternatives, recommend green products, or consider environmental consequences during purchasing.

The Theory of Planned Behavior proposes that behavioral intention is influenced by attitudes, subjective norms, and perceived behavioral control. The theory has been widely applied to green consumption research because purchasing decisions involve personal evaluations, social expectations, and perceived ability to perform the behavior.

Recent research confirms the importance of intention in green consumption. An extended Theory of Planned Behavior study published in 2025 found that green consumption intention significantly predicted green consumption behavior, with intention emerging as the strongest predictor among the behavioral variables examined.

Behavioral intention is therefore expected to mediate the relationship between environmental awareness and green consumption. Environmentally aware consumers may develop stronger intentions because they

understand environmental consequences and perceive sustainable consumption as more important. These intentions then increase the likelihood of actual green consumption.

Environmental Awareness and Behavioral Intention

Environmental awareness is expected to positively influence behavioral intention. Consumers who understand environmental degradation may be more motivated to support products and brands that reduce environmental harm.

Recent research supports this relationship. Studies examining green purchase intention have identified environmental awareness, environmental concern, environmental knowledge, attitudes, subjective norms, and perceived behavioral control as important predictors.

Research involving Pakistani farmers also demonstrates that environmental awareness and beliefs can improve the explanatory power of behavioral intention models. This is important because it demonstrates that environmental awareness is relevant even outside conventional consumer product contexts.

Therefore:

H1: Environmental awareness has a positive and significant effect on behavioral intention toward green consumption.

Behavioral Intention and Green Consumption

Behavioral intention is expected to positively affect green consumption because individuals who plan or intend to purchase green products are more likely to act accordingly.

The Theory of Planned Behavior provides the strongest theoretical foundation for this relationship. Although intention does not always translate into behavior, it represents the most immediate psychological antecedent of planned behavior.

Recent empirical evidence supports this proposition. A 2025 study found that green consumption intention significantly predicted green consumption behavior and that intention was the most influential predictor among several tested variables.

Therefore:

H2: Behavioral intention has a positive and significant effect on green consumption.

Environmental Awareness and Green Consumption

Environmental awareness may also directly influence green consumption. Individuals who recognize environmental problems and understand the environmental consequences of conventional products may be more likely to make sustainable choices.

Recent research on environmental consciousness and green purchasing behavior found a significant positive effect of environmental consciousness on green purchasing behavior.

Similarly, research on employees in Pakistan found environmental awareness to be a significant predictor of green behavior.

Therefore:

H3: Environmental awareness has a positive and significant effect on green consumption.

Mediating Role of Behavioral Intention

The direct relationship between environmental awareness and green consumption does not fully explain the psychological process involved. Consumers may become aware of environmental problems without immediately changing their consumption patterns. Behavioral intention provides a mechanism through which awareness can be translated into action.

The proposed mediation can be expressed as:

Environmental Awareness → Behavioral Intention → Green Consumption

The first path represents the cognitive process through which awareness creates willingness to act. The second represents the behavioral translation of intention into actual consumption.

Recent green consumption research strongly emphasizes intention as a central mechanism. The 2025 extended TPB study found that green consumption intention significantly predicted actual green consumption. Furthermore, recent research using the Value Belief Norm model found that awareness of consequences, responsibility, and personal norms contributed to green consumption intention.

Therefore:

H4: Behavioral intention mediates the positive relationship between environmental awareness and green consumption.

Cultural Values

Cultural values refer to shared beliefs concerning desirable behavior, social responsibility, interpersonal relationships, individual autonomy, and collective welfare. In sustainable consumption research, cultural values are particularly relevant because environmental problems are collective problems requiring behavior that may involve personal costs for collective benefits.

Collectivist cultural orientations emphasize group welfare, social harmony, community responsibility, and concern for others. Such values may encourage consumers to consider environmental consequences beyond immediate personal benefits.

Recent cross cultural research found differences in green purchase intention mechanisms between cultural contexts. A 2024 study reported that the relationship between environmental concern and green purchase intention was stronger in Western culture in the examined sample. A more recent Pakistan China comparison also found that collectivism interacted with green marketing influence in explaining green purchase intentions.

These findings suggest that cultural values can alter the strength of environmental consumption processes rather than simply exerting direct effects.

Moderating Role of Cultural Values

The proposed study argues that cultural values moderate the relationship between environmental awareness and behavioral intention. Consumers with stronger pro social, collectivist, and environmental responsibility values may be more likely to transform environmental awareness into behavioral intention.

For example, two consumers may possess equivalent levels of environmental awareness. The first consumer may strongly value individual convenience and personal economic benefit, while the second may emphasize community welfare and collective responsibility. The second consumer may be more likely to convert environmental awareness into an intention to purchase green products.

This proposition is supported by recent literature demonstrating that cultural and value related variables influence green purchase intention and consumption.

Therefore:

H5: Cultural values positively moderate the relationship between environmental awareness and behavioral intention, such that the relationship is stronger when cultural values supporting collective and environmental responsibility are high.

Conditional Indirect Effect

Because behavioral intention mediates the environmental awareness and green consumption relationship while cultural values moderate the awareness and intention relationship, the overall framework represents

a **moderated mediation model**.

The indirect effect can be represented as:

Environmental Awareness → Behavioral Intention → Green Consumption

with:

Cultural Values moderating Environmental Awareness → Behavioral Intention.

Therefore:

H6: The indirect effect of environmental awareness on green consumption through behavioral intention is stronger when cultural values supporting collective and environmental responsibility are high.

Research Gap

Despite extensive research on green consumption, several gaps remain.

First, many studies examine environmental awareness as a direct predictor of green purchase intention or behavior without explicitly testing behavioral intention as a mediating mechanism.

Second, green consumption studies frequently examine culture through cross country comparisons rather than measuring cultural values at the individual level.

Third, although the Theory of Planned Behavior and Value Belief Norm theory are frequently used independently, fewer studies integrate cognitive awareness, behavioral intention, and cultural values into one moderated mediation framework.

Fourth, existing green consumption research has disproportionately focused on young, educated, and urban consumers, limiting generalizability across demographic groups. The 2024 systematic review specifically identifies this concentration as a limitation of the existing literature.

The present study addresses these gaps by examining **how environmental awareness affects green consumption through behavioral intention and whether cultural values strengthen this process.**

Conceptual Model and Theoretical Framework

The proposed framework integrates the **Theory of Planned Behavior**, **Value Belief Norm Theory**, and selected cultural value perspectives.

The Theory of Planned Behavior explains the transition from psychological evaluation to behavioral intention and subsequently to behavior. Behavioral intention is therefore positioned as the mediator between environmental awareness and green consumption.

The Value Belief Norm framework explains why environmental awareness can activate environmentally responsible behavior. Awareness of environmental consequences can increase perceived responsibility and personal norms, creating motivation for sustainable action.

Cultural value theory provides the contextual explanation. Shared cultural orientations can determine how individuals interpret environmental responsibility and whether awareness is translated into intention.

Conceptual Model

Environmental Awareness → Behavioral Intention → Green Consumption

Cultural Values → Green Consumption

Environmental Awareness × Cultural Values → Behavioral Intention

Environmental Awareness → Green Consumption

The model therefore contains:

Independent variable: Environmental Awareness

Mediator: Behavioral Intention

Dependent variable: Green Consumption
Moderator: Cultural Values

Hypotheses

- H1:** Environmental awareness positively affects behavioral intention.
- H2:** Behavioral intention positively affects green consumption.
- H3:** Environmental awareness positively affects green consumption.
- H4:** Behavioral intention mediates the relationship between environmental awareness and green consumption.
- H5:** Cultural values positively moderate the relationship between environmental awareness and behavioral intention.
- H6:** The indirect effect of environmental awareness on green consumption through behavioral intention is stronger at higher levels of supportive cultural values.

Methodology

A quantitative cross sectional research design is appropriate for testing the proposed moderated mediation model. The target population should consist of adult consumers who have experience purchasing consumer products and can evaluate environmental considerations in their purchasing decisions. A structured questionnaire should be used with five point Likert scale responses ranging from strongly disagree to strongly agree. Environmental awareness should be measured through items assessing knowledge of environmental problems, awareness of environmental consequences, and understanding of sustainable consumption. Behavioral intention should measure willingness, plans, and commitment to purchase green products. Green consumption should assess actual purchasing and consumption behaviors such as purchasing environmentally friendly products, reducing environmentally harmful consumption, selecting sustainable alternatives, and considering environmental information during purchases. Cultural values should measure relevant orientations such as collectivism, social responsibility, community welfare, and environmental responsibility.

A sample of approximately 350 to 500 respondents is recommended because the proposed model includes both mediation and moderation. A pilot study involving 30 to 50 participants should be conducted before full data collection. Convenience or purposive sampling may be used when probability sampling is not feasible, although probability sampling would provide stronger generalizability.

SmartPLS should be used for PLS SEM analysis. The measurement model should be assessed using outer loadings, Cronbach's alpha, composite reliability, average variance extracted, and HTMT. The structural model should be evaluated through path coefficients, bootstrapping, t statistics, p values, R squared, f squared, and predictive relevance. Mediation should be tested through bootstrapped indirect effects, while moderation should be examined using an interaction term between environmental awareness and cultural values. The moderated mediation effect should be assessed by comparing conditional indirect effects at low, medium, and high levels of cultural values. A minimum of 5,000 bootstrap samples is recommended for hypothesis testing.

Measurement Model

Table 1

Construct Reliability and Convergent Validity

Construct	Cronbach Alpha Composite Reliability AVE Assessment
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Construct	Cronbach Alpha	Composite Reliability	AVE	Assessment
Environmental Awareness	0.912	0.935	0.741	Acceptable
Behavioral Intention	0.921	0.941	0.762	Acceptable
Green Consumption	0.905	0.929	0.725	Acceptable
Cultural Values	0.894	0.921	0.700	Acceptable

Note. Values are illustrative SmartPLS results and must be replaced with actual empirical results.

Table 2
Illustrative Indicator Loadings

Construct	Indicator Loading	
Environmental Awareness	EA1	0.847
Environmental Awareness	EA2	0.882
Environmental Awareness	EA3	0.861
Environmental Awareness	EA4	0.875
Environmental Awareness	EA5	0.856
Behavioral Intention	BI1	0.874
Behavioral Intention	BI2	0.901
Behavioral Intention	BI3	0.883
Behavioral Intention	BI4	0.869
Behavioral Intention	BI5	0.851
Green Consumption	GC1	0.842
Green Consumption	GC2	0.875
Green Consumption	GC3	0.861
Green Consumption	GC4	0.884
Green Consumption	GC5	0.853
Cultural Values	CV1	0.816
Cultural Values	CV2	0.851
Cultural Values	CV3	0.864
Cultural Values	CV4	0.837
Cultural Values	CV5	0.856

Note. Values are illustrative.

Table 3
Discriminant Validity Using HTMT

Construct Pair	HTMT Threshold Decision		
Environmental Awareness and Behavioral Intention	0.714	< 0.850	Established
Environmental Awareness and Green Consumption	0.681	< 0.850	Established
Environmental Awareness and Cultural Values	0.492	< 0.850	Established

Construct Pair	HTMT Threshold Decision		
Behavioral Intention and Green Consumption	0.763	< 0.850	Established
Behavioral Intention and Cultural Values	0.528	< 0.850	Established
Green Consumption and Cultural Values	0.501	< 0.850	Established

Note. Values are illustrative.

Structural Model Analysis

Table 4

Direct Effects

Hypothesis	Relationship	Beta	Standard Error	t value	p value	Decision
H1	Environmental Awareness → Behavioral Intention	0.516	0.058	8.897	< 0.001	Supported
H2	Behavioral Intention → Green Consumption	0.573	0.055	10.418	< 0.001	Supported
H3	Environmental Awareness → Green Consumption	0.214	0.063	3.397	0.001	Supported

Note. Values are illustrative SmartPLS results.

Table 5

Mediation Analysis

Hypothesis	Indirect Relationship	Indirect Beta	Standard Error	t value	p value	Decision
H4	Environmental Awareness → Behavioral Intention → Green Consumption	0.296	0.039	7.590	< 0.001	Supported

Direct effect: 0.214

Indirect effect: 0.296

Total effect: 0.510

Note. Values are illustrative.

Table 6

Moderation Analysis

Hypothesis	Interaction	Beta	Standard Error	t value	p value	Decision
H5	Environmental Awareness × Cultural Values → Behavioral Intention	0.137	0.051	2.686	0.007	Supported

Note. Values are illustrative.

Table 7

Moderated Mediation Analysis

Cultural Values Level Conditional Indirect Effect Bootstrapped Confidence Interval Interpretation

Cultural Values Level	Conditional Indirect Effect	Bootstrapped Confidence Interval	Interpretation
Low	0.218	0.146 to 0.305	Significant
Medium	0.296	0.221 to 0.379	Significant
High	0.374	0.287 to 0.468	Significant

Note. Values are illustrative. Confidence intervals are hypothetical.

Table 8
Coefficient of Determination and Effect Sizes

Endogenous Construct	R ²	Interpretation	Predictor	f ²	Interpretation
Behavioral Intention	0.386	Moderate	Environmental Awareness	0.318	Medium
Behavioral Intention	0.386	Moderate	Interaction	0.041	Small
Green Consumption	0.548	Moderate to substantial	Behavioral Intention	0.392	Large
Green Consumption	0.548	Moderate to substantial	Environmental Awareness	0.071	Small
Green Consumption	0.548	Moderate to substantial	Cultural Values	0.027	Small

Note. Values are illustrative.

Interpretation of Table 1

Table 1 presents the illustrative reliability and convergent validity results for environmental awareness, behavioral intention, green consumption, and cultural values. All Cronbach alpha coefficients exceed 0.89, demonstrating strong internal consistency. Environmental awareness has a Cronbach alpha of 0.912, behavioral intention has 0.921, green consumption has 0.905, and cultural values has 0.894. These values indicate that the indicators associated with each construct consistently measure their respective latent concepts.

Composite reliability values range from 0.921 to 0.941, substantially exceeding the recommended minimum threshold of 0.70. These findings provide additional evidence of measurement reliability. Behavioral intention demonstrates the highest composite reliability, indicating strong consistency among the items measuring consumers' willingness and plans to engage in green consumption.

The AVE values range from 0.700 to 0.762. All values exceed 0.50, demonstrating satisfactory convergent validity. This means that each construct explains more than half of the variance in its indicators.

The results indicate that environmental awareness is measured consistently through indicators capturing environmental knowledge and awareness of environmental consequences. Behavioral intention is represented through consumers' willingness and commitment to green consumption. Green consumption is represented through actual environmentally responsible purchasing practices. Cultural values capture shared and individual orientations toward collective welfare, responsibility, and environmental responsibility.

The measurement findings are consistent with recent research using PLS SEM to investigate environmental awareness and green behavior. Recent studies have demonstrated satisfactory measurement models for environmental consciousness, green purchasing behavior, and related psychological constructs.

These results provide sufficient support for proceeding to structural model analysis. Nevertheless, reliability and convergent validity alone are not sufficient. Since environmental awareness, behavioral intention, and green consumption are theoretically related, discriminant validity must also be established.

Therefore, Table 3 evaluates the HTMT ratios.

Interpretation of Table 2

Table 2 presents the illustrative outer loadings for the four constructs. All loadings exceed 0.80, indicating strong relationships between the indicators and their respective constructs. This demonstrates that each measurement item contributes meaningfully to its underlying latent variable.

Environmental awareness indicators range from 0.847 to 0.882. These results demonstrate that the items consistently represent consumers' awareness and understanding of environmental issues. EA2 has the highest loading, suggesting that this indicator is particularly representative of environmental awareness.

Behavioral intention indicators range from 0.851 to 0.901. BI2 has the highest loading at 0.901. This indicates that the corresponding intention item has a particularly strong relationship with the overall behavioral intention construct.

Green consumption indicators range from 0.842 to 0.884. GC4 produces the highest loading, indicating strong representation of environmentally responsible consumption behavior.

Cultural values indicators range from 0.816 to 0.864. These values are also well above the commonly accepted threshold. CV3 produces the strongest loading.

The consistently strong loadings suggest that all indicators can reasonably be retained. Indicator deletion should not be based solely on attempts to maximize statistical reliability. The theoretical content of each indicator should also be considered because removing items can reduce construct coverage.

The results are particularly important because cultural values are a broad concept that can include collectivism, community responsibility, social harmony, and environmental responsibility. Multiple indicators are therefore necessary to represent the construct adequately.

Recent green consumption literature emphasizes the importance of measuring multiple psychological and cultural determinants rather than relying on a single environmental attitude item.

Overall, the outer loading results support the adequacy of the proposed measurement model and provide a strong basis for evaluating the structural relationships.

Interpretation of Table 3

Table 3 presents the HTMT results for discriminant validity. All values are below 0.850, indicating that the four constructs are empirically distinct.

The HTMT value of 0.714 between environmental awareness and behavioral intention indicates a meaningful association but remains below the recommended threshold. This is theoretically appropriate because consumers with greater environmental awareness are expected to have stronger intentions to consume sustainably, while awareness and intention remain conceptually different.

The HTMT value between environmental awareness and green consumption is 0.681. This indicates that environmental awareness is associated with actual consumption behavior without being identical to it. This distinction is important because the proposed model explicitly examines whether behavioral intention helps explain the transition from awareness to consumption.

Behavioral intention and green consumption have an HTMT value of 0.763. This is the highest value among the principal constructs but remains below the threshold. The relatively strong association is theoretically expected because intention represents a proximal predictor of actual behavior.

The HTMT values involving cultural values are substantially lower, ranging from 0.492 to 0.528. This indicates that cultural values represent a distinct contextual construct rather than another form of environmental awareness or behavioral intention.

The results therefore support discriminant validity and provide an appropriate foundation for mediation

and moderation analysis.

The distinction is especially important in the proposed model because mediation requires environmental awareness, behavioral intention, and green consumption to represent separate constructs. Similarly, moderation requires cultural values to be sufficiently distinct from environmental awareness and behavioral intention.

Recent green consumption research emphasizes the importance of separating environmental awareness, intention, actual consumption, and cultural or value based factors.

Interpretation of Table 4

Table 4 presents the illustrative direct effects and provides support for H1, H2, and H3.

H1 proposes that environmental awareness positively affects behavioral intention. The path coefficient is 0.516, with a t value of 8.897 and p value below 0.001. This indicates a strong positive and statistically significant relationship. Consumers who possess greater awareness of environmental problems are therefore expected to demonstrate stronger intentions to purchase and consume green products.

This result is consistent with recent research demonstrating that environmental awareness and environmental concern are important determinants of green purchase intention.

H2 proposes that behavioral intention positively affects green consumption. The coefficient is 0.573, with a t value of 10.418 and p value below 0.001. This is the strongest direct relationship in the model. The finding suggests that consumers who intend to engage in green consumption are substantially more likely to report actual environmentally responsible consumption.

The result is consistent with recent empirical evidence showing that green consumption intention is a significant predictor of green consumption behavior.

H3 proposes that environmental awareness directly affects green consumption. The coefficient of 0.214 is positive and significant, with a p value of 0.001. This indicates that environmental awareness retains a direct effect on green consumption even after behavioral intention is included.

The coexistence of significant direct and indirect effects is theoretically meaningful. It suggests that awareness influences consumption partly through intention but also through other mechanisms. Consumers may directly apply environmental knowledge during purchasing decisions without consciously forming a strong behavioral intention.

The results therefore support a partially mediated model rather than a fully mediated model. Environmental awareness has both a direct relationship with green consumption and an indirect relationship through behavioral intention.

Interpretation of Table 5

Table 5 presents the illustrative mediation analysis. The indirect effect of environmental awareness on green consumption through behavioral intention is 0.296, with a t value of 7.590 and p value below 0.001. The result provides strong support for H4.

The significant indirect effect indicates that environmental awareness influences green consumption partly by increasing consumers' behavioral intentions. In practical terms, environmentally aware consumers are more likely to develop intentions to purchase sustainable products, and these intentions subsequently increase actual green consumption.

The direct effect remains significant at 0.214. Therefore, behavioral intention does not completely explain the relationship between environmental awareness and green consumption. Instead, the findings indicate **partial mediation**.

The total effect is 0.510, representing the combined direct and indirect effects. The indirect effect

constitutes a substantial portion of the total relationship, highlighting the importance of behavioral intention as a psychological mechanism.

The finding provides a theoretically important explanation of the green awareness behavior gap. Awareness is valuable, but awareness alone does not necessarily produce behavior. Consumers must also develop willingness and commitment to act. Behavioral intention represents this motivational bridge.

The finding is consistent with the Theory of Planned Behavior, in which intention represents the immediate psychological antecedent of behavior. It also complements Value Belief Norm theory because awareness of environmental consequences can create motivational conditions that encourage responsible intentions.

Recent evidence supports the central role of intention in green consumption. A 2025 extended TPB study found that green consumption intention significantly predicted green consumption behavior.

The finding also aligns with recent research on green consumption values, awareness, norms, and intention, which demonstrates that awareness related constructs can influence sustainable consumption through psychological mechanisms.

Thus, the study contributes by demonstrating that environmental awareness should not be viewed solely as a direct behavioral determinant. Its effect is partly transmitted through consumers' behavioral intentions.

Interpretation of Table 6

Table 6 examines the moderating role of cultural values. The interaction between environmental awareness and cultural values has a positive coefficient of 0.137, with a t value of 2.686 and p value of 0.007. This supports H5.

The positive interaction indicates that cultural values strengthen the relationship between environmental awareness and behavioral intention. When cultural values supporting collective responsibility and environmental concern are high, environmental awareness is more strongly associated with green consumption intentions.

The finding provides an important contextual explanation for variation among consumers. Two consumers may possess similar levels of environmental awareness but demonstrate different behavioral intentions because their underlying cultural values differ.

Consumers with stronger collectivist values may consider the effects of consumption on family, community, future generations, and society. Consequently, environmental awareness may be interpreted as a collective responsibility rather than merely a personal concern.

The finding is consistent with recent research demonstrating that cultural context influences green purchase intention. A 2024 study found that the relationship between environmental concern and green purchase intention differed across Western and other cultural contexts. More recent cross cultural evidence comparing Pakistan and China similarly demonstrates the importance of collectivism in green purchase intention models.

The moderation effect also has implications for green marketing. Global companies should avoid assuming that identical environmental messages will produce identical consumer responses across markets. Marketing communication may be more effective when it is aligned with culturally relevant values.

In collectivist environments, campaigns emphasizing community welfare, family well being, social responsibility, and protection of future generations may strengthen the effect of environmental awareness. In more individualistic environments, messages emphasizing personal health, personal identity, innovation, and individual responsibility may be more effective.

A simple slope analysis should be conducted in SmartPLS to visualize the interaction. The expected pattern is a steeper positive relationship between environmental awareness and behavioral intention among consumers with high cultural values and a flatter relationship among consumers with low cultural values.

Interpretation of Table 7

Table 7 presents the illustrative moderated mediation analysis. The results indicate that the indirect effect of environmental awareness on green consumption through behavioral intention changes according to the level of cultural values.

At low cultural values, the conditional indirect effect is 0.218. The confidence interval does not include zero, indicating a statistically significant indirect effect. At medium cultural values, the indirect effect increases to 0.296. At high cultural values, the indirect effect increases further to 0.374.

This pattern supports H6 and demonstrates that cultural values strengthen the indirect pathway from environmental awareness to green consumption through behavioral intention.

The result is theoretically important because it combines the mediation and moderation mechanisms into one integrated model. Environmental awareness creates behavioral intentions, intentions influence green consumption, and cultural values determine how strongly awareness is translated into intention.

At low levels of supportive cultural values, environmental awareness still has a significant indirect effect, suggesting that environmental awareness itself is sufficient to produce some behavioral motivation. However, the effect becomes considerably stronger as cultural values supporting collective responsibility increase.

This result suggests that cultural values do not replace environmental awareness. Instead, they amplify its behavioral consequences.

The finding is consistent with recent research demonstrating that environmental values, beliefs, norms, and cultural characteristics influence green consumption intention. A 2025 study using the Value Belief Norm framework found significant relationships among environmental values, awareness of consequences, responsibility, personal norms, and green consumption intention.

The results also extend cross cultural research by moving beyond simple comparisons between countries. Rather than assuming that all consumers within one country possess identical cultural orientations, the proposed model measures cultural values at the individual level.

This approach provides a more nuanced understanding of consumer behavior because substantial variation can exist within countries. Consumers may differ in collectivism, environmental responsibility, social orientation, and concern for community welfare even when they share the same national culture.

Interpretation of Table 8

Table 8 reports the illustrative coefficient of determination and effect sizes. The R squared value for behavioral intention is 0.386, indicating that approximately 38.6 percent of its variance is explained by environmental awareness and the environmental awareness by cultural values interaction.

The R squared value for green consumption is 0.548, indicating that approximately 54.8 percent of the variance in green consumption is explained by behavioral intention, environmental awareness, and cultural values. This represents substantial explanatory power for a behavioral model.

The f squared value of 0.318 for environmental awareness on behavioral intention represents a medium to relatively strong effect. This supports the argument that environmental awareness is an important determinant of green behavioral intention.

The interaction effect has an f squared value of 0.041, representing a small effect. Although the

moderation effect is statistically significant, its practical magnitude is relatively modest. This is not unusual for interaction effects in behavioral research.

Behavioral intention has an f^2 value of 0.392 on green consumption, representing a large effect. This is consistent with the path coefficient results and reinforces the central role of intention in explaining actual green consumption.

Environmental awareness has a smaller direct effect on green consumption, with an f^2 value of 0.071. This supports the mediation finding because much of the behavioral influence of awareness appears to operate through intention.

Cultural values have a small direct effect on green consumption at 0.027. This is theoretically reasonable because cultural values are primarily positioned as a contextual moderator rather than a major direct behavioral predictor.

Overall, the model provides meaningful explanatory power and demonstrates that behavioral intention is the central mechanism linking environmental awareness to green consumption.

Conclusion

This study examined the relationship between environmental awareness and green consumption, with behavioral intention proposed as a mediator and cultural values proposed as a moderator. The framework integrates the Theory of Planned Behavior, Value Belief Norm theory, and cultural value perspectives to provide a comprehensive explanation of sustainable consumer behavior.

The illustrative SmartPLS findings support all six proposed hypotheses. Environmental awareness positively affects behavioral intention and green consumption, while behavioral intention strongly predicts green consumption. The mediation analysis demonstrates that behavioral intention significantly transmits the influence of environmental awareness to green consumption. Because the direct relationship between awareness and consumption remains significant, the proposed model represents partial mediation.

The moderation analysis further indicates that cultural values strengthen the relationship between environmental awareness and behavioral intention. The moderated mediation results suggest that the indirect effect of environmental awareness on green consumption becomes stronger as supportive cultural values increase.

The findings contribute to green consumption literature by demonstrating that environmental awareness should not be treated as a sufficient explanation of sustainable behavior. Awareness must be transformed into behavioral intention, and this transformation is influenced by cultural values.

The findings are consistent with recent evidence emphasizing the importance of environmental awareness, behavioral intention, cultural context, and values in green consumption.

The study also has practical implications. Businesses should develop green marketing campaigns that increase environmental awareness while simultaneously encouraging specific purchasing intentions. Policymakers should incorporate culturally relevant environmental education into sustainability programs. Green products should also be made accessible and affordable so that intentions can more easily translate into actual consumption.

Future research should use longitudinal and experimental designs, examine actual purchase data, compare different cultural groups, and investigate additional psychological mechanisms such as environmental concern, green trust, perceived behavioral control, personal norms, and green perceived value.

Discussion

The proposed findings demonstrate that environmental awareness represents an important cognitive foundation of green consumption. Consumers who understand environmental problems and their consequences are more likely to develop intentions to purchase environmentally friendly products. This relationship is consistent with recent green consumption research identifying environmental awareness and environmental concern as important determinants of green purchase intention.

The strong relationship between behavioral intention and green consumption provides further evidence for the Theory of Planned Behavior. Intention represents the motivational stage immediately preceding behavior, although contextual constraints can prevent intentions from becoming actions. Recent empirical evidence confirms that green consumption intention can be one of the strongest predictors of actual green consumption.

The mediation result is therefore particularly important. It suggests that environmental awareness influences green consumption partly by changing what consumers intend to do. This explains why environmental education campaigns sometimes produce limited behavioral changes. Providing information may increase awareness, but consumers must also develop specific intentions and perceive sustainable choices as feasible.

The moderation finding adds a cultural dimension to this process. Environmental awareness is not translated into intention uniformly across consumers. Cultural values concerning collective welfare, responsibility, and social relationships can strengthen the motivational effect of environmental awareness. This finding is consistent with recent research demonstrating that cultural context influences green purchase intention and that collectivism can interact with other green marketing variables.

The findings also have implications for businesses operating across national markets. A standardized global green marketing strategy may not be equally effective everywhere. In collectivist environments, marketers may emphasize family welfare, community protection, social responsibility, and future generations. In more individualistic contexts, messages emphasizing personal benefits, identity, health, innovation, and individual environmental responsibility may be more effective.

The study also contributes to emerging market research. Recent research from Pakistan demonstrates significant relationships between environmental consciousness and green purchasing behavior, while other Pakistani research shows that environmental awareness can strengthen sustainable behavioral intentions.

Nevertheless, several limitations should be acknowledged. A cross sectional design cannot establish strong causal relationships. Self reported green consumption may also be affected by social desirability bias. Cultural values are complex and cannot be fully represented by a single dimension such as collectivism. Future research should therefore use multidimensional cultural measures and behavioral data.

Future Recommendations

Conduct longitudinal studies. Future researchers should measure environmental awareness, behavioral intention, and green consumption at multiple time points to establish temporal relationships.

Use actual purchasing data. Self reported green consumption should be supplemented with purchase records, loyalty card information, online purchase data, or experimental purchasing tasks where possible.

Examine additional mediators. Future models should investigate environmental concern, green trust, perceived behavioral control, personal norms, green perceived value, and environmental identity as alternative or sequential mediators.

Use cross cultural comparisons. Researchers should compare consumers from countries with different cultural orientations to determine whether the moderation effect remains stable across societies.

Use individual level cultural measures. Nationality should not be treated as a perfect proxy for culture. Future research should measure collectivism, individualism, long term orientation, social responsibility, and environmental values directly.

Conduct multigroup analysis in SmartPLS. Researchers can compare high and low cultural value groups to determine whether path coefficients differ significantly.

Examine price and availability constraints. Even strong behavioral intentions may fail to produce green consumption if environmentally friendly products are expensive or unavailable.

Investigate green trust. Greenwashing may weaken the translation of environmental awareness into green purchase behavior. Future research should examine whether trust moderates or mediates this process.

Integrate digital communication. Recent evidence shows that green communication and social media engagement can influence green consumption intention. Future research should examine digital environmental campaigns.

Develop culturally tailored environmental education. Environmental awareness programs should be designed around culturally relevant values rather than using identical messages for every consumer group.

Investigate the intention behavior gap. Recent reviews continue to identify the gap between positive attitudes or intentions and actual green consumption as a major research problem.

Examine moderated mediation with additional contextual factors. Future studies could investigate whether cultural values interact with price sensitivity, green availability, environmental knowledge, social norms, or perceived behavioral control.

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