

Determinants of Green Purchase Intention Among Educated Consumers: A Pre-Registered Protocol for a Multi-Stratum Moderated-Mediation Survey

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Abstract: Educated urban consumers in India report high levels of environmental concern, yet green products still account for a small share of household purchases. Reviews trace this attitude–behaviour gap to a familiar set of determinants, but the underlying evidence remains fragmented. Normative and economic factors behave inconsistently from one study to the next, most designs test antecedents in isolation, and South Indian consumers are thinly represented in the sampling frames on which the field's conclusions rest. This paper sets out a protocol for a study built to address those three weaknesses. Drawing on the Theory of Planned Behaviour and on Value–Belief–Norm theory, it specifies a moderated-mediation model in which environmental awareness, subjective norms, perceived behavioural effectiveness and eco-label trust predict green purchase intention; price sensitivity attenuates the awareness and trust pathways; product availability amplifies the effectiveness pathway; and eco-label trust carries part of the effect of awareness. Seven hypotheses are stated directionally. The design is a cross-sectional survey of 500 usable responses drawn by proportionate stratified sampling across four strata (Bengaluru, the rest of Karnataka, other Indian states and other countries), supplemented by twelve semi-structured expert interviews. An a priori power analysis for the nine-predictor moderated equation places the binding sample requirement at 481 cases at $f^2 = 0.05$, $\alpha = 0.05$ and power = 0.95. Measurement uses a 34-item trilingual instrument whose content validity was established by a six-member expert panel and whose reliability was confirmed in a 60-case pilot. Estimators, fit thresholds and decision rules are fixed for every hypothesis before data collection begins. Publishing them at this stage closes off outcome-dependent analytic choices and allows reviewers to judge the study on its design while the findings are still unknown.

Keywords: green purchase intention; eco-label trust; price sensitivity; product availability; Theory of Planned Behaviour; structural equation modelling; study protocol; sustainable consumption; India

Status of this paper: *This is a study protocol. It reports the design, instrumentation and pre-specified analysis plan of an investigation for which data collection had not begun at the time of writing. No empirical results are presented, and none of the decision rules stated below were derived from observed data. Findings will be reported in a separate paper that follows this plan, and any departure from it will be declared explicitly.*

1. Introduction

Household consumption accounts for a substantial share of the environmental burden generated by any economy, so the choices consumers make between conventional and lower-impact alternatives carry direct policy interest. Two decades of research have established that most consumers, when asked, express favourable attitudes towards green products. Why so few of them buy such products with any regularity has proved much harder to explain. This discrepancy, known as the attitude–intention–behaviour gap [1], [30], is no marginal anomaly. Systematic reviews covering several hundred studies report it as the field's defining empirical regularity [4], [6], and it has survived repeated attempts to model it away by adding constructs to the Theory of Planned Behaviour. Its persistence suggests that the field does not lack predictors. What it lacks is an account of the conditions under which favourable attitudes convert into intention, and intention into purchase.

The Indian case sharpens the question. Educated urban consumers in cities such as Bengaluru are heavily exposed to environmental messaging, are digitally connected, and hold the discretionary income that

green premiums require. If awareness alone were sufficient, green purchasing should already be commonplace in this population. It is not. A companion review conducted at the first stage of this programme synthesised the published evidence on six recurring determinants: environmental awareness, subjective norms, perceived behavioural effectiveness, eco-label trust, price sensitivity and product availability. Three problems emerged from that synthesis. First, the six determinants are rarely modelled together, so the relative weight of cognitive, normative, institutional and structural influences cannot be compared within a single specification. Second, the evidence on subjective norms and on price is contradictory in a way that measurement error does not adequately explain, which points instead to unmodelled moderation. Third, the geographic coverage of the field is uneven, and South Indian consumers are thinly represented [5].

This protocol responds to all three problems. It specifies a single model containing four antecedents, two moderators and one mediator; it treats price sensitivity and product availability as explicit boundary conditions instead of competing main effects; and it draws its sample through a stratified frame anchored in Bengaluru and Karnataka while retaining comparison strata elsewhere. Every estimator, threshold and decision rule reported below was fixed before any data were collected. Publishing them in advance distinguishes a protocol from a post hoc methods section, and it gives the reader grounds for confidence that the analytic choices were not shaped by the results they went on to produce [27]. What this paper contributes is a testable and fully specified design; the findings will follow separately.

2. Theoretical Background and Hypothesis Development

2.1 Theoretical position

The model rests on two complementary theories. The Theory of Planned Behaviour holds that intention is a function of attitude towards the behaviour, subjective norms and perceived behavioural control [1]; it supplies the backbone of the model and remains the most frequently validated framework in green consumption research [6]. Its limitation is widely acknowledged: it treats the actor as a deliberative calculator and has little to say about moral obligation. Value–Belief–Norm theory supplies what is missing [2]. It traces pro-environmental action to a chain running from values through ecological beliefs to personal moral norms, which explains why environmental awareness carries motivational force and does not simply sit in the mind as inert information. Taken together, the two theories justify a model in which cognition, social expectation and moral conviction all contribute, while structural and economic conditions determine how much of that motivation survives to the point of purchase.

2.2 Environmental awareness

Environmental awareness refers to a consumer's knowledge of environmental problems and concern about them. It is the most frequently reported antecedent of green purchase intention, and its sign is consistently positive [3], [4]. The literature is equally clear that awareness is necessary without being sufficient. High-awareness consumers populate both sides of the attitude–behaviour gap, which implies that the effect of awareness is conditional on factors it cannot overcome alone.

H1. Environmental awareness is positively associated with green purchase intention.

2.3 Subjective norms

Subjective norms capture the perceived social pressure exerted by people whose opinion matters to the consumer. The Theory of Planned Behaviour assigns them a central role, and reviews list social influence among the significant determinants of intention [5], [6]. The empirical record is uneven, however. Positive effects are common but far from universal, and effect sizes vary considerably across cultures and product categories. In collectivist settings such as India there are theoretical grounds to expect normative influence to exceed the international average, which is a reason to test the proposition here and not simply assume it.

H2. Subjective norms are positively associated with green purchase intention.

2.4 Perceived behavioural effectiveness

Perceived behavioural effectiveness is the belief that one's own choices make a material difference to environmental outcomes. It sits close to perceived behavioural control without being identical to it: control concerns capability, whereas effectiveness concerns consequence. A consumer may be perfectly able to buy a green product and still decline to do so on the grounds that one purchase changes nothing. Empirical work generally supports a positive association with intention [3], [4].

H3. Perceived behavioural effectiveness is positively associated with green purchase intention.

2.5 Eco-label trust

Eco-labels function as a credibility device, allowing a consumer to act on an environmental preference without personally verifying the claim behind it. Trust in those labels is positively associated with intention to buy organic and green products, and label credibility affects intention both directly and through environmental trust [10], [11]. The mechanism is fragile. Greenwashing erodes the association, and awareness of greenwashing has been shown to moderate the effect of label credibility [11]. Label proliferation compounds the problem, since a crowded field makes certified claims harder to distinguish from ordinary marketing copy.

H4. Eco-label trust is positively associated with green purchase intention.

2.6 Price sensitivity as a boundary condition

Green products typically carry a premium, and price sensitivity is repeatedly identified as the barrier at which favourable attitudes stall [7], [8], [9]. It is modelled here as a moderator. The claim is not that price-sensitive consumers hold weaker environmental values; it concerns how far those values are translated into intention once a premium has to be paid. A claim of that kind is about the slope of a relationship, and testing it requires an interaction term. Trust operates under the same constraint: a consumer who believes an eco-label may still decline to act on that belief when the labelled product costs materially more.

H5a. Price sensitivity negatively moderates the relationship between environmental awareness and green purchase intention, such that the relationship weakens as price sensitivity increases.

H5b. Price sensitivity negatively moderates the relationship between eco-label trust and green purchase intention.

2.7 Product availability as a boundary condition

Situational constraints receive less attention than cognitive ones, yet they may matter more in practice. Where green alternatives are not stocked in the outlets a consumer actually uses, the belief that one's choices matter has nothing to act on. Reviews identify limited availability and inconvenience as barriers that widen the gap between attitude and purchase, and note that the problem is more acute in developing markets [7], [9]. Availability should therefore strengthen the effectiveness pathway, since the belief that individual action counts translates into intention most readily when acting on it is easy.

H6. Product availability positively moderates the relationship between perceived behavioural effectiveness and green purchase intention.

2.8 Eco-label trust as a mediator

The final hypothesis concerns mechanism, not magnitude. Environmental awareness plausibly raises intention partly because better-informed consumers are more able to interpret certification and to rely on it. If that is so, some portion of the effect of awareness travels through trust. Establishing partial mediation would carry a practical implication: awareness campaigns that fail to protect label credibility at the same time would be expected to underperform.

H7. Eco-label trust partially mediates the relationship between environmental awareness and green purchase intention.

Figure 1 presents the full specification. Table 1 defines each construct conceptually and operationally, and Table 2 summarises the seven hypotheses.

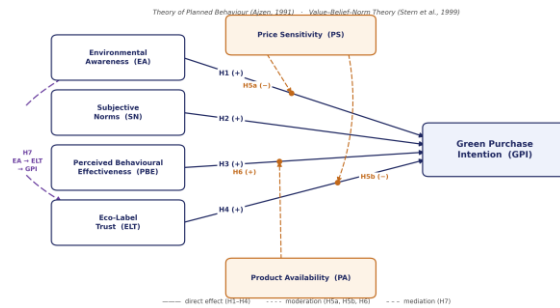


Figure 1. Conceptual model. Solid arrows denote hypothesised direct effects (H1–H4); dashed orange arrows terminating in a filled marker denote moderation of the path on which the marker sits (H5a, H5b, H6); the dashed purple arrow denotes the mediation pathway (H7).

Table 2. Summary of hypotheses.

Hypothesis	Statement	Type	Expected sign
H1	Environmental awareness → green purchase intention	Direct	Positive
H2	Subjective norms → green purchase intention	Direct	Positive
H3	Perceived behavioural effectiveness → green purchase intention	Direct	Positive
H4	Eco-label trust → green purchase intention	Direct	Positive
H5a	Price sensitivity moderates environmental awareness → green purchase intention	Moderation	Negative
H5b	Price sensitivity moderates eco-label trust → green purchase intention	Moderation	Negative

Hypothesis	Statement	Type	Expected sign
H6	Product availability moderates perceived behavioural effectiveness → green purchase intention	Moderation	Positive
H7	Eco-label trust partially mediates environmental awareness → green purchase intention	Mediation	Positive indirect

3. Method

3.1 Design and its justification

The study uses a cross-sectional quantitative survey estimated by structural equation modelling, supplemented by twelve semi-structured expert interviews. The position is post-positivist: the constructs are latent, they are measured by multiple observed indicators, and the hypotheses are directional and falsifiable. Structural equation modelling was selected because it estimates direct, mediated and moderated paths within a single system while correcting for measurement error in the latent variables [16], [29]. Separate regressions would neither control for the shared variance among the antecedents nor permit a global assessment of fit. The interview strand supplies contextual interpretation that a closed-ended instrument cannot reach. Three alternative designs were considered and set aside; Table 3 records the reasoning.

3.2 Population, sampling frame and eligibility

The target population is adults aged 18 or over who hold at least a completed undergraduate degree, have been resident in their stated location for twelve months or more, and take part in household purchasing decisions. The education criterion follows directly from the research question, which concerns consumers who already possess the informational resources that awareness campaigns set out to supply. Sampling is proportionate stratified by location, with quotas applied within strata for gender, age band and education level. Four strata are used, weighted towards Bengaluru as the primary site while retaining comparison groups. The rest of Karnataka isolates metropolitan effects within a single state; other Indian states provide national contrast; and respondents outside India allow a preliminary cross-cultural comparison that the review identified as absent from the field [5]. Table 4 sets out the allocation. Respondents who work professionally in certification, green marketing or sustainability consulting are excluded, since their answers would reflect expert reasoning and not consumer reasoning. The remaining exclusions are applied in the fixed order given in Section 3.5.

Table 4. Stratified sampling allocation.

Stratum	Target usable responses	To be distributed	Share of sample
Bengaluru	250	320	50.0%

Stratum	Target usable responses	To be distributed	Share of sample
Rest of Karnataka	90	115	18.0%
Other Indian states	80	103	16.0%
Other countries	80	102	16.0%
Total	500	640	100.0%

3.3 Sample size determination

Three adequacy rules were evaluated and the largest adopted, on the principle that a sample must satisfy the most demanding requirement the analysis imposes. The indicator rule of ten respondents per measured item across 34 items yields 340, and model-complexity guidance for a seven-factor solution with 34 indicators yields approximately 300 [16]. The a priori power analysis is the binding constraint. The moderated equation carries nine predictors: six main effects together with the three interaction terms specified in H5a, H5b and H6. At $f^2 = 0.05$, $\alpha = 0.05$ and power of 0.95, it requires 481 cases [19], while the direct-effects equation with six predictors requires 424. The target was therefore set at 500 usable responses, and a 22 per cent allowance for the quality filters gives a distribution target of about 640 questionnaires. A small effect size was assumed deliberately, since interaction terms routinely explain only modest increments in variance.

