

**ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL**Available Online: <https://assajournal.com>

Vol. 05 No. 01. Jan-March 2026. Page#. 6958-6976

Print ISSN: [3006-2497](#) Online ISSN: [3006-2500](#)Platform & Workflow by: [Open Journal Systems](#)

When Clean Labels Signal Sustainability: Perceived Healthiness and Green Brand Image as Pathways to Purchase Intent

Mahnoor Qamar

BBA Graduate, Faculty of Management Sciences, UCP Constituent Campus, Gujrat, Pakistan.

Email: mahnoorgamar222222@gmail.com

Faizan Ashfaq

BBA Graduate, Faculty of Management Sciences, UCP Constituent Campus, Gujrat, Pakistan.

Email: meharfaizan023@gmail.com

Sheraz Anjum

PhD Scholar, Faculty of Business and Management, Universiti Sultan Zainal Abidin, Terengganu, Malaysia.

Email: sheraz153@hotmail.com

Dr. Yasir Aftab Farooqi

Assistant Professor, Faculty of Management and Administration Sciences (FMAS) University of Gujrat, Pakistan.

Email: yasir.aftab@uoq.edu.pk

Rizwan Umer

Campus Dean, Faculty of Management Sciences, UCP Constituent Campus, Gujrat.

Email: Principal.gujrat@ucp.edu.pk

Farwa Bugvi

PhD Scholar, Superior University, Lahore, Pakistan.

Email: farwabuqvi2013@gmail.com

Abstract

This study examines how sustainability-oriented clean labeling shapes consumer purchase intent among small and medium enterprise (SME) brands in the Golden Triangle, and identifies the psychological pathway and brand-level boundary condition that govern this effect. Integrating signaling theory with the Value–Attitude–Behaviour (VAB) framework (Homer & Kahle, 1988), the study models clean labeling as influencing purchase intent both directly and indirectly through perceived healthiness, with green brand image moderating the clean labeling–purchase intent relationship. A quantitative, cross-sectional survey design was adopted, and 340 valid responses from adult retail consumers of sustainability-labelled products were analyzed using partial least squares structural equation modelling (PLS-SEM) in SmartPLS 4. The measurement model demonstrated satisfactory indicator reliability, internal consistency,

convergent validity, and discriminant validity, and common method bias was not a concern. The structural results supported all five hypotheses: clean labeling significantly predicted both perceived healthiness and purchase intent; perceived healthiness significantly predicted purchase intent and partially (complementarily) mediated the clean labeling–purchase intent relationship; and green brand image positively moderated that relationship, such that clean-label signals were more persuasive from brands with a stronger green image. The findings extend mediated-moderated green-marketing models to the under-examined SME context and offer managers evidence that clean labels persuade most when framed around health benefits and backed by a credible green brand image.

Keywords: *clean labeling; sustainability signaling; perceived healthiness; green brand image; purchase intent; SMEs; PLS-SEM*

Chapter 1: Introduction

1.1 Background of the Study

Sustainability has moved from a peripheral corporate concern to a central driver of food-purchasing behaviour. Recent industry surveys report that more than three-quarters of consumers now place at least some priority on sustainability when buying, and a growing majority actively look for sustainability information on the pack itself. “clean labeling” is now a green signal with sustainability attributes indicating the carbon footprint, eco-certification and eco-friendly processing claims of the product at the point of purchase (Chang & Chen, 2022). Sustainability is a credence attribute which is not revealed by examination or use, making it a signaller that diminishes the information asymmetry between producer and consumer, and helps to reduce the cognitive cost of choice (Chang & Chen, 2022; Taillie et al., 2024). Clean and green labelling has, therefore, come to be more than a compliance measure for firms; it's a marketing tool. Experimental studies reveal that front-of-pack environmental labels can affect consumers' perceptions of sustainability and purchase intentions (Taillie et al., 2024) and that – as shown repeatedly – eco-labels and organic marks can influence judgements of healthiness, safety and quality that are not certified by them. This spillover effect, known as the “health halo effect,” is at the heart of the understanding of how sustainability communication is effective at persuading consumers: they are tempted to believe that a product that is good for the planet is also good for the body, even without nutritional proof. (Eichin et al., 2025)

The dynamics are particularly significant when it comes to small and medium enterprises (SMEs). With limited advertising budgets and brand recognition compared to their multinational counterparts, SMEs must depend on the label itself as the main – even often the sole – means by which ethical and environmental values are conveyed to ethically and environmentally aware consumers (Durrani et al., 2024; Zaman et al., 2025). A clean label can be a significant factor influencing consumer choice in large commercial clusters where the competition is fierce and exposure to sustainability marketing is high, such as the Golden Triangle.

1.2 Problem Statement

Although sustainability signaling is now widespread, its behavioural payoff is neither automatic nor uniform, and two questions remain inadequately resolved for the SME context. First, through what psychological mechanism does clean labeling translate into an intention to buy? Evidence of a health halo effect suggests that sustainability cues raise perceived healthiness even without nutritional data

(Eichin et al., 2025; Büttner et al., 2024), positioning perceived healthiness as a plausible mediating pathway that is rarely modelled explicitly alongside a moderating brand-level condition. Second, under what conditions does the signal work? A clean claim issued by a brand with a weak or inconsistent environmental reputation risks being read as greenwashing and dismissed outright, which implies that green brand image conditions — or moderates — the label's effect on intent (Do et al., 2025; Rehman et al., 2025). The combined mediating and moderating structure remains under-examined for SMEs specifically, leaving practitioners without clear guidance on where sustainability-communication investment actually pays off.

1.3 Research Gap

Prior work has established direct links between green-marketing cues and purchase intent (Wang et al., 2022; Chang & Chen, 2022), but three gaps persist in this literature. First, the mediating role of perceived healthiness is frequently assumed on the strength of halo-effect studies conducted in Western, large-brand, or laboratory food-choice contexts (Büttner et al., 2024; Eichin et al., 2025), but is rarely tested as a formal statistical mediator within a green-marketing purchase-intent model. Second, the moderating role of green brand image is often treated descriptively, or is modelled only as an antecedent of trust or skepticism (Do et al., 2025; Rehman et al., 2025), rather than as a formal statistical interaction term conditioning the clean-labeling–purchase-intent path. Third, the SME setting — where the label itself does the heaviest signaling work because larger marketing channels are unavailable — remains underrepresented relative to large-brand and Gen Z-focused studies (Durrani et al., 2024; Zaman et al., 2025). This study addresses all three gaps by specifying and empirically testing an integrated mediation–moderation model in an SME cluster setting.

1.4 Research Questions

- RQ1: Does sustainability-oriented clean labeling significantly influence consumers' perceived healthiness and purchase intent?
- RQ2: Does perceived healthiness mediate the relationship between clean labeling and purchase intent?
- RQ3: Does green brand image moderate the relationship between clean labeling and purchase intent?

1.5 Research Objectives

- To examine the effect of sustainability-oriented clean labeling on perceived healthiness and on purchase intent.
- To assess the effect of perceived healthiness on purchase intent.
- To test whether perceived healthiness mediates the clean labeling–purchase intent relationship.
- To test whether green brand image moderates the clean labeling–purchase intent relationship.

1.6 Significance of the Study

Theoretically, the study combines signaling logic with the Value–Attitude–Behaviour tradition (Homer & Kahle, 1988) by formal testing in a single framework, modelling perceived healthiness as a mediator and green brand image as a moderator, instead of considering direct links between green cue and intent separately. From a practical standpoint, it provides SMEs in the Golden Triangle with evidence of the

effects of sustainability communication: is it best to position a health message first, and does a credible green brand image need to be present as a condition or as an added value for clean labels to persuade?

1.7 Scope of the Study

This study targets adult retail consumers who consider the sustainability or clean label claims on foods and consumer packaged goods with a focus on the SME brands found in the Golden Triangle. It is cross sectional and quantitative with structured survey and partial least squares structural equation modelling (PLS-SEM). It does not consider the behaviour over time, the real purchase or non-food categories and these limits are discussed again in the limitations.

Chapter 2: Literature Review

2.1 Sustainability-Oriented Clean Labeling

Clean labelling has moved from avoiding artificial ingredients to the addition of additional green, sustainability-focused labels including carbon footprint information, eco certification, and eco-friendly processing claims (Chang & Chen, 2022). Given that a product's environmental impact is a credence attribute that can be neither verified by inspection by the consumer, nor verified by the producer before the product is produced, these signals serve to reduce information asymmetry between the producer and consumer and also ease choice at the point of sale (Taillie et al., 2024). In randomized experiments, the use of front-of-pack environmental labelling, like the Eco-Score, has been found to influence consumers' understanding of the environmental impact of a product, and even their reported purchasing intentions, establishing a clear connection between clean-label cues and consumer information that does not simply conform to marketing messages (Taillie et al., 2024). For SMEs, particularly, these labels can be the primary – and often lowest cost – medium for conveying ethical and environmental commitments to growing ethically and environmentally aware consumers (Durrani et al., 2024).

2.2 Perceived Healthiness and the Health Halo Effect

Perceived healthiness refers to what the consumer believes he will feel once he has taken a product and it is a subjective perception that does not equal the nutritional content of the product. There is a large body of research that shows that a single positive attribute, such as an organic, low-fat or sustainability claim, can create an overall positive health halo effect that extends beyond what the objective evidence would suggest (Büttner et al., 2024). In a large German sample Büttner et al. (2024) demonstrated the positive relationship between the perception of health of a product with a favourable Eco-Score and purchase intention. Complementary evidence suggests that consumers have a “healthy = sustainable” heuristic, which means they perceive healthiness and sustainability as correlated cues when there is little or no objective link (Eichin et al., 2025). All this literature lends weight to the notion that sustainability-based “clean labels” increase the perceived healthiness even in the absence of nutritional facts.

2.3 Purchase Intent and the Value–Attitude–Behaviour Framework

Purchase intent is the consumer's conscious decision to purchase a certain product, and it is the most common behavioural indicator used in consumer-marketing research as actual purchase is not possible to be captured in survey contexts. Purchase intent may be seen as a behavioural outcome of values and attitudes they evoke about a given object or claim in the Value–Attitude–Behaviour (VAB) hierarchy (Homer & Kahle, 1988). The VAB logic states that the activation of pro-environmental values by a cue of a clean label leads to a favourable evaluation of the product (partly measured in terms of perceived

healthiness), which in turn triggers purchase intent, when applied to sustainability marketing. Recently, research on GenZ green consumption has also found that attention to the sustainability claim itself is not enough to lead to intention, but rather the attitudinal route that has been investigated (Do et al., 2025; Wang et al., 2022).

2.4 Green Brand Image

Green brand image is the environmental associations that a consumer relates to a brand that are accumulated from sustainable practices, credible certification, and coherent communication (Suttharattanagul & Manotungvorapun, 2025). It acts as a perceptual filter which translates new sustainability claims: the same clean label is interpreted differently by brand with differing environmental track records. A favorable green reputation can enhance the persuasive force of a clean label for SMEs in the Golden Triangle, while a poor or inconsistent image can lead to doubts and greenwashing perceptions that can mitigate or even backfire the desired effect (Rehman et al., 2025; Suttharattanagul & Manotungvorapun, 2025).

2.5 Clean Labeling and Purchase Intent Among SMEs

Sustainability signals for SMEs are not only ethical tools, but are also strategic tools. In various markets, green-marketing practices like eco-labelling and green packaging have been found to positively influence consumer's attitude and purchase intentions (Wang et al., 2022), while consistent use of these signals in the products over the years can result in the development of reputational capital for the business (Zaman et al., 2025). SMEs, however, are also constrained by structural issues, such as limited technical capacity, financial resources, and market intelligence, that make it difficult for them to engage in a continuous and credible sustainability communication compared to large brands (Durrani et al., 2024). The impact of clean label on SME purchase intent is thus best understood as conditional – jointly determined by the extent of the psychological inference the label evokes and the brand level credibility that follows it.

2.6 The Mediating Role of Perceived Healthiness

Integrating Sections 2.2 and 2.3, this study proposes that perceived healthiness functions as a psychological mechanism through which clean labeling exerts part of its effect on purchase intent, rather than acting on intent solely through a direct, healthiness-independent route. This mediated pathway is consistent with health halo evidence showing that sustainability cues bias healthiness judgements (Büttner et al., 2024; Eichin et al., 2025), and with VAB logic in which favourable product evaluations translate values into behavioural intention (Homer & Kahle, 1988). Formal mediation testing is required, however, because a significant total effect of clean labeling on purchase intent is also consistent with an entirely direct, non-health-based pathway (e.g., pure environmental concern), and only a significant indirect effect can distinguish between these accounts.

2.7 The Moderating Role of Green Brand Image

The link between clean labeling and purchase intent is theorised to depend on green brand image because consumers act on sustainability signals more readily when they perceive the issuing brand as authentically committed to the environment (Suttharattanagul & Manotungvorapun, 2025). Absent a credible image, identical claims are more likely to be read as a marketing ploy, consistent with evidence that perceived greenwashing suppresses green purchase intention and, in some models, functions explicitly as a negative moderator of green-marketing effects (Do et al., 2025; Rehman et al., 2025). SMEs

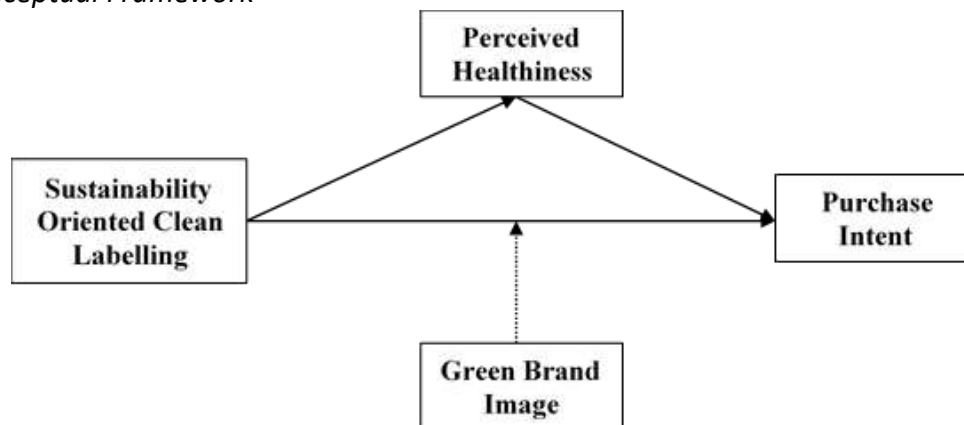
must therefore back their “clean” claims with systematic sustainable practice — from production choices to meaningful corporate social responsibility — if the label is to convert into intent rather than skepticism.

2.8 Conceptual Framework and Hypotheses

Figure 1 summarises the hypothesised relationships among the four constructs: sustainability-oriented clean labeling (CL) as the exogenous predictor; perceived healthiness (PH) as the mediating mechanism; green brand image (GBI) as the moderating boundary condition; and purchase intent (PI) as the behavioural outcome.

Figure 1

Proposed Conceptual Framework



Based on the theoretical integration above, the following five hypotheses are proposed:

H1: Sustainability-oriented clean labeling has a significant positive relationship with perceived healthiness.

H2: Sustainability-oriented clean labeling has a significant positive relationship with purchase intent.

H3: Perceived healthiness has a significant positive relationship with purchase intent.

H4: Perceived healthiness mediates the relationship between sustainability-oriented clean labeling and purchase intent.

H5: Green brand image moderates the relationship between sustainability-oriented clean labeling and purchase intent.

Chapter 3: Research Methodology

3.1 Research Approach and Design

This study is deductive, quantitative and follows positivist paradigm (Creswell & Creswell, 2018; Saunders et al., 2019) that posits that consumer behaviours can be measured using standardised metrics, free from researcher bias. A deductive approach is the best approach for evaluating directional paths between independent variables, mediated variables and dependent variables, which is the method presented in this inquiry, because the inquiry started from theory and had five hypotheses (H1, H2, H3, H4, and H5) that were already established. In this case, an explanatory (causal) design is employed instead of an exploratory design (Hair et al., 2019), which allows for the functional relationships among constructs, enables the testing of direct effects and tests the relationship of mediation effect through

perceived healthiness (H4) and the moderating interaction between green brand image (H5). Closed-ended, 5-point Likert items transform abstract perceptions into numerical data appropriate for powerful statistical testing (Babbie, 2020).

3.2 Population and Unit of Analysis

The target audience are retail consumers that consider, choose or buy food and consumer packaged goods (CPG) with front-of-pack labelling, clean claims and/or sustainability badges. The constructs are suitable for assessing a large retail audience as sustainability labelling has gained from a niche to a mainstream purchasing consideration (Chang & Chen, 2022). Relevance and data integrity ensured by the eligibility criteria: the participants were required to be at least 18 years old (independent purchasing power) and to have purchased a retail product with a sustainability or clean-label claim within the last three months. The focus is geographic and relates to the urban and suburban retail clusters where exposure to sustainability marketing is concentrated and baseline awareness is high.

3.3 Sampling Strategy and Sample Size

Since there is no central register of clean label purchasers, non-probability purposive and convenience sampling was used (Suri, 2011). To prevent selection bias, the sample was collected using diverse methods and days across the different retail zones and digital platforms, and purposive screening was used to ensure that all respondents are eligible. There were two thresholds that converged on minimum sample size. The rule of thumb in the literature, which is based on the number of respondents per estimated number of parameters, is $N:p=15-20$ respondents per estimated number of parameters (Bentler & Chou, 1987) and in this case the estimated number of parameters is 20 (4 constructs with 5 items each). A G*Power analysis for a three-predictor regression revealed a minimum of 119 respondents to be able to detect a medium effect ($f^2 = 0.15$, $\alpha = .05$, power = .95). The study involved 350 responses but data screening resulted in 340 valid cases, meeting both criteria and for attrition (Hair et al., 2022).

3.4 Instrumentation and Data Collection

Research was conducted using a structured, self-administered questionnaire using a hybrid approach: The online version (Qualtrics) was disseminated via targeted consumer groups and the digital version was distributed by intercept. Outside the big four supermarkets. The respondents were first asked dichotomous screening questions before they were asked the main items, to confirm their age and recent purchasing behavior. The scales were adapted from previously validated work in the field of green-marketing and food-labelling without being changed in order to maintain their psychometric properties, all items on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The characteristics of eco-labelling and ethical indicators, along with the transparency of ingredients were adapted into clean labelling (5 items) (Wang et al., 2022; Chang & Chen, 2022). Adapted from food-labeling halo-effect studies that measure nutritional value, wholesome attributes, and sustainable health actions (Büttner et al., 2024; Eichin et al., 2025), Perceived Healthiness (5 items) measures the perceived nutritional value of the food, wholesome attributes, and sustainable health actions. The dimension of Green Brand Image (5 items), adapted from Suttharattanagul and Manotungvorapun (2025), has been used to measure the prestige, green brand associations and ecological reputation. Purchase Intent (5 items) derived from existing scales of behavioural-intention in the green-consumer

literature that capture behavioural likelihood, purchase intention and consumer commitment (Do et al., 2025; Wang et al., 2022). Informed consent was included in the survey process: a statement informed the participants of the academic use of the survey, ensured anonymity, explained how the data would be protected, and confirmed that participation was voluntary, consistent with recommended responses to methodological common biases (Podsakoff et al., 2003).

3.5 Data Analysis Strategy

Data preparation and analysis were conducted in two phases following the current guidance of PLS-SEM (Hair et al., 2022): First was data preparation and second was the analysis of the data.

3.5.1 Preliminary and Descriptive Analysis

Data cleaning included missing-value analysis, outlier detection via Mahalanobis distance, and screening of unengaged (straight-lining) responses (Hair et al., 2019). Descriptive statistics profiled the sample. Common method bias was checked with Harman's single-factor test, where a single factor explaining under 50% of total variance indicates that common method bias is not a serious concern (Podsakoff et al., 2003).

3.5.2 Measurement Model Evaluation

Indicator reliability was assessed via standardised outer loadings ($> .70$); internal consistency via Cronbach's alpha and composite reliability (both $> .70$); and convergent validity via average variance extracted (AVE $> .50$) (Hair et al., 2022). Discriminant validity was assessed using both the heterotrait-monotrait ratio of correlations (HTMT $< .85$; Henseler et al., 2015) and the Fornell–Larcker criterion, under which the square root of each construct's AVE should exceed its correlations with all other constructs (Fornell & Larcker, 1981).

3.5.3 Structural Model Evaluation and Hypothesis Testing

PLS-SEM was used to evaluate the structural paths for its ability to analyse complex, multi-layered relationships with modest sample sizes and non-normal data (Hair et al., 2022). Collinearity was checked via inner variance inflation factors (VIF < 3.3), and explanatory power via R^2 for each endogenous construct. Testing then proceeded in three parts. Direct effects (H1–H3) were evaluated through standardised path coefficients (β) and bootstrapped p-values for CL→PH, CL→PI, and PH→PI. Mediation (H4) was tested as the indirect CL→PH→PI effect via non-parametric bootstrapping with 5,000 resamples; a 95% bias-corrected confidence interval excluding zero confirms mediation (Preacher & Hayes, 2008). Moderation (H5) was tested through a product-indicator interaction term (CL $\times$ GBI); a significant coefficient indicates that green brand image alters the strength of the CL→PI relationship (Dawson, 2014).

3.6 Ethical Considerations

The study was conducted according to the standard research procedures used in human subject research: participation was voluntary and anonymous; informed consent was obtained before respondents enter the data; no personally identifying information was gathered; the respondents were able to withdraw at any time before submitting without penalty.

Chapter 4: Data Analysis and Results

This chapter reports the analysis of 340 valid responses in four stages: (1) the respondent profile; (2) the reflective measurement model — reliability, convergent validity, and discriminant validity; (3) the

structural model — collinearity, explanatory power, and path coefficients; and (4) the hypothesis tests, including the mediation and moderation results and their associated effect sizes. Data were analysed in SPSS v28 and SmartPLS 4.

4.1 Respondent Profile

The achieved sample (N = 340) satisfied both the N:p rule and the G*Power minimum specified in Section 3.3. Table 1 summarises the demographic composition of the sample.

Table 1

Sample Demographic Profile (N = 340)

Characteristic	Category	n	%
Gender	Female	164	48.2
	Male	161	47.4
	Prefer not to say	15	4.4
Age group	25–34 years	121	35.6
	18–24 years	92	27.1
	35–44 years	69	20.3
	45–54 years	36	10.6
	55 years and above	22	6.5
Education	Bachelor's degree	172	50.6
	Postgraduate (Master's / PhD)	83	24.4
	Diploma / certificate	53	15.6
	Primary / secondary school	27	7.9
	No formal education	5	1.5
Residential location	Urban area	191	56.2
	Suburban area	104	30.6
	Rural area	45	13.2
SME purchase frequency	Occasionally (2–3 times/month)	113	33.2
	Frequently (once a week)	97	28.5
	Very frequently (> once a week)	75	22.1
	Rarely (once a month or less)	55	16.2

Characteristic	Category	n	%
Considers sustainability	Yes, sometimes	172	50.6
	Yes, always	119	35.0
	Rarely	49	14.4

Note. N = 340. Percentages are column percentages within each characteristic and may not total exactly 100% due to rounding. All respondents were ≥ 18 years and had purchased a clean/sustainability-labelled product within the previous three months (eligibility screening).

4.2 Measurement Model Assessment

Construct means ranged from 3.57 to 3.83 on the five-point scale, indicating a generally favourable orientation toward sustainability labeling, with comparable dispersion across constructs. Harman's single-factor test returned a first factor explaining 33.34% of the variance — well below the 50% threshold — indicating that common method bias is not a concern (Podsakoff et al., 2003). All 20 outer loadings exceeded the .70 benchmark (.708–.858), Cronbach's alpha (.838–.858) and composite reliability (.886–.898) both surpassed .70, and average variance extracted (AVE) ranged .608–.639, exceeding .50. Table 2 integrates the construct-level descriptive statistics, reliability and convergent-validity coefficients, and standardised outer loadings in a single display.

Table 2

Descriptive Statistics, Reliability, Convergent Validity, and Standardised Outer Loadings

Construct / Item	Loading	Mean	SD	α	CR	AVE
Clean Labeling (CL)		3.83	0.69	.838	.886	.608
CL1	.798					
CL2	.779					
CL3	.766					
CL4	.778					
CL5	.777					
Perceived Healthiness (PH)		3.57	0.72	.852	.894	.630
PH1	.806					
PH2	.789					
PH3	.834					
PH4	.708					

Construct / Item	Loading	Mean	SD	α	CR	AVE
PH5	.824					
Green Brand Image (GBI)		3.69	0.72	.852	.894	.628
GBI1	.794					
GBI2	.844					
GBI3	.789					
GBI4	.758					
GBI5	.776					
Purchase Intent (PI)		3.70	0.72	.858	.898	.639
PI1	.826					
PI2	.730					
PI3	.797					
PI4	.780					
PI5	.858					

Note. α = Cronbach's alpha; CR = composite reliability; AVE = average variance extracted. Construct-level means and standard deviations are averaged across the construct's items. All loadings exceed .70, all α and CR values exceed .70, and all AVE values exceed .50 (Hair et al., 2022), indicating adequate indicator reliability, internal consistency, and convergent validity.

4.3 Discriminant Validity

Discriminant validity was confirmed on two converging criteria. All heterotrait-monotrait (HTMT) ratios (.179–.547) fell below the conservative .85 threshold (Table 3; Henseler et al., 2015). Under the Fornell–Larcker criterion, the square root of each construct's AVE (the diagonal in Table 4) exceeded that construct's correlations with all other constructs (Fornell & Larcker, 1981). The four constructs are therefore empirically distinct.

Table 3

Discriminant Validity: Heterotrait-Monotrait Ratio (HTMT)

	CL	PH	GBI	PI
CL	—			
PH	.539	—		
GBI	.414	.179	—	
PI	.524	.547	.405	—

Note. HTMT = heterotrait-monotrait ratio of correlations; all values fall below the .85 threshold, supporting discriminant validity. CL = clean labeling; PH = perceived healthiness; GBI = green brand image; PI = purchase intent.

Table 4

Discriminant Validity: Fornell–Larcker Criterion

	CL	PH	GBI	PI
CL	.779			
PH	.456	.794		
GBI	.351	.154	.793	
PI	.445	.468	.346	.799

Note. Diagonal values (bold) are the square roots of the average variance extracted; off-diagonal values are inter-construct correlations. Each diagonal value exceeds the corresponding off-diagonal correlations, supporting discriminant validity.

4.4 Structural Model Assessment

Collinearity was acceptable — all inner VIF values (1.01–1.42) were well below the conservative 3.3 threshold — so the path estimates are not distorted by multicollinearity. The model explained 21.0% of the variance in perceived healthiness ($R^2 = .210$) and 34.0% in purchase intent ($R^2 = .340$); against common PLS-SEM benchmarks these represent weak-to-moderate but meaningful in-sample explanatory power for a behavioural-intention model (Hair et al., 2022). The estimated structural model is shown in Figure 2, and the path estimates — direct effects, the specific indirect (mediation) effect, and the interaction (moderation) effect — are reported in Table 5, each with its bootstrap standard error, t-value, p-value, and 95% confidence interval (5,000 resamples).

Figure 2

Structural Model With Standardised Path Coefficients

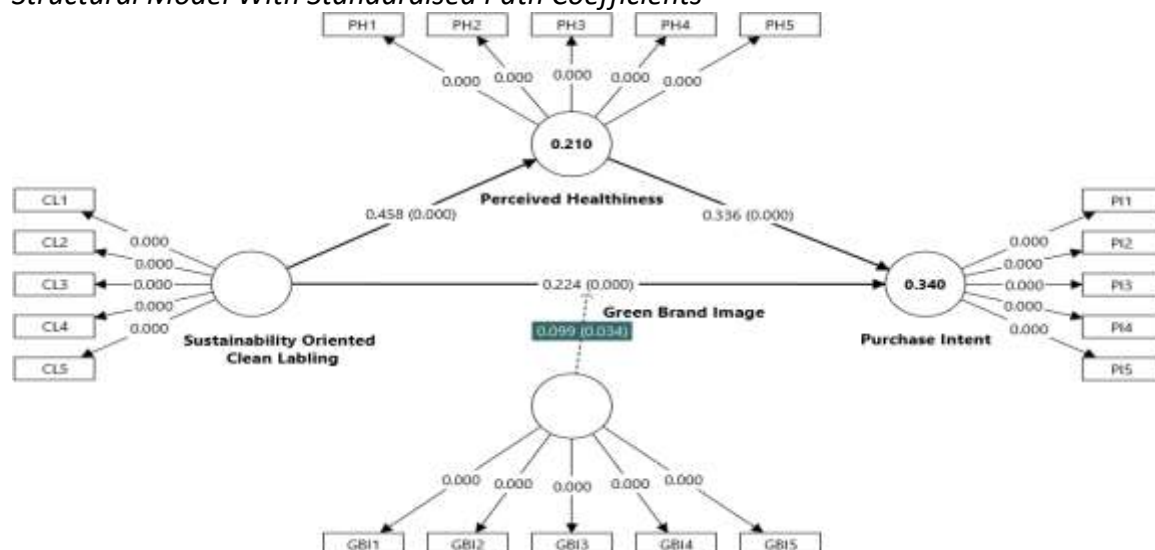


Table 5*Structural Path Coefficients and Hypothesis Tests (Bootstrap, 5,000 Resamples)*

H	Relationship	β	SE	t	p	95% CI	Decision
H1	CL $\rightarrow$ PH	0.458	0.050	9.057	< .001	[0.358, 0.553]	Supported
H2	CL $\rightarrow$ PI	0.224	0.053	4.196	< .001	[0.120, 0.329]	Supported
H3	PH $\rightarrow$ PI	0.336	0.050	6.681	< .001	[0.239, 0.441]	Supported
H4	CL $\rightarrow$ PH $\rightarrow$ PI (indirect)	0.154	0.028	5.441	< .001	[0.101, 0.212]	Supported
H5	CL $\times$ GBI $\rightarrow$ PI	0.099	0.048	2.109	.034	[0.004, 0.190]	Supported
—	GBI $\rightarrow$ PI (control)	0.212	0.053	3.994	< .001	[0.108, 0.316]	—

Note. β = standardised path coefficient; 95% confidence intervals are bias-corrected bootstrapped intervals; a path is considered significant when its interval excludes zero. GBI $\rightarrow$ PI is included as a direct control, not a formal hypothesis. CL = clean labeling; PH = perceived healthiness; GBI = green brand image; PI = purchase intent.

4.5 Hypothesis Testing Results

4.5.1 Direct Effects (H1, H2, H3)

Clean labeling had a strong positive effect on perceived healthiness ($\beta = 0.458$, $t = 9.06$, $p < .001$), supporting H1: consumers infer greater healthiness from sustainability signals, consistent with the health-halo evidence reviewed in Section 2.2 (Büttner et al., 2024; Eichin et al., 2025). Clean labeling also directly raised purchase intent ($\beta = 0.224$, $t = 4.20$, $p < .001$), supporting H2. Perceived healthiness in turn had the largest single effect on purchase intent ($\beta = 0.336$, $t = 6.68$, $p < .001$), supporting H3 and confirming that health inferences are a key driver of intention within the VAB sequence.

4.5.2 Mediation Effect (H4)

The specific indirect effect of clean labeling on purchase intent through perceived healthiness was positive and significant ($\beta = 0.154$, $t = 5.44$, $p < .001$), with a 95% confidence interval of [0.101, 0.212] that excludes zero. Because the direct effect (H2) also remains significant, perceived healthiness operates as a complementary (partial) mediator, accounting for approximately 41% of the total effect (VAF = 40.7%): clean labeling raises purchase intent both directly and by elevating perceived healthiness. H4 is supported.

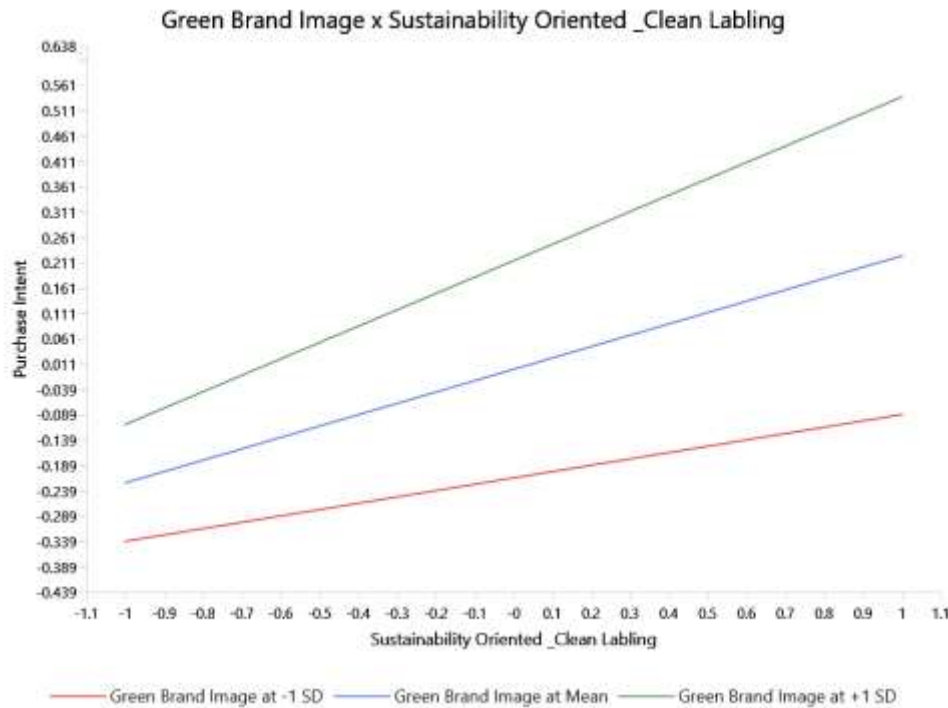
4.5.3 Moderation Effect (H5)

The interaction term (CL $\times$ GBI) had a significant positive effect on purchase intent ($\beta = 0.099$, $t = 2.11$, $p = .034$; 95% CI [0.004, 0.190]), supporting H5. The positive sign indicates that a stronger green brand image strengthens the clean labeling–purchase intent relationship: the same sustainability signals are

more persuasive when they come from a brand perceived as authentically green, consistent with the greenwashing-skepticism argument reviewed in Section 2.7 (Do et al., 2025; Rehman et al., 2025). Figure 3 plots the interaction.

Figure 3

Moderating Effect of Green Brand Image on the Clean Labeling–Purchase Intent Relationship



4.6 Effect Sizes (f^2)

Effect sizes (f^2) indicated a medium effect of clean labeling on perceived healthiness and small-to-medium effects among the purchase-intent predictors (Table 6).

Table 6

Effect Sizes (f^2) for Structural Paths

Path	f^2	Interpretation
Clean Labeling → Perceived Healthiness	0.263	Medium
Perceived Healthiness → Purchase Intent	0.136	Small-to-medium
Green Brand Image → Purchase Intent	0.059	Small
Clean Labeling → Purchase Intent	0.054	Small
Clean Labeling × Green Brand Image → Purchase Intent	0.015	Small

Note. Effect-size benchmarks: $f^2 = 0.02$ (small), 0.15 (medium), 0.35 (large) (Cohen, 1988).

4.7 Summary of Hypothesis Testing

Table 7

Summary of Hypothesis Testing

H	Path	β	p	Decision
H1	CL $\rightarrow$ PH	0.458	< .001	Supported
H2	CL $\rightarrow$ PI	0.224	< .001	Supported
H3	PH $\rightarrow$ PI	0.336	< .001	Supported
H4	CL $\rightarrow$ PH $\rightarrow$ PI (mediation)	0.154	< .001	Supported
H5	CL $\times$ GBI $\rightarrow$ PI (moderation)	0.099	.034	Supported

Note. All five hypotheses were supported. As detailed in Section 5.5

In summary, the measurement model met all reliability and validity thresholds, and common method bias was not a concern. The structural model supported every hypothesis: clean labeling significantly raised both perceived healthiness (H1) and purchase intent (H2); perceived healthiness raised purchase intent (H3) and partially mediated the clean labeling–purchase intent link (H4); and green brand image positively moderated that link (H5). Chapter 5 discusses these findings, their implications, limitations, and directions for future research.

Chapter 5: Discussion and Conclusion

This chapter interprets the findings reported in Chapter 4, situates them within the signalling and Value–Attitude–Behaviour (VAB) traditions, and draws out their theoretical and practical implications for SME sustainability communication in the Golden Triangle. It then acknowledges the study’s limitations and outlines directions for future research before concluding.

5.1 Overview of Findings

The study aimed to understand the translation from sustainability related clean labeling to purchase intention by SME consumers and to find the psychological step and boundary condition that controls the translation. The measurement model being used was tested on 340 responses, which fulfilled all the reliability and validity requirements and common method bias was not an issue. All five hypotheses were supported by the structural model: clean labeling significantly positively increased the perceived healthiness (H1) and purchase intent (H2); perceived healthiness significantly positively increased the link between clean labeling and purchase intent (H3); the link between clean labeling and purchase intent was significantly positively moderated by green brand image (H5); and perceived healthiness partially mediated the link between clean labeling and purchase intent (H4).

5.2 Discussion of Findings

Direct effects (H1–H3)

Clean labelling showed the most direct impact on the perception of the healthiness of the product ($\beta = 0.458$), in line with the health halo effect that was observed in recent studies on food labelling: consumers assume that a food product that is “better for the planet” is also “better for the body,” even when no nutritional information is provided (Büttner et al., 2024; Eichin et al., 2025). Results also

indicated that clean labelling had a positive effect directly on purchase intent ($\beta = 0.224$), suggesting that the use of eco-labelling and green packaging influences purchase intent in various markets (Wang et al., 2022). The strongest predictor of purchase intent ($\beta = 0.336$) was perceived healthiness, which suggests that health inferences, rather than just sustainability information, are an important component of the VAB sequence (Homer & Kahle, 1988).

Mediation (H4)

The important indirect path ($\beta = 0.154$, 95% CI [0.101, 0.212]) makes perceived healthiness a complementary partial mediator that explains approximately 41% of the total effect of clean labeling on purchase intent. The mediating role of perceived healthiness, which is often inferred in halo-effect studies but rarely is formally modeled in a green-marketing purchase-intent framework (Büttner et al., 2024), is here specified and established. Clean labelling works, in part because it places a ‘sustainability message’ in the context of personal health, and in part directly without any inferences about health.

Moderation (H5)

Green brand image significantly and positively moderated the clean labeling–purchase intent relationship (interaction $\beta = 0.099$, $p = .034$). The positive sign validates the findings that similar sustainability signals are more influential when they come from a brand that appears to be a credible, genuine green brand, and less influential when the green brand image is less strong – the mechanism that leads to the suspicion of greenwashing as documented in recent research on perceived greenwashing and green purchase intention (Do et al., 2025; Rehman et al., 2025). For SMEs, the benefits of a clean label are not a standalone; it requires a credible green reputation over time, which in turn requires time to build (Suttharattanagul & Manotungvorapun, 2025).

5.3 Theoretical Implications

The study has three contributions. First, it integrates signalling logic with the Value–Attitude–Behaviour tradition (Homer & Kahle, 1988) by modelling perceived healthiness as a mediation and green brand image as a moderation process in a single model rather than in isolated fashion as done in most previous studies (e.g., Wang et al., 2022). Second, it formalizes the mediating role of perceived healthiness and the moderating role of green brand image, which have been assumed but not empirically tested so far, and incorporates them into a formal statistical test (Büttner et al., 2024; Do et al., 2025). Third, the SME context engages the label itself as the primary signal, as larger marketing channels are not available, which extends a literature that remains highly focused on large brand and Gen Z studies (Durrani et al., 2024; Zaman et al., 2025) to demonstrate that the same signal works conditionally with respect to brand-level credibility, even for smaller companies.

5.4 Practical Implications

The results provide actionable information for SME managers in the Golden Triangle on where sustainability communication is worthwhile. The health relevance of sustainability attributes should be communicated explicitly, not just through environmental claims, as perceived healthiness is the most important way to drive intention. Considering the fact that green brand image plays a pivotal role in influencing the impact of a label, the ability to build a coherent and credible green reputation, which is grounded in sustainable production, with a strong CSR framework and transparent sourcing, is a prerequisite for a label to be effective in persuading consumers (Suttharattanagul & Manotungvorapun,

2025; Zaman et al., 2025). If your brand is part of a dense pack of small players making similar claims when the signal is shared, a credible green image is what makes you the choice over the others.

5.5 Limitations

These conclusions are limited by several factors. The cross-sectional design does not imply causal precedence, and expresses intention to purchase instead of actual purchasing behaviour, which can differ. Non-probability purposive and convenience sampling facilitates access to eligible clean-label buyers, but restricts statistical generalisability; and the cluster of urban and suburban Golden Triangle buyers restricts external validity. There is a risk of common method variance in relying on self-reported and single-source data; although Harman's test showed that this was not a major problem, procedural and statistical remedies are not completely effective at eliminating common method variance (Podsakoff et al., 2003).

5.6 Directions for Future Research

These limitations can be tackled in a number of ways in future studies. Longitudinal or experimental designs would be able to allow for stronger causal inference and could be able to connect the intention to purchase with actual purchase records, as recent randomized-experiment designs in the food-labeling literature have started to do (Taillie et al., 2024). The generalisability of the mediated-moderated model would be tested by having the model extended to other product categories (other than food and consumer packaged goods) and other retail regions. Researchers could also consider modeling other boundary conditions, such as environmental knowledge, green trust, or perceived greenwashing (Do et al., 2025; Rehman et al., 2025), and segment clean labeling into the individual cues (carbon disclosure, