

Awareness, Trust, and the Value–Action Gap in Sustainable Consumption: A Comparison of Purchase-Frequency Groups Among Urban Indian Consumers

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Background. Most consumers say they value the environment, yet far fewer buy sustainable products — the value–action gap. Most Indian studies measure intention rather than behaviour, which is precisely what that gap tells us not to trust. This study asks what distinguishes people who actually buy sustainable products from those who do not.

Methods. A total of 133 economically active adults completed a 24-item questionnaire. Respondents were grouped by reported purchase frequency over the previous six months into infrequent ($n = 23$), occasional ($n = 72$), and frequent buyers ($n = 37$), then compared on eleven constructs. Scale reliability was assessed with Cronbach's alpha. Normality and variance homogeneity were tested first; ANOVA with Tukey HSD was used where assumptions held and Kruskal–Wallis with Dunn's test where they did not. Environmental awareness was the pre-designated primary outcome; the remaining ten were corrected with the Benjamini–Hochberg false discovery rate.

Results. Frequent buyers scored significantly higher on environmental awareness ($F(2, 129) = 11.71, p < .001, \eta^2 = .154$), green trust, quality perception, social norms, willingness to pay, and marketing exposure. Moral responsibility was high and flat across all groups ($M \approx 4.0$), as was the perceived price barrier.

Conclusions. In this sample the gap is not one of moral conviction, which is already near-universal, but of knowledge, trust, and willingness to pay a premium. Findings describe one urban convenience sample and are not national estimates.

Keywords: *sustainable consumption; value–action gap; green trust; environmental awareness; willingness to pay; Kruskal–Wallis*

Introduction

Background and Context

The global economy is undergoing a structural transformation, moving away from the traditional take, make, waste model toward circular and sustainable frameworks. Consumers derive utility from the objective characteristics of a product, price, quality, and durability, according to Lancaster¹. In the mid-2020s, a fourth dimension of utility has emerged: environmental integrity. By 2026, the international market for sustainable goods has moved well beyond niche status. Global markets for green products and clean technology are projected to surpass USD 600 billion by 2027, a shift driven by the visible consequences of climate change and the commitments embedded in the Paris Agreement (2015).

Consumer attitudes toward sustainable products have shifted from passive awareness to active advocacy, yet a persistent tension remains. The green premium, the additional

cost consumers pay in exchange for a reduced environmental footprint, continues to act as a structural barrier. Even where sustainable alternatives are readily available, demand side behaviour remains constrained by the value action gap: the well documented phenomenon in which positive environmental attitudes fail to translate consistently into purchasing decisions.

Problem Statement and Rationale

India presents a particularly instructive case. As the world's most populous country, India's consumption patterns carry significant global environmental consequences. The country's sustainable transition is being driven by a combination of policy incentives, such as the FAME-II scheme for electric vehicles, and increasing resource scarcity. In 2025, India attracted a record USD 18 billion in renewable energy investment. Unlike European consumers, who tend to prioritise carbon neutrality, Indian consumers are primarily motivated by resource efficiency and long-term cost savings. A 2025 study by the Indian Council for Research on International Economic Relations found that Indian households were 30% more likely

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to adopt sustainable products when these promised long term cost reductions, compared with American households who placed more weight on corporate social responsibility.

Significance and Purpose

Two features of the market help explain why conventional products still dominate. The first is network externalities: a product becomes more useful as more people use it, because the supporting infrastructure grows with it. Petrol stations are everywhere; electric-vehicle chargers are not. The second is bounded rationality — people do not weigh every option carefully, because they have limited time, information, and attention, and so fall back on habit. Both work against products that are newer, costlier, and harder to find.

This study makes three contributions. It anchors the comparison in reported behaviour rather than stated preference. It chooses each statistical test on the basis of tested assumptions rather than convention. And it reports what did not differ as carefully as what did.

Objectives

The study compares three purchase-frequency groups across eleven constructs. Rather than a single general hypothesis, we state eleven directional hypotheses, one per construct. H1 is designated the primary hypothesis in advance of analysis; the remaining ten are exploratory and corrected for multiplicity. Lancaster's characteristics approach¹ suggests that consumers derive utility from product attributes like price, quality and environmental performance, which implies that buyers who repeatedly choose sustainable products should perceive greater product quality, value and affordability. This has been the base of hypotheses H3-H6. The outcomes for the hypotheses are derived in results.

H1: Frequent buyers report higher environmental awareness than infrequent buyers. (PRIMARY)

H2: Frequent buyers report higher green trust.

H3: Frequent buyers rate sustainable product quality more highly.

H4: Frequent buyers perceive sustainable products as more affordable

H5: Frequent buyers perceive sustainable products as more accessible.

H6: Infrequent buyers report price as a stronger barrier.

H7: Frequent buyers report stronger social norms.

H8: Frequent buyers report stronger moral norms.

H9: Frequent buyers report higher willingness to pay a premium.

H10: Frequent buyers report greater exposure to sustainability marketing

H11: Frequent buyers report a stronger stated preference for sustainable products

Theoretical Framework

This study works within the Theory of Planned Behaviour², extended with trust and knowledge constructs, and read against Lancaster's characteristics approach to consumer theory¹, which treats a product as a bundle of attributes from which utility is derived. On that view an environmental attribute competes with price, quality, and durability for the consumer's attention.

The value-action gap has a long evidentiary base. Ethical shoppers often fail to translate self-description into purchases³, and the same pattern recurs in the German green-apparel market⁴. Recent syntheses classify the gap's causes into psychological, demographic, social, and marketing-mix families⁵, and call for more work comparing developed and developing markets⁶.

Knowledge is the most frequently proposed driver, and one of the least consistent. A meta-analysis found knowledge has a real but modest effect largely mediated by attitude and moral norm⁷, and environmental knowledge matters for sustainable purchase only in combination with other factors⁸. Indian evidence is mixed in the same way: environmental knowledge and past behaviour predicted sustainable-apparel intention in one large survey⁹, and knowledge and media exposure predicted intention to buy green durables in another¹⁰.

Trust has emerged as the mechanism that converts knowledge into action. Greenwashing damages green trust through consumer confusion and perceived risk¹¹, and eco-label knowledge drives purchase only when it produces trust¹²; greenwashing concerns help explain why attitudes fail to become behaviour¹³. If trust is the converting mechanism, it should separate buyers from non-buyers even where knowledge alone does not.

The green premium is the most obvious barrier, and the evidence on it is nuanced. Willingness to pay a premium depends on the reference group a consumer compares against¹⁴, and price and availability rank among the most consistently cited barriers¹⁵. An important distinction runs through this work: feeling that a product is expensive is not the same as being unwilling to pay for it. Two kinds of norm also appear. Social norms are what a person believes others expect; moral or personal norms are what they believe they owe themselves¹⁶. Personal norms significantly influence green attitudes¹⁷, and extended-TPB models have been applied to young Indian consumers^{18,19}. Whether moral norms separate buyers from non-buyers in a population where almost everyone endorses them is a separate, testable question.

Methods

Research Design

This is a cross-sectional, questionnaire-based comparison of three naturally occurring groups. Respondents are grouped by reported behaviour, and eleven attitudinal and behavioural constructs are compared across those groups. No manipulation was involved. As the study is based on self-reported data, the responses may be influenced by social desirability bias, with participants tending to provide socially acceptable answers. The limitation was considered during the design and administration of the questionnaire.

Participants and sampling

Responses were collected from 133 economically active adults through an online questionnaire distributed via email and messaging platforms. One respondent did not answer the purchase-frequency item and could not be assigned to a group, leaving $N = 132$ for group comparisons. Sampling was by convenience. This is a real constraint, and the sample is not presented as representative of India; respondents are overwhelmingly urban (95.5%) and internet-using, and just over half report household income above ₹15 lakh per year. Every claim is therefore scoped to this sample. Table 2 gives the profile.

Table 1 Sample profile ($N = 132$)

Characteristic	Category	n	%
Gender	Male	79	59.8%
	Female	51	38.6%
	Prefer not to say / missing	2	1.5%
Age group	40–65 years	54	40.9%
	25–40 years	53	40.2%
	Under 25 years	25	18.9%
Annual income	Above ₹15 lakh	69	52.3%
	₹10–15 lakh	18	13.6%
	₹5–10 lakh	17	12.9%
	₹1–5 lakh	15	11.4%
	Not disclosed	13	9.8%
Occupation	Employed	94	71.2%
	Self-employed / Other	21	15.9%
	Student	16	12.1%
Location	Urban	126	95.5%
	Rural	5	3.8%

Note. Percentages are of the analysed sample. Income was not disclosed by 13 respondents. The rural subsample ($n = 5$) is too small to support any rural–urban comparison, and none is attempted.

Data collection and instrument

The questionnaire contained 24 substantive items plus demographics. During re-coding of the raw export, the instrument

was found not to use a uniform scale: 17 items use a five-point scale and 7 use a seven-point scale. To allow items of different lengths to be combined, every item was linearly rescaled onto a common 1–5 metric using $x' = 1 + (x - 1) \times 4 / (k - 1)$, where k is the number of scale points. All means below are on that 1–5 metric, and the price-barrier item was reverse-scored where combined with affordability.

Variables and measurements

Several constructs were rebuilt from multiple items rather than measured with one question. This section defines each construct as operationalised here, states its items, and gives the direction in which higher scores run.

Multi-item composites

Environmental Awareness ($\alpha = .771$). Self-assessed knowledge of environmental issues, averaging four items on awareness of climate-change impacts on local weather, familiarity with global resource depletion, awareness of greenwashing, and understanding of products' lifecycle impact. Higher = broader knowledge. This is the primary outcome.

Product Quality Perception ($\alpha = .777$). How favourably sustainable products are judged on quality relative to conventional ones, averaging four items on reliability, value for money, perceived quality, and durability.

Social Norms ($\alpha = .665$). The degree to which environmental behaviour is shaped by the social environment, averaging four items on appearing eco-conscious to peers, family support, peer influence, and social desirability in one's community. Higher = stronger perceived pressure and support.

Marketing Exposure ($\alpha = .488$ — *low*). Influence of media and advertising on environmental knowledge and buying, averaging two items on social-media posts and sustainability advertisements. Reliability is below threshold, so results are flagged and treated as exploratory.

Perceived Accessibility ($\alpha = .407$ — *low*). How easy sustainable products are to obtain, averaging two items on accessibility relative to conventional products and on variety and choice. Reliability is low, so results are flagged.

Single-item measures (exploratory)

The instrument contains one question for each construct below. They cannot be given a reliability coefficient and are reported as exploratory throughout.

Sustainable Purchase Frequency (*grouping variable*). How often the respondent reports having actually bought sustainable products in the previous six months, from “never” to “always”. This behavioural measure forms the

three comparison groups. It is a report of past behaviour, not an attitude or intention.

Green Trust (*single item*). How much the respondent trusts eco-labels and environmental certifications. Higher = greater confidence that environmental claims are truthful.

Moral Norms (*single item*). Personal moral responsibility for environmental protection, measured by agreement that one feels personally responsible. A personal norm, distinct from the social-norms composite, which concerns external pressure.

Willingness to Pay (*single item*). The price premium the respondent says they would accept for a sustainable product, from “nothing extra” to “50% more”. A stated financial intention, conceptually separate from the price-barrier item.

Price Barrier (*single item*). The extent to which price is perceived as an obstacle to buying sustainable products. Higher = price felt as a stronger barrier. Measures how expensive the product feels, not whether the premium would be paid.

Perceived Affordability (*single item*). How affordable sustainable products are felt to be in absolute terms. Intended to combine with the price-barrier item, but the two-item composite failed its reliability test ($\alpha = .262$), confirming that felt affordability and felt price-barrier are distinct.

Stated Preference (*single item*). Which product type the respondent says they prefer between sustainable and conventional, from “strongly prefer conventional” to “strongly prefer sustainable”. Treated as an outcome here, not as the grouping variable, so preference and behaviour can be compared.

Scale reliability

Multi-item composites were built wherever the instrument allowed and tested with Cronbach’s alpha against conventional thresholds ($\geq .70$ good, $\geq .60$ acceptable)²⁰. Table 3 reports the result, including composites that failed.

Procedure: grouping and the circularity problem

An earlier version of this study grouped respondents by a single stated-preference item and then tested whether groups differed on adoption intention, green trust, and quality perception — several of which are near-neighbours of the grouping item, making the test close to tautological. This was fixed by changing the grouping variable to reported purchase frequency, a behavioural measure:

- Infrequent buyers ($n = 23$): answered “never” or “rarely”.
- Occasional buyers ($n = 72$): answered “sometimes”.
- Frequent buyers ($n = 37$): answered “often” or “always”.

Stated preference is now an outcome, not the grouping variable, which turns the circularity problem into the research question: if preference and behaviour were identical, there would be no value–action gap to study.

To show the grouping variable is not a proxy for the outcomes, Table 4 reports the Spearman correlation between purchase frequency and every construct, alongside the correlation with the old grouping variable.

Data Analysis

The test for each construct was chosen from tested assumptions rather than convention. Normality was assessed with the Shapiro–Wilk test in all three groups²¹ and homogeneity of variance with Levene’s median-centred test²². The routing rule was fixed before any outcome was inspected:

- Normality and equal variances both satisfied → one-way ANOVA with Tukey HSD post hoc.
- Normality satisfied but variances unequal → Welch’s ANOVA with Games–Howell post hoc.
- Normality violated in any group → Kruskal–Wallis²³ with Dunn’s post hoc, Holm-adjusted²⁴.

Levene’s test passed for all eleven constructs, so the Welch branch was never triggered. Tukey’s HSD²⁵ provided ANOVA post hoc tests. For multiplicity, environmental awareness was designated the primary outcome in advance and tested at $\alpha = .05$ without correction; the remaining ten omnibus tests form an exploratory family whose p-values are corrected with the Benjamini–Hochberg false discovery rate²⁶. Effect sizes are η^2 for ANOVA and ε^2 for Kruskal–Wallis, with Cohen’s d and rank-biserial r for pairwise contrasts, interpreted against conventional benchmarks²⁷.

With $N = 132$ across three groups, the study has 80% power to detect Cohen’s $f = 0.273$ ($\eta^2 \approx .070$) — a medium-to-large effect. Achieved power is 72% for a medium effect but only 16% for a small one²⁷. A non-significant result therefore means a difference was not detected, not that none exists.

Ethical considerations

Participation was voluntary and anonymous. Respondents were told how their answers would be used. No item was compulsory, which is why constructs have slightly different sample sizes. No responses were altered or excluded to change a result.