3.4 Instrument

The questionnaire contains 34 items across five sections and takes 12 to 14 minutes to complete. All substantive items use a seven-point Likert scale anchored at 1 (strongly disagree) and 7 (strongly agree). Items were adapted from published, previously validated instruments instead of being written afresh, so that results remain comparable with the studies synthesised in the review. Table 5 gives the structure. Content validity was established by a six-member expert panel drawn from consumer behaviour, sustainability and survey methodology. The retention criteria were an item-level Content Validity Index of at least 0.78 and a scale-level average of at least 0.90 [24], [25]; items falling below either threshold were revised or discarded before translation. The instrument is administered in English, Kannada and Hindi, following forward and blind back-translation, with discrepancies reconciled by the bilingual panel before the pilot [23]. In a Karnataka-anchored study this step carries real weight, because restricting administration to English would have biased the sample towards a narrower social stratum than the population definition intends. A pilot of 60 respondents precedes the main collection. Scales are retained where Cronbach's α reaches 0.70 [28], corrected item-total correlations reach 0.30, and item distributions fall within skewness of ± 2 and kurtosis of ± 7 .

Table 5. Instrument structure: five sections, 34 items.

Section	Constructs measured	Items	Source of items
1. Profile and screening	Demographics and eligibility screening	8	Study-specific
2. Cognitive antecedents	Environmental awareness · Subjective norms · Perceived behavioural effectiveness	15	Adapted from Theory of Planned Behaviour instruments
3. Institutional trust	Eco-label trust	5	Adapted from label-credibility and green-trust scales
4. Economic and structural	Price sensitivity · Product availability	8	Adapted from price-premium and availability scales
5. Outcome	Green purchase intention	6	Adapted from green-intention scales
Total	Seven latent constructs plus profile block	34	—

3.5 Data collection and quality control

Collection runs for eight weeks through an online platform, supplemented by supervised intercept administration. The intercept component is included specifically to reach respondents whom online recruitment tends to miss. Screening items enforce every eligibility criterion at entry, and a participant information sheet and electronic consent precede the first substantive item. Two attention checks are embedded at approximately one-third and two-thirds of the way through the instrument, response duration is recorded for every case, and the predictor and criterion blocks are separated and partly randomised. Once collection closes, the exclusion filters are applied in the fixed order given in Table 6, and a response-accounting table reporting distributed, returned, excluded and usable counts is published

with the results. Non-response bias is assessed by comparing early and late respondents on the focal constructs [26].

3.6 Common method bias

Because the predictors and the criterion are collected from one respondent at a single point in time, common method variance poses a substantive threat, and the design treats it as such. Procedural remedies come first, as the literature recommends: separating and partly randomising the predictor and criterion blocks, guaranteeing anonymity to reduce evaluation apprehension, and pre-testing item wording for ambiguity [17]. Statistical diagnosis follows. Harman's single-factor test is reported as a first screen only, since it is a weak test; the criterion is that no single factor accounts for 50 per cent or more of the variance. The substantive evidence comes from a marker-variable test and a full collinearity assessment requiring every variance inflation factor to fall below 3.3 [18].

4. Pre-Specified Analysis Plan

The analysis proceeds in seven stages. Every threshold below was fixed before data collection began.

Stage 1 — Screening. Missing-data patterns, Mahalanobis distance for multivariate outliers, univariate and multivariate normality, and variance inflation factors.

Stage 2 — Reliability. Cronbach's α and composite reliability, each required to reach 0.70.

Stage 3 — Exploratory factor analysis on a random half of the sample, using Promax rotation, requiring a Kaiser–Meyer–Olkin measure of at least 0.80 and item loadings of at least 0.50.

Stage 4 — Confirmatory factor analysis of the seven-factor measurement model on the second half, following the two-step approach in which the measurement model is validated before any structural path is estimated [12].

Stage 5 — Structural model. Standardised path coefficients for H1 to H4 estimated by maximum likelihood.

Stage 6 — Mediation. The indirect effect in H7 tested with 5,000 bias-corrected bootstrap resamples [20].

Stage 7 — Moderation. Hierarchical regression with mean-centred interaction terms, with simple slopes plotted at ± 1 standard deviation of the moderator [21], [22].

Acceptance thresholds for the measurement and structural models follow conventional cut-offs [13], [29]: $\chi^2/df \leq 3.00$, CFI and TLI ≥ 0.95 , RMSEA ≤ 0.06 , SRMR ≤ 0.08 , average variance extracted ≥ 0.50 , composite reliability ≥ 0.70 , heterotrait–monotrait ratio < 0.85 , Kaiser–Meyer–Olkin ≥ 0.80 , and full-collinearity variance inflation factors < 3.30 . Discriminant validity is established by the Fornell–Larcker criterion, which requires the square root of the average variance extracted to exceed every inter-construct correlation [14], and confirmed by the heterotrait–monotrait ratio [15]. Analysis uses SPSS 29, AMOS 29, SmartPLS 4 and the PROCESS macro.

Table 7 states, for each hypothesis, the estimator and the rule by which it will be judged supported or unsupported. Effect sizes and confidence intervals are reported alongside significance tests throughout, and every supported interaction is plotted. Two features of the plan constrain the authors: no decision rule may be altered once data collection has begun, and if a departure proves unavoidable it will be reported as a deviation, with the original rule and the reason for the change stated in full.

Table 7. Hypothesis, estimator and pre-specified decision rule.

Hy p.	Path or interaction term	Estimator	Decision rule for support
H1	EA → GPI	Standardised path, maximum likelihood	$\beta > 0$ and $p < 0.05$
H2	SN → GPI	Standardised path, maximum likelihood	$\beta > 0$ and $p < 0.05$
H3	PBE → GPI	Standardised path, maximum likelihood	$\beta > 0$ and $p < 0.05$
H4	ELT → GPI	Standardised path, maximum likelihood	$\beta > 0$ and $p < 0.05$
H5 a	EA × PS → GPI	Hierarchical regression, centred interaction	$\beta < 0$, $p < 0.05$, significant ΔR^2
H5 b	ELT × PS → GPI	Hierarchical regression, centred interaction	$\beta < 0$, $p < 0.05$, significant ΔR^2
H6	PBE × PA → GPI	Hierarchical regression, centred interaction	$\beta > 0$, $p < 0.05$, significant ΔR^2
H7	EA → ELT → GPI	Bias-corrected bootstrap, 5,000 resamples	95% confidence interval for the indirect effect excludes zero

Note. EA = environmental awareness; SN = subjective norms; PBE = perceived behavioural effectiveness; ELT = eco-label trust; PS = price sensitivity; PA = product availability; GPI = green purchase intention.

5. Ethical Considerations

Institutional review approval is obtained before any data are collected. Participation requires documented electronic consent, and respondents may withdraw at any point without giving a reason. No directly identifying information is collected; responses are stored encrypted for five years and handled in compliance with the Digital Personal Data Protection Act, 2023. Interview participants consent separately to recording and to the use of anonymised quotations.

6. Anticipated Contributions

Theoretical. The study tests four antecedents, two moderators and one mediator within one specification. This allows the relative contribution of cognitive, normative, institutional and structural influences to be compared directly, without inferring comparisons across studies that differ in sample and measurement. If the interaction terms are supported, the contradictory findings on norms and price reported in the review become explicable as boundary conditions, and no longer stand as unresolved inconsistency.

Methodological. Pre-registering estimators and decision rules addresses a documented weakness in consumer research, where analytic flexibility permits hypotheses to be adjusted until they fit the results [27]. The study also contributes a trilingual 34-item instrument with documented content validity that subsequent work in multilingual Indian settings can reuse.

Policy and practice. If price sensitivity attenuates the awareness pathway, awareness campaigns unaccompanied by price intervention would be predicted to yield limited returns. If availability amplifies the effectiveness pathway, the binding constraint is distributional. If trust mediates awareness, certification integrity becomes a precondition for any campaign to work. Each outcome implies a different instrument, which is why the three are tested jointly.

7. Anticipated Limitations

- The cross-sectional design establishes association and structure, but not temporal precedence. Causal claims cannot be drawn from it, and a longitudinal extension is proposed as the next stage.
- The outcome variable is measured intention, not observed purchase. Intention is a defensible proxy, yet the gap between intention and purchase is the very phenomenon under study, which makes this the most consequential limitation of the design.
- Online recruitment under-represents consumers with limited digital access; supervised intercept administration reduces this bias without removing it.
- Anonymity and item separation reduce social desirability bias without eliminating it. Green consumption is a domain in which respondents have every reason to present themselves favourably.
- The sample is weighted towards Bengaluru. The non-Karnataka strata support preliminary comparison only; full cross-cultural validation requires a dedicated multi-group study.

8. Conclusion

A hypothesis becomes testable only once the construct is measurable, the sample is adequate for the estimator, and the decision rule is fixed before the data are seen. This paper has set out to satisfy those three conditions for a seven-hypothesis model of green purchase intention among educated consumers. The design permits the model to fail: should price sensitivity leave the awareness pathway unattenuated, or eco-label trust carry none of the effect of awareness, those results follow from the same pre-specified rules as the supportive ones. Given how much policy effort rests on the assumption that informing consumers is enough, a well-powered null result on the awareness pathway would be as useful as a confirmation.

Supplementary Material

Table 1, Table 3 and Table 6 are provided as online supplementary material accompanying this article, together with the full 34-item instrument. Every threshold and count referred to in the text is reproduced there in full.

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