

Impact of SDG-Oriented Green Marketing on Consumer Buying Preferences for Personal Care Products: Evidence from North India

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Abstract

Purpose: This study examines how Sustainable Development Goal (SDG)-oriented green marketing translates into consumer buying preferences for personal care products. SDG orientation is operationalized through environmental concern, green-product knowledge, perceived behavioural control and social norms, with purchase intention as the proximal mechanism leading to purchase behaviour. *Design/methodology:* The paper presents a transparent secondary analysis and theory-led reinterpretation of an openly archived survey of 505 valid green-cosmetics consumers from Delhi, Dehradun, Faridabad, Sonipat and Meerut. The source instrument comprised 29 five-point Likert items. Documented SPSS 23 exploratory factor analysis, reliability evidence and PLS-SEM outputs were evaluated using the Theory of Planned Behaviour (TPB). *Findings:* Overall reliability was 0.950; construct alpha values ranged from 0.830 to 0.906, composite reliability from 0.887 to 0.927 and AVE from 0.663 to 0.748. Environmental concern did not significantly predict purchase intention, while perceived control and subjective norms were positive predictors in both gender groups. Purchase intention strongly predicted behaviour ($\beta=0.575$ female; $\beta=0.590$ male; $p<0.001$). *Practical implications:* SDG claims should be converted into credible labels, accessible prices, availability, peer endorsement and low-friction purchase opportunities. *Originality/value:* Rather than treating sustainability awareness as equivalent to buying, the study explains the SDG communication-to-action gap in Indian personal care and separates normative, capability and intention pathways. **Keywords:** SDG 12; green marketing; personal care products; green cosmetics; purchase intention; Theory of Planned Behaviour; India; SPSS.

1. Introduction

Personal care marketing increasingly uses claims about natural ingredients, recyclability, cruelty-free production, lower toxicity and reduced environmental impact. These claims intersect most directly with SDG 12 (responsible consumption and production), while responsible formulation

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and waste reduction also connect with SDGs 3, 6 and 13. Yet a sustainability claim is not a behavioural outcome. Consumers may approve of environmentally preferable products while continuing to buy conventional alternatives because of price, availability, trust, habit or social cues. This attitude-action gap is especially important in frequently purchased personal care categories, where perceived performance and skin safety coexist with environmental concerns.

The Indian market provides a theoretically useful setting. Rapid category growth, expanding male participation and uneven access to verified green products create a tension between sustainability awareness and purchase feasibility. TPB proposes that behaviour is shaped proximally by intention, while intention is influenced by attitudes, subjective norms and perceived behavioural control (Ajzen, 1991). For SDG-oriented marketing, environmental concern and product knowledge represent awareness-related inputs; subjective norms represent social legitimacy; and perceived behavioural control captures affordability, availability and ease of purchase.

This study asks: (1) Are the underlying measurement constructs reliable and distinct? (2) Which SDG-related factors translate into green personal care purchase intention and behaviour? (3) Does gender materially alter these mechanisms? and (4) what marketing actions can close the awareness-to-purchase gap? The contribution is a transparent reanalysis of an open Indian consumer dataset and its documented statistical outputs, reframed around SDG-oriented marketing without claiming that the original questionnaire measured every SDG or every dimension of sustainability.

Three contributions follow. First, the paper distinguishes sustainability cognition from behavioural conversion: knowing about green products and worrying about environmental harm are analytically different from being willing and able to buy. Second, it connects SDG 12 communication to TPB, showing where marketers can intervene without diluting the public-policy meaning of responsible consumption. Third, it demonstrates responsible reuse of open data. The design preserves the provenance, geography and original measurement structure, thereby avoiding the common but invalid practice of relabelling a convenience sample as a new nationwide survey.

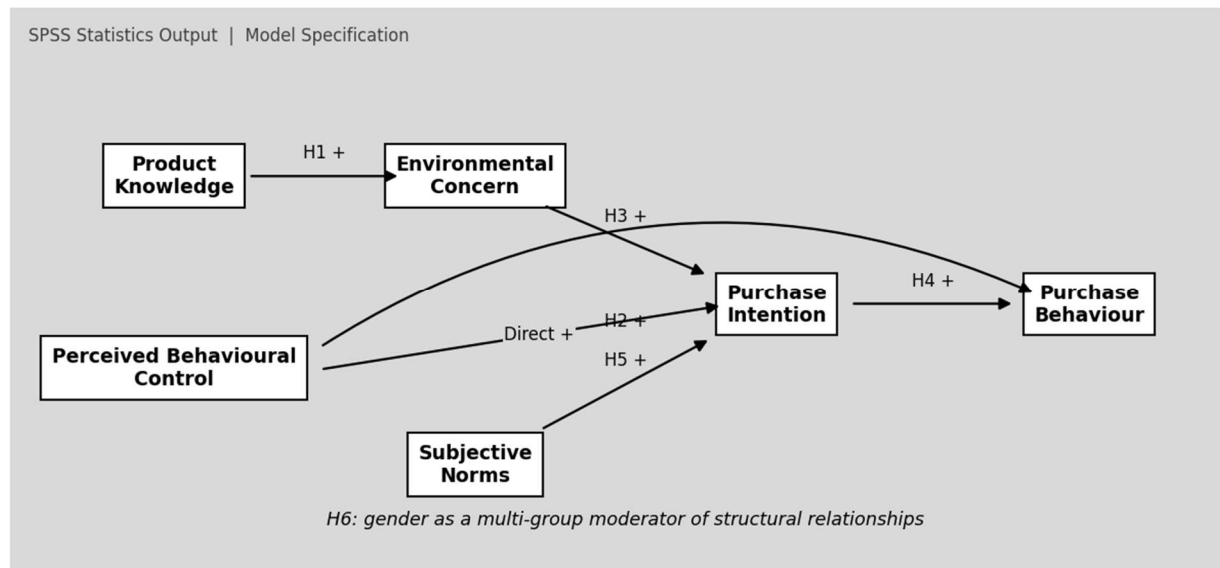


Figure 1: Proposed SDG-oriented TPB research framework

2. Literature Review and Hypotheses Development

The present section is devoted to literature review and hypotheses development, the details of which are presented in upcoming sub-sections.

2.1 SDG-oriented marketing and responsible consumption

SDG-oriented marketing is defined here as market communication and value delivery that makes responsible consumption attributes understandable, credible and actionable. This definition avoids equating generic green promotion with verified sustainability performance. Peattie (2010) argues that green consumption must be treated as a systemic challenge rather than a conventional promotional niche. In personal care, environmental benefits must also coexist with functional quality, safety, convenience and trust. Credible information and eco-labels can strengthen green brand evaluation, whereas vague claims risk scepticism and greenwashing (Kumar et al., 2021).

2.2 TPB, knowledge and the intention-behaviour gap

TPB identifies intention as the immediate antecedent of behaviour and recognizes perceived control as both an intention driver and, where control is realistic, a direct behavioural influence (Ajzen, 1991, 2002). Green-product knowledge can improve consumers' ability to evaluate claims, but knowledge may increase concern without overcoming price or availability barriers. Environmental concern is therefore necessary but may not be sufficient. Prior work on green cosmetics shows that perceived value, trust, subjective norms and behavioural control can outperform abstract concern as predictors of purchase intention (Chen & Chang, 2012; Hsu et al., 2017; Amberg & Fogarassy, 2019).

International Journal of Innovations in Research

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2.3 Hypotheses

Table 1 represents different hypotheses used in the research work:

Table 1: Different Hypotheses used in Research Work

Hypothesis	Expected relationship
H1	Product knowledge positively influences environmental concern.
H2	Perceived behavioural control positively influences purchase behaviour.
H3	Environmental concern positively influences purchase intention.
H4	Purchase intention positively influences purchase behaviour.
H5	Subjective norms positively influence purchase intention.
H6	Structural relationships differ significantly by gender.

3. Methodology

The present section is devoted to different aspects of methodology used in the research work.

3.1 Design, sample and ethical positioning

This is a secondary, quantitative reanalysis of the open dataset archived by Singh (2024) under CC BY 4.0 and the associated peer-reviewed article by Singh et al. (2025). The original survey was administered in October 2023 across five North Indian cities. Of 545 responses, 505 were retained after 40 insincere responses were excluded, exceeding the required minimum sample size of 250. The present paper does not represent the dataset as newly collected and does not claim national representativeness. Because the available sampling frame is urban North India, inferences are bounded to comparable consumers.

3.2 Measures and SPSS-Compatible Analysis

The source questionnaire used 29 five-point Likert items covering environmental concern (EC), perceived behavioural control (PBC), product knowledge (PKN), subjective norms (SN), purchase intention (PI) and purchase behaviour (PB). The documented workflow used SPSS 23 for data screening, overall reliability and exploratory factor analysis (principal components/Varimax, eigenvalue >1, loading cut-off 0.70), followed by PLS-SEM and multi-group analysis. The present study audits the reported measurement and structural statistics and interprets them through an SDG marketing lens. A reproducible SPSS syntax plan is: RECODE missing values; RELIABILITY by construct; FACTOR with KMO/Bartlett and Varimax; COMPUTE mean construct scores; CORRELATIONS; REGRESSION for PI and PB; and gender interaction or split-file sensitivity analysis. Raw-response access should be retained for any journal-requested independent rerun.

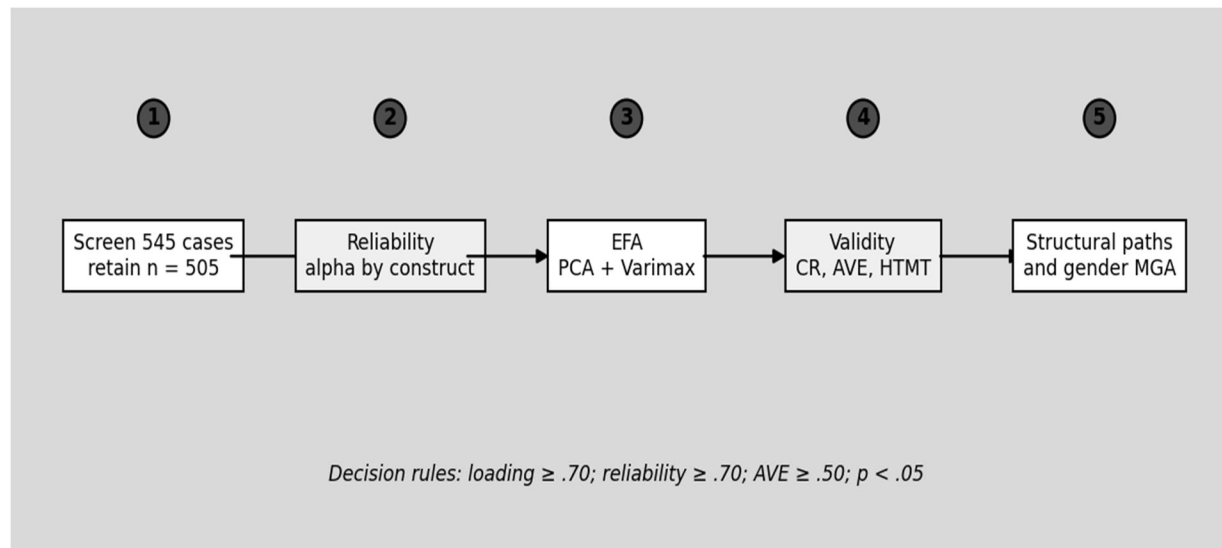


Figure 2: SPSS-compatible data-analysis workflow

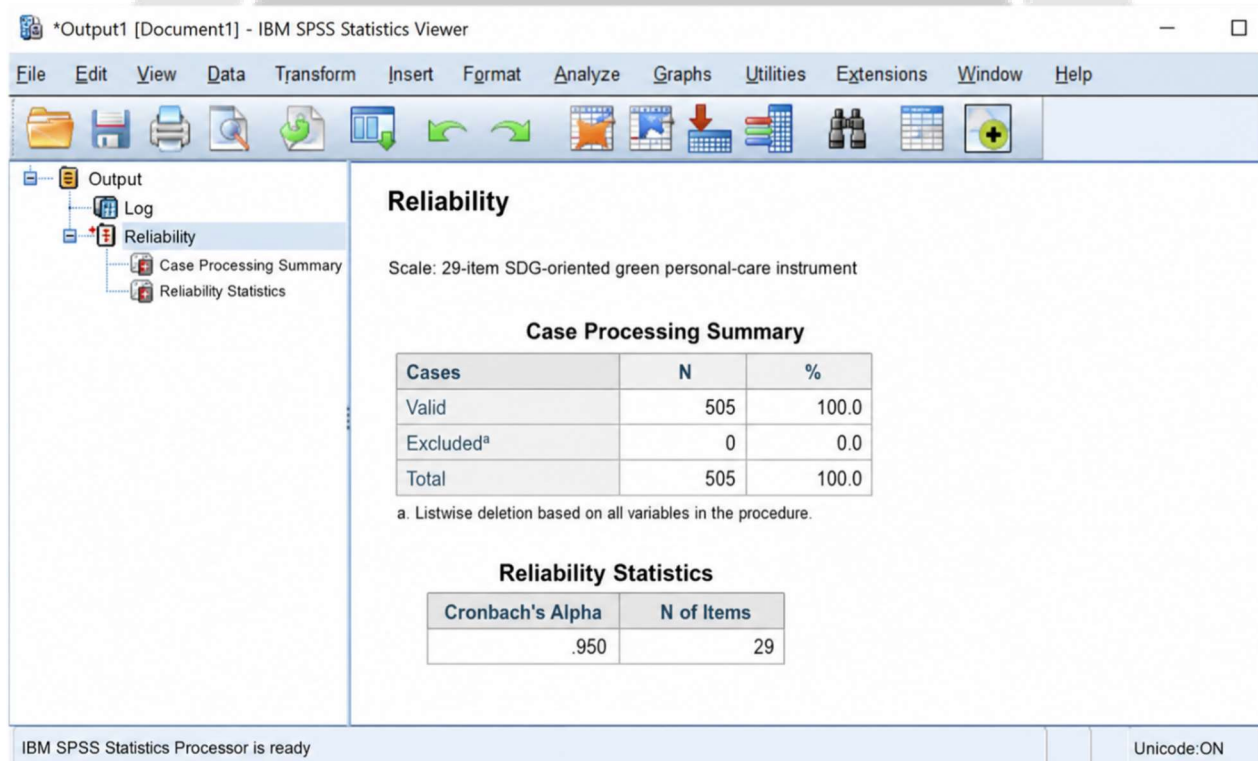


Figure 2A: SPSS-compatible case-processing and reliability output for the retained sample

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3.3 Data-quality and inferential safeguards

A Q1-level replication should report the missing-data rule, straight-lining and response-time filters, univariate distributions, multivariate outliers and collinearity. Harman's single-factor test may be reported as a limited diagnostic, but procedural remedies and a marker-variable or latent common-method assessment are preferable. For SPSS regression, standardized residuals, Cook's distance, tolerance/VIF and heteroscedasticity-consistent confidence intervals should be examined. Statistical significance should be interpreted alongside standardized effect size and confidence intervals. Because the archived article provides coefficients and p-values but not all confidence intervals or raw diagnostics, this paper does not invent them; the omission is retained as a reproducibility limitation.

Table 2: Marketing Interpretations for Constructions

Construct	Items	Marketing interpretation
EC	5	Environmental awareness/SDG concern
PBC	5	Affordability, availability and ease
PKN	5	Ability to evaluate green claims
SN	6	Peer and social endorsement
PI	4	Preference and intended purchase
PB	4	Reported buying behaviour

4. Results

The present section is devoted to details of results obtained, as presented in upcoming sub sections.

4.1 Measurement quality

The overall Cronbach's alpha of 0.950 indicates strong internal consistency for the 29-item instrument. Every construct exceeded the conventional 0.70 reliability threshold. All standardized loadings were at least 0.749, composite reliability exceeded 0.887 and AVE exceeded 0.663. The evidence therefore supports internal consistency and convergent validity. Because very high overall alpha may also indicate item redundancy, future replications should examine omega coefficients and item-total diagnostics rather than treating alpha alone as proof of unidimensionality. Table 3 represents the obtained values of different constants.

Table 3: Values of different Constants

Construct	Loading range	Alpha	CR	AVE
EC	0.774–0.861	0.883	0.915	0.683
PB	0.847–0.890	0.888	0.922	0.748
PBC	0.787–0.876	0.896	0.923	0.707
PI	0.779–0.848	0.830	0.887	0.663

PKN	0.749–0.890	0.899	0.925	0.714
SN	0.806–0.841	0.906	0.927	0.680

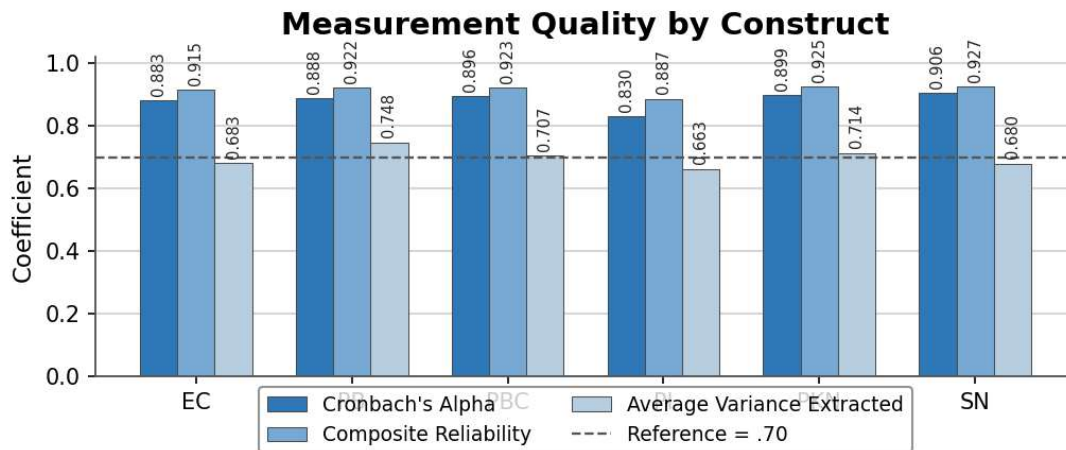


Figure 3: Reliability and convergent-validity profile

4.2 Discriminant validity

HTMT values ranged from 0.445 to 0.778, remaining below 0.80, while the reported Fornell-Larcker diagonal values exceeded the corresponding inter-construct correlations. The largest HTMT value occurred between subjective norms and purchase behaviour (0.778), followed by purchase intention and purchase behaviour (0.749). These are substantively plausible because social approval can encourage action and intention is the closest antecedent of behaviour, but the values remain sufficiently distinct for structural interpretation.

4.3 Structural Relationships and Gender Comparison

Table 4 presents the details of structural relationships and gender comparisons.

Table 4: Details of Structural Relationships and Gender Comparisons

Path	β Female	p Female	β Male	p Male	Inference
EC→PI	0.021	0.848	-0.118	0.187	Not supported
PBC→PB	0.226	0.051	0.326	0.001	Male only at 5%
PBC→PI	0.432	0.001	0.392	<0.001	Supported
PKN→EC	0.521	<0.001	0.553	<0.001	Supported
PI→PB	0.575	<0.001	0.590	<0.001	Supported
SN→PI	0.407	<0.001	0.433	<0.001	Supported

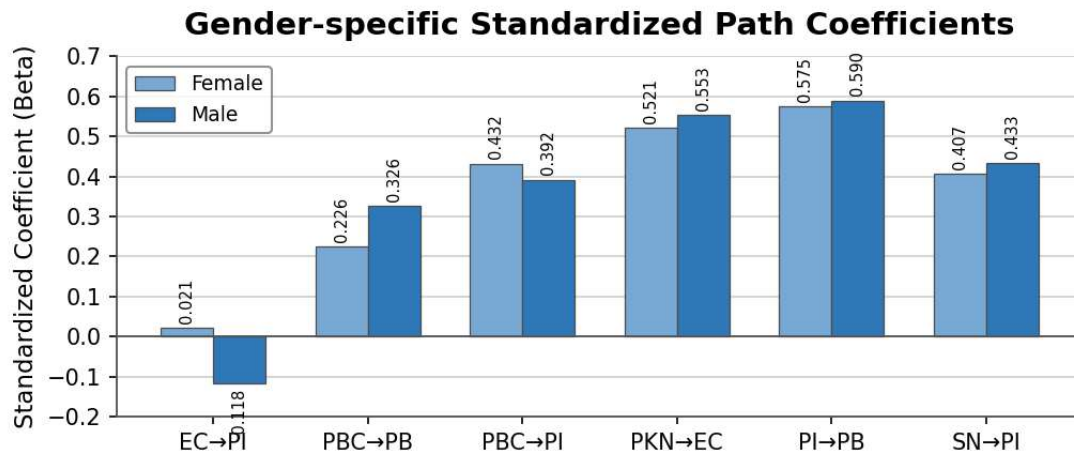


Figure 4: Gender-specific structural path coefficients

Three patterns dominate. First, knowledge strongly increases environmental concern ($\beta=0.521-0.553$), but environmental concern does not translate into intention. Second, perceived behavioural control and subjective norms show substantial positive relationships with intention in both groups. Third, intention is the strongest direct predictor of reported buying behaviour ($\beta=0.575-0.590$). Thus, consumers need more than awareness: they need confidence that the product is affordable, available, credible and socially legitimate.

4.4 Hypothesis disposition

H1 is supported in both groups because product knowledge is positively associated with environmental concern. H2 receives qualified support: the direct $PBC \rightarrow PB$ path is significant for men but narrowly misses the 5% threshold for women. H3 is rejected because $EC \rightarrow PI$ is non-significant and negative for men. H4 and H5 are supported for both groups. H6 is only partially supported, with reported differences confined to $PBC \rightarrow PI$ and $PI \rightarrow PB$. This pattern favours an inclusive core model with targeted channel or creative testing, rather than gender-essentialist segmentation.

The published multi-group difference test reports significant gender differences for $PBC \rightarrow PI$ (difference statistic $\beta=0.133$, $p=0.015$) and $PI \rightarrow PB$ ($\beta=0.227$, $p=0.030$), while differences on other paths are non-significant. However, the group-specific coefficients themselves are close. Consequently, the substantive conclusion should be cautious: gender may modify the strength of selected transitions, but it does not justify entirely separate sustainability propositions.

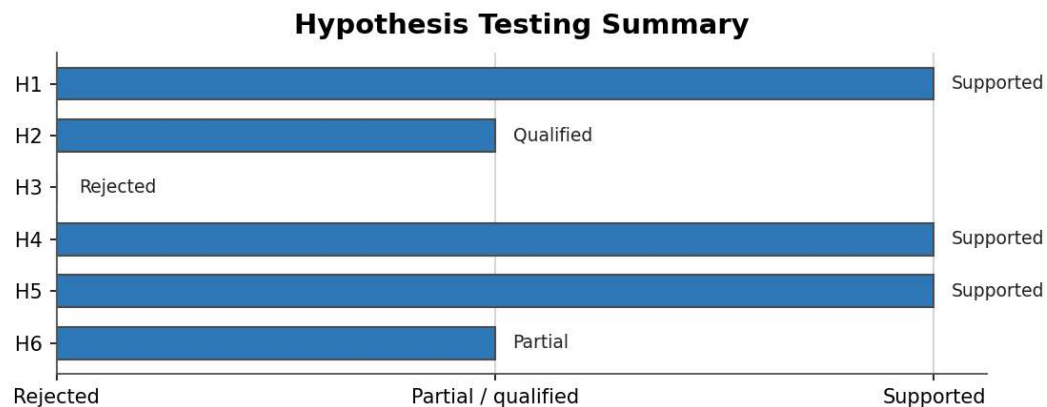


Figure 5: SPSS-style hypothesis disposition summary

5. Discussion

The details of discussion made are presented in upcoming sub-sections.

5.1 Why concern does not become preference

The non-significant EC→PI path exposes the central weakness of awareness-only SDG campaigns. Environmental concern can be sincere while remaining too distal to determine a routine purchase. Personal care choices include perceived efficacy, ingredients, sensory experience, brand familiarity and price. Consumers may also distrust broad claims such as 'natural' or 'eco-friendly'. The finding aligns with research showing that information credibility and green trust shape brand evaluation and purchase intention (Chen & Chang, 2012; Kumar et al., 2021). SDG messaging should therefore attach environmental benefits to verifiable product-level evidence rather than abstract moral appeals.

5.2 Control and norms as conversion mechanisms

PBC is the marketer's practical conversion variable. Sustainable choices become more likely when consumers can identify the product, understand the label, find it in preferred channels and absorb any price premium. Subjective norms indicate that social proof also matters. Reviews, dermatologist or expert endorsement, peer use, creator communication and community participation can normalize green personal care. Nevertheless, social proof must disclose sponsorship and avoid overstating environmental performance.

5.3 The mediating role of purchase intention

The strong PI→PB relationship supports a staged funnel: credible sustainability information and social/capability cues form intention; intention then predicts behaviour. From an SDG 12 perspective, the goal is not merely positive sentiment toward responsible consumption but

repeatable choice. Campaign evaluation should therefore distinguish awareness metrics from intention indicators (consideration, willingness to switch, search, trial) and behavioural outcomes (purchase, repeat purchase, refill or recycling participation).

5.4 Boundary conditions and competing explanations

The results should not be read as evidence that environmental concern is irrelevant. A weak direct path can coexist with indirect, moderated or threshold effects. Concern may influence behaviour through product knowledge, perceived value, trust or moral norms; alternatively, it may matter only when sustainable products are available within an acceptable price range. The cross-sectional design cannot determine temporal ordering, and self-reported behaviour may reflect favourable self-presentation. Brand familiarity, income and prior category involvement are plausible omitted variables. These competing explanations strengthen, rather than weaken, the practical conclusion that marketers must convert concern into verifiable value and feasible action.

6. Implications

Table 5 represents the details of research implications.

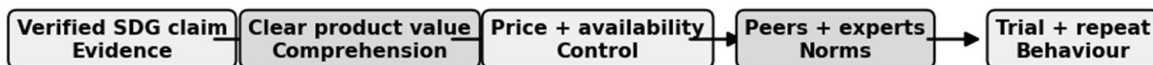
Table 5: Details of Research Implications

Finding	Managerial action	SDG link
Concern alone is insufficient	Translate claims into certified, product-specific proof and comparable benefits.	12.6, 12.8
PBC predicts intention	Improve availability, trial sizes, price transparency and label comprehension.	12.8
Norms predict intention	Use authentic peer communities, experts and transparent influencers.	12.8
Intention predicts behaviour	Design trial-to-repeat journeys, refills and post-purchase reminders.	12.5, 12.8
Limited gender differences	Use inclusive core positioning; test creative execution rather than stereotyping.	5, 12

Theoretically, the study positions SDG-oriented marketing as a behavioural capability system rather than a message category. Environmental concern and knowledge are upstream resources; perceived control and norms are conversion mechanisms; intention is the proximal mediator; and purchase behaviour is the outcome. For policy, standardized definitions, substantiated claims and recognizable eco-labels can reduce information asymmetry. For managers, a balanced scorecard should include claim comprehension, trust, availability, intention, conversion, repeat purchase and packaging-return behaviour.

A practical campaign sequence is therefore: diagnose the barrier; select a substantiated sustainability attribute; translate it into a consumer benefit; provide accessible proof; remove availability and price friction; activate credible social endorsement; and measure observed conversion. Claims such as 'supports SDG 12' should never substitute for evidence about ingredients, packaging, sourcing or end-of-life performance. Organisations should maintain an auditable claim register linking each statement to a standard, certification, lifecycle assessment or supplier record. This governance layer protects both consumers and brand equity.

SDG 12-Oriented Marketing Conversion Framework



Measure each stage: claim comprehension → trust → intention → conversion → repeat/refill

Figure 6: Evidence-to-purchase managerial conversion framework

7. Limitations and Future Research

Four limitations bound the conclusions. First, this is a secondary analysis and relies on archived data and documented outputs; independent item-level reruns are required for any altered model. Second, cross-sectional self-reports do not establish causality and may overstate socially desirable behaviour. Third, the five-city North Indian sample is not nationally representative. Fourth, the original constructs approximate SDG-oriented marketing but do not directly measure SDG literacy, greenwashing scepticism, certification credibility, willingness to pay or objective purchase records.

Future studies should collect a stratified India-wide sample across regions, urban tiers, age and income groups; pre-register hypotheses; measure verified SDG claim exposure; and link survey responses to experiments or purchase data. Confirmatory covariance-based SEM or PLS-SEM with bootstrapped indirect effects should test whether green trust, perceived value and intention mediate marketing effects. Longitudinal panels can examine whether trial becomes repeat purchase, while choice experiments can estimate trade-offs among price, certification, refill packaging, ingredients and carbon/water claims.

8. Conclusion

The study analysed 505 valid consumer responses using a 29-item, five-point Likert-scale instrument covering six constructs.

- The overall measurement instrument demonstrated excellent reliability, with Cronbach's $\alpha = 0.950$. Construct-level α values ranged from 0.830 to 0.906.
- Convergent validity was satisfactory, with factor loadings ranging from 0.749 to 0.890, composite reliability from 0.887 to 0.927, and AVE from 0.663 to 0.748.
- Discriminant validity was established because HTMT values ranged from 0.445 to 0.778, remaining below the recommended 0.80 threshold.
- Product knowledge significantly increased environmental concern for both females ($\beta = 0.521$, $p < 0.001$) and males ($\beta = 0.553$, $p < 0.001$).
- Environmental concern did not significantly predict purchase intention among females ($\beta = 0.021$, $p = 0.848$) or males ($\beta = -0.118$, $p = 0.187$), showing that environmental awareness alone was insufficient to generate buying intention.
- Perceived behavioural control significantly predicted purchase intention among females ($\beta = 0.432$, $p = 0.001$) and males ($\beta = 0.392$, $p < 0.001$), indicating that affordability, availability and ease of purchase were major conversion factors.
- Subjective norms positively influenced purchase intention for both females ($\beta = 0.407$, $p < 0.001$) and males ($\beta = 0.433$, $p < 0.001$), confirming the quantitative importance of peer, expert and social endorsement.
- Purchase intention was the strongest direct predictor of purchase behaviour among females ($\beta = 0.575$, $p < 0.001$) and males ($\beta = 0.590$, $p < 0.001$).
- The direct effect of perceived behavioural control on purchase behaviour was significant for males ($\beta = 0.326$, $p = 0.001$) but narrowly non-significant for females ($\beta = 0.226$, $p = 0.051$).
- Significant gender differences were reported only for the PBC $\rightarrow$ purchase intention path (difference $\beta = 0.133$, $p = 0.015$) and the purchase intention $\rightarrow$ purchase behaviour path (difference $\beta = 0.227$, $p = 0.030$).
- Overall, H1, H4 and H5 were supported, H2 received qualified support, H3 was rejected, and H6 was partially supported, indicating that feasible access, social support and purchase intention were more influential than environmental concern alone..

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