Results

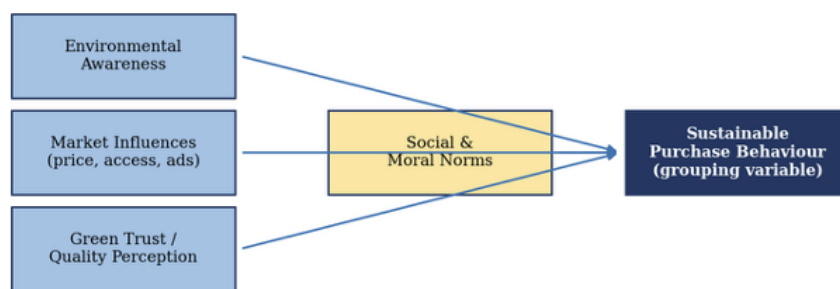
Research Hypothesis

Table 4 lists the hypotheses with outcomes for the reader’s convenience

Table 2 Scale reliability

Construct	Items	Cronbach α	n	Verdict	Treatment in analysis
Environmental Awareness	4	.771	129	Good	Retained as composite
Product Quality Perception	4	.777	130	Good	Retained as composite
Social Norms	4	.665	130	Acceptable	Retained as composite
Marketing Exposure	2	.488	132	Low	Retained; results flagged
Perceived Accessibility	2	.407	132	Low	Retained; results flagged
Affordability (2-item)	2	.262	131	Failed	Split into single items
Green Trust	1	—	132	Single item	Exploratory only
Perceived Affordability	1	—	131	Single item	Exploratory only
Price Barrier	1	—	131	Single item	Exploratory only
Moral Norms	1	—	130	Single item	Exploratory only
Willingness to Pay	1	—	132	Single item	Exploratory only
Stated Preference	1	—	130	Single item	Exploratory only

Note. The two-item affordability composite failed because its components measure different things — how expensive the product is, and how much of a barrier that price is. These were separated. Constructs with $\alpha < .60$ and all single-item measures are reported as exploratory and flagged throughout.



Groups are formed from reported purchase frequency (a behaviour), not from stated preference.

Figure. 1 Constructs compared across purchase-frequency groups.

Assumption testing

Table 5 reports the Shapiro–Wilk and Levene results that determined which test each construct received. Only three constructs satisfied normality in all three groups; eight did not. Had ANOVA been run across the board, eight of eleven tests would have rested on an assumption the data reject.

Primary outcome: environmental awareness

Environmental awareness met both assumptions and was analysed by one-way ANOVA. The three groups differed significantly, $F(2, 129) = 11.71$, $p < .001$, $\eta^2 = .154$ — a large effect. In plain terms, knowing only which purchase-frequency group a respondent belonged to accounts for about a seventh of the spread in their awareness scores, a substantial share for a single grouping variable. The group means climb steadily: infrequent 2.66, occasional 3.28, frequent 3.60.

Tukey's post hoc test located the difference. Frequent buy-

ers scored well above infrequent buyers ($d = 1.10$, $p < .001$), and occasional buyers also scored above infrequent buyers ($d = 0.88$, $p = .002$) — both large gaps. But occasional and frequent buyers did not differ ($p = .084$). The awareness jump happens between not buying and buying at all, not between buying sometimes and buying often. H1 is supported.

Exploratory outcomes

Table 6 reports group means, the assumption-matched omnibus test, the FDR-corrected p-value, and the effect size for all eleven constructs. Six of the ten exploratory constructs survived correction; four did not.

The six constructs that differed

Willingness to pay produced the clearest gradient in the study ($H = 17.56$, $p = .001$, $\epsilon^2 = .121$), rising in even steps (2.00, 2.47, 3.03) with every pairwise comparison significant, including occasional versus frequent ($p = .019$). It is the one

Table 3 Discriminant validity of the grouping variable

Construct	ρ with purchase frequency(grouping variable)	ρ with stated preference(old grouping variable)	Redundant? ($\rho > .70$)
Stated Preference	.371	.	Distinct — 13.8% shared variance
Willingness to Pay	.353	.341	Distinct
Environmental Awareness	.330	.335	Distinct
Marketing Exposure	.303	.300	Distinct
Green Trust	.296	.301	Distinct
Product Quality Perception	.282	.478	Distinct
Perceived Accessibility	.252	.132	Distinct
Social Norms	.236	.403	Distinct
Perceived Affordability	.189	.215	Distinct
Moral Norms	.067	.202	Distinct
Price Barrier	.012	-.077	Distinct

Note. Spearman's ρ . A correlation above about .70 would suggest two measures capture the same construct; none come close. Purchase frequency and stated preference correlate at $\rho = .371$, sharing 13.8% of variance — the value–action gap in miniature.

Table 4 Hypotheses and outcomes

	Hypothesis	Outcome
H1	Frequent buyers report higher environmental awareness than infrequent buyers. (PRIMARY)	Supported
H2	Frequent buyers report higher green trust.	Supported
H3	Frequent buyers rate sustainable product quality more highly.	Supported
H4	Frequent buyers perceive sustainable products as more affordable.	Not supported
H5	Frequent buyers perceive sustainable products as more accessible.	Not supported
H6	Infrequent buyers report price as a stronger barrier.	Not supported
H7	Frequent buyers report stronger social norms.	Supported
H8	Frequent buyers report stronger moral norms.	Not supported
H9	Frequent buyers report higher willingness to pay a premium.	Supported
H10	Frequent buyers report greater exposure to sustainability marketing.	Supported
H11	Frequent buyers report a stronger stated preference for sustainable products.	Supported

Note. H1 is primary and tested at $\alpha = .05$ without correction. H2–H11 are exploratory and corrected using the Benjamini–Hochberg false discovery rate. H1 is designated primary because awareness is named first in the research question, the value–action gap concerns whether knowing becomes doing, and awareness is the construct most conceptually distant from purchase frequency.

construct that keeps discriminating all the way up the frequency ladder: where awareness plateaus after a person starts buying, readiness to pay a premium keeps rising.

Stated preference behaved almost identically ($H = 18.29$, $p = .001$, $\epsilon^2 = .128$), separating all three groups — people who buy more also say they prefer more. The point of interest is how modest the preference–behaviour correlation actually is ($\rho = .371$), which is the value–action gap restated.

Marketing exposure was significant ($H = 15.40$, $p = .002$, $\epsilon^2 = .104$), with frequent buyers reporting far more influence from posts and ads than infrequent buyers ($r = 0.59$). Because the two-item marketing scale was unreliable ($\alpha = .488$), this is the significant finding we would least stake a claim on without replication.

Green trust ($H = 12.95$, $p = .004$, $\epsilon^2 = .086$) showed a famil-

iar shape: infrequent buyers trusted eco-labels much less than occasional ($r = 0.37$) or frequent buyers ($r = 0.48$), while the latter two did not differ. This fits the proposed mechanism — if consumers do not believe environmental claims, no amount of knowledge converts into purchase.

Product quality perception ($F = 6.08$, $p = .005$, $\eta^2 = .086$) and social norms ($F = 6.60$, $p = .004$, $\eta^2 = .093$) both reached ANOVA significance and both followed the threshold pattern, the largest gap sitting between infrequent buyers and the rest. Frequent buyers rated sustainable products meaningfully better made ($d = 0.84$ versus infrequent) and reported stronger social encouragement ($d = 0.88$)

The four constructs that did not differ

Moral norms did not differ ($H = 3.80$, $p = .166$), and the reason is the ceiling, not low power alone: every group scored

Table 5 Assumption tests and route selection

Dependent Variable	Shapiro–Wilk p, by group			Levene’s test		Route selected
	Infreq.	Occas.	Freq.	F	p	
Environmental Awareness	.055	.075	.307	2.688	.072	ANOVA + Tukey
Product Quality Perception	.579	.561	.419	1.165	.315	ANOVA + Tukey
Social Norms	.983	.479	.184	0.994	.373	ANOVA + Tukey
Green Trust	.004	.000	.000	0.862	.425	Kruskal–Wallis + Dunn
Perceived Affordability	.030	.000	.074	2.069	.131	Kruskal–Wallis + Dunn
Price Barrier	.035	.000	.006	1.057	.351	Kruskal–Wallis + Dunn
Perceived Accessibility	.062	.002	.033	0.695	.501	Kruskal–Wallis + Dunn
Marketing Exposure	.178	.014	.008	0.265	.768	Kruskal–Wallis + Dunn
Moral Norms	.001	.000	.000	0.684	.507	Kruskal–Wallis + Dunn
Willingness to Pay	.000	.000	.008	2.157	.120	Kruskal–Wallis + Dunn
Stated Preference	.007	.000	.001	0.176	.839	Kruskal–Wallis + Dunn

Note. Shapiro–Wilk p-values per group; values below .05 (red) indicate a normality violation. Levene’s test uses the median-centred (Brown–Forsythe) form and was satisfied for every construct, so the Welch branch was never used. Three constructs qualified for ANOVA; eight required Kruskal–Wallis.

Table 6 Group descriptives and assumption-matched omnibus tests

Construct	Infrequent M (SD) n = 23	Occasional M (SD) n = 72	Frequent M (SD) n = 37	Test	Stat.	p (FDR)	Effect
Environmental Awareness	2.66 (0.93)	3.28 (0.61)	3.60 (0.79)	ANOVA	11.71	< .001	.154
Product Quality Perception	2.96 (0.72)	3.16 (0.54)	3.45 (0.50)	ANOVA	6.08	.005	.086
Social Norms	2.54 (0.76)	3.03 (0.65)	3.19 (0.73)	ANOVA	6.60	.004	.093
Green Trust	2.27 (0.94)	2.81 (0.68)	3.05 (0.78)	K–W	12.95	.004	.086
Marketing Exposure ^b	2.46 (0.69)	3.04 (0.74)	3.27 (0.67)	K–W	15.40	.002	.104
Willingness to Pay	2.00 (0.74)	2.47 (0.79)	3.03 (1.04)	K–W	17.56	.001	.121
Stated Preference	3.00 (0.85)	3.45 (0.80)	3.97 (0.79)	K–W	18.29	.001	.128
Perceived Accessibility ^b	2.50 (0.93)	2.67 (0.70)	2.92 (0.64)	K–W	6.36	.059	.034
Perceived Affordability	2.21 (0.89)	2.59 (0.65)	2.75 (0.89)	K–W	4.96	.105	.023
Moral Norms	4.05 (0.74)	3.74 (1.01)	4.05 (1.05)	K–W	3.80	.166	.014
Price Barrier	2.68 (1.21)	2.86 (1.01)	2.78 (1.00)	K–W	0.45	.799	.000

Note. Scores rescaled to a common 1–5 metric. Effect size is η^2 for ANOVA and ϵ^2 for Kruskal–Wallis, interpreted on the same scale (.01 small, .06 medium, .14 large). The ten exploratory p-values are Benjamini–Hochberg corrected; the primary outcome (shaded) is uncorrected.

^b Composite reliability below .60.

close to 4.0 out of 5. People who rarely buy feel just as personally responsible as those who buy often. There is no gap in conviction to detect.

The price barrier also did not differ ($H = 0.45$, $p = .799$), with a near-zero effect. Everyone finds sustainable products expensive to roughly the same degree. The contrast with willingness to pay is the point: felt price is flat, but readiness to pay it is not.

Perceived accessibility was significant before correction ($p = .042$) but not after FDR adjustment ($p = .059$) — exactly the borderline case multiplicity correction exists to catch — and its low reliability ($\alpha = .407$) gives further reason for caution. Perceived affordability was not significant under the correct test ($p = .105$), though it would have been under a naive

ANOVA; the next section treats this case in detail.

Post hoc comparisons

A pattern repeats across almost every construct: the large, reliable gap is between infrequent buyers and everyone else, while occasional and frequent buyers rarely differ. Willingness to pay is the exception, separating all three groups and rising steadily from 2.00 to 2.47 to 3.03. Money is the thing that keeps discriminating even among people who already buy.

Sensitivity analysis

Table 8 retains the naive ANOVA as a sensitivity check, comparing what a blanket ANOVA would have concluded against

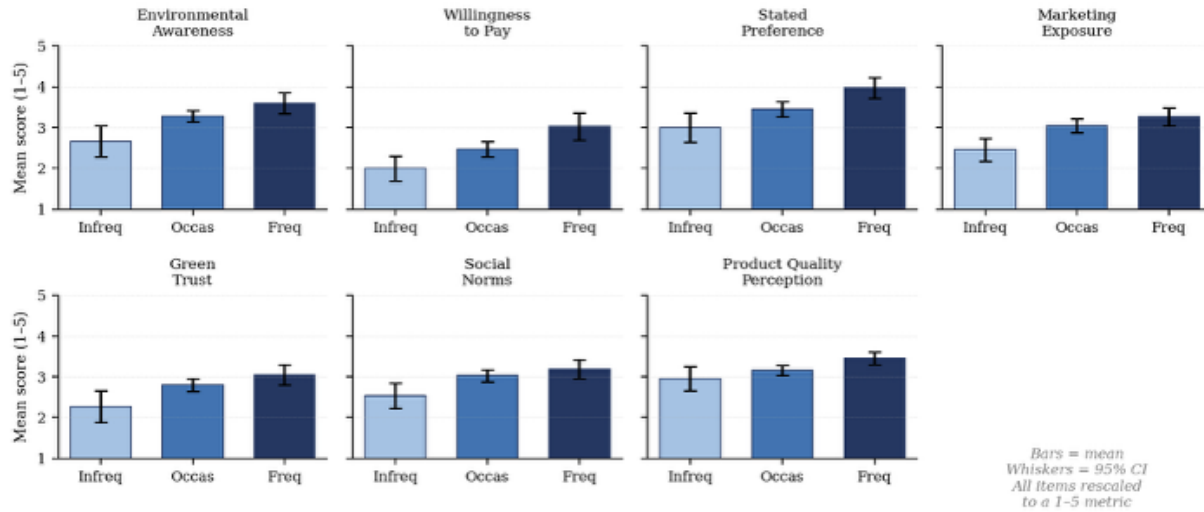


Figure. 2 Constructs that differ significantly across purchase-frequency groups. Whiskers show 95% confidence intervals.

Table 7 Post hoc comparisons (omnibus-significant constructs only)

Construct	Comparison	p (adj.)	Effect size	Magnitude
Environmental Awareness	Infrequent vs Frequent	< .001	d = 1.10	Large
	Infrequent vs Occasional	.002	d = 0.88	Large
	Occasional vs Frequent	.084	d = 0.47	n.s.
Product Quality Perception	Infrequent vs Frequent	.003	d = 0.84	Large
	Occasional vs Frequent	.028	d = 0.56	Medium
	Infrequent vs Occasional	.299	d = 0.34	n.s.
Social Norms	Infrequent vs Frequent	.002	d = 0.88	Large
	Infrequent vs Occasional	.010	d = 0.72	Medium
	Occasional vs Frequent	.475	d = 0.24	n.s.
Green Trust	Infrequent vs Frequent	.001	r = 0.48	Medium
	Infrequent vs Occasional	.014	r = 0.37	Medium
	Occasional vs Frequent	.128	r = 0.17	n.s.
Marketing Exposure	Infrequent vs Frequent	< .001	r = 0.59	Large
	Infrequent vs Occasional	.003	r = 0.42	Medium
	Occasional vs Frequent	.178	r = 0.15	n.s.
Willingness to Pay	Infrequent vs Frequent	< .001	r = 0.56	Large
	Occasional vs Frequent	.019	r = 0.30	Medium
	Infrequent vs Occasional	.019	r = 0.34	Medium
Stated Preference	Infrequent vs Frequent	< .001	r = 0.59	Large
	Occasional vs Frequent	.005	r = 0.36	Medium
	Infrequent vs Occasional	.045	r = 0.29	Small

Note. Tukey HSD for ANOVA routes (effect size Cohen's d); Dunn's test with Holm adjustment for Kruskal–Wallis routes (effect size rank-biserial r). Magnitude bands follow Cohen (1988). Comparisons are ordered within each construct by significance.

the assumption-matched route.

This is the concrete cost of the earlier method. Perceived affordability is not a real finding; it looked like one because the wrong test was applied to non-normal data and no correction was made across eleven tests. Testing assumptions before choosing a test is not a formality.

Demographic comparisons

Chi-square tests of independence were run between each demographic variable and purchase-frequency group (Table 9). None was significantly associated with purchase frequency; all effect sizes fell below .13. The three groups are demographically comparable, which means the attitudinal differ-

Table 8 Sensitivity analysis — naive ANOVA vs. assumption-matched route

Construct	ANOVA F	ANOVA p	Primary route p (FDR)	Conclusion
Environmental Awareness	11.71	< .001	< .001	Agrees
Product Quality Perception	6.08	.003	.005	Agrees
Social Norms	6.60	.002	.004	Agrees
Green Trust	7.38	.001	.004	Agrees
Marketing Exposure	9.38	< .001	.002	Agrees
Willingness to Pay	10.74	< .001	.001	Agrees
Stated Preference	10.62	< .001	.001	Agrees
Perceived Accessibility	2.57	.080	.059	Agrees
Moral Norms	1.65	.195	.166	Agrees
Price Barrier	0.26	.769	.799	Agrees
Perceived Affordability	3.39	.037	.105	Naive ANOVA gives a false positive

Note. The two approaches agree on ten of eleven constructs and disagree on perceived affordability, where a blanket ANOVA returns $p = .037$ and would have been reported as significant, while the assumption-matched test plus FDR correction returns $p = .105$.

ences above are unlikely to be demographic artefacts in disguise. This should not be over-read as evidence that demographics do not matter for green consumption generally — the sample is too homogeneous to test that.

Discussion

Restatement of key findings

Among 132 urban Indian consumers, what separated frequent buyers of sustainable products from infrequent ones was not moral conviction. The most informative result is a null one: moral norms did not differ across groups ($p = .166$), and every group scored around 4.0 out of 5. The people who almost never buy sustainable products feel exactly as personally responsible for the environment as those who buy often. This is the value–action gap stated as a number. The gap is not a motivational deficit — nobody in this sample needs persuading that environmental protection is their responsibility. Campaigns built on moral appeal are therefore aimed at a problem that, in this group, does not exist.

What does separate the groups is knowledge, trust, and willingness to pay. Awareness produced the largest effect, green trust followed, and willingness to pay discriminated all three groups on its own. This is consistent with the finding that eco-label knowledge converts into behaviour only when it produces trust¹², and with the account of how greenwashing corrodes that trust¹¹.

Implications: price is felt, but it is not what divides people

The price results deserve care, because two similar-sounding constructs behaved completely differently. The perceived price barrier did not differ across groups ($p = .799$): everyone finds sustainable products expensive to roughly the same

degree. Willingness to pay a premium, by contrast, was one of the strongest discriminators. These are not the same thing, and the failure of the two-item affordability composite ($\alpha = .262$) is itself evidence of that. Recognising that a product costs more is a perception; deciding to pay it anyway is a choice. The gap between buyers and non-buyers lies in the second. Lowering prices might help, but so might giving people a reason to think the premium is worth paying.

Across nearly every construct the significant contrasts involved the infrequent group, while occasional and frequent buyers rarely differed. This suggests a threshold: once a consumer starts buying at all, further increases in frequency are not matched by proportionate increases in awareness or trust. The psychological distance between never and sometimes is larger than the distance between sometimes and often. Willingness to pay is the one construct that keeps separating groups all the way up — so the intervention that moves people from zero to some (informational) differs from the one that moves them from some to many (financial).

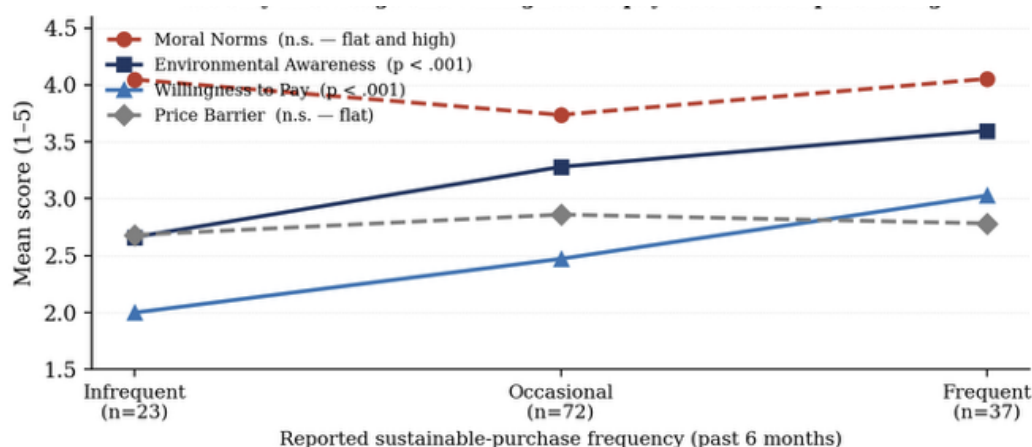
Connection to objectives and the Indian context

The objectives were met for the primary hypothesis and for six of ten exploratory ones. Two features of the Indian market bear on the results. Cost orientation: Indian consumers respond to sustainability framed as long-run saving more than as carbon virtue, and price sensitivity moderates green purchase relationships in Indian samples¹⁰, consistent with our willingness-to-pay finding. Collectivism: our social-norms composite differed significantly across groups, fitting the collectivist orientation documented in Indian consumers²⁸. But the deep-rooted frugality and the north–south divide described in the introduction sit beyond what our instrument can see. Traditional reuse and repair may produce environmentally beneficial behaviour for reasons of thrift rather than conviction.

Table 9 Chi-square tests: demographics × purchase-frequency group

Demographic	χ^2	df	p	Cramér's V	Assumption check
Gender (M / F)	1.01	2	.605	.088	<i>Assumptions met</i>
Age group	1.28	4	.864	.070	<i>Assumptions met</i>
Income ($\leq$ ₹10 / $>$ ₹10 lakh)	0.08	2	.960	.026	<i>Assumptions met</i>
Occupation	3.84	4	.428	.121	<i>3/9 expected cells < 5</i>
Location (Urban / Rural)	1.61	2	.447	.111	<i>3/6 expected cells < 5</i>

Note. Categories were collapsed where necessary to satisfy the expected-frequency assumption (no more than 20% of expected cells below 5). Occupation and location still violate it and are indicative only. Cramér's V bands: .10 small, .30 medium, .50 large.

**Figure. 3** Moral conviction is high and flat across all three groups, while awareness and willingness to pay rise steeply.

tion, and status-driven northern purchasing responds to different appeals than conformity-driven southern purchasing. We measured neither region nor cultural orientation, so we flag these as the clearest gaps for a broader study.

Recommendations

Future work should follow the same consumers over time, recruit across rural and low-income groups, stratify by region to test the north–south axis, use validated multi-item scales, and where possible verify purchases against records rather than recall. The practical reading, scoped strictly to this sample, is that appeals to environmental duty are unlikely to shift behaviour, because the duty is already felt; interventions that build specific knowledge, make environmental claims credible, and change willingness to pay have more room to work. The methodological reading is narrower but perhaps more useful: when assumption-matched tests were compared against a blanket ANOVA, one finding evaporated. In a field that often reports single-item measures and untested ANOVAs, that one disappearing result is the strongest argument the study can make for doing the arithmetic carefully.

Limitations

Several limitations apply. The study consists of self-reported behaviour. The grouping variable is what respondents say they bought, not what they bought, and environmentally desirable behaviour is over-reported. Purchase records would be far stronger evidence. The sample was selected through convenience sampling. Recruitment was through email and messaging; the sample is urban, educated, and online, and cannot be treated as representative of Indian consumers. It has a cross-sectional design. All measures were taken at one moment, so no causal claim is possible — awareness may produce purchasing, or purchasing may produce awareness. There are single-item measures in the study. Six of eleven constructs rest on one question each; their results are exploratory and should be replicated with validated multi-item scales. There are two composites with weak reliability. Marketing exposure ($\alpha = .488$) and perceived accessibility ($\alpha = .407$) fall below threshold; the significant marketing-exposure result in particular needs replication. There are unequal group sizes. The infrequent group ($n = 23$) is much smaller than the occasional group ($n = 72$); non-parametric tests handle this better than

ANOVA, but precision is still reduced. At $N = 132$ the study has only 16% power to detect a small effect, so the nulls for moral norms and the price barrier mean “no detectable difference”, not “no difference”. This highlights the power of small effects. The study does not tap into cultural or regional variables. Caste, religion, language, and region were not collected, so the north–south axis central to Indian consumption could not be tested, and the single urban milieu could not support such a comparison even if it had been.

Closing Thought

The real gap between conventional and sustainable consumers is not that one group cares more about the environment or feels more social pressure to act green. It is that they see the product differently. Closing this perceptual gap, by making sustainable product quality visible, verifiable, and credible, may matter far more for the long-term growth of green consumer markets than any single price or messaging intervention alone.

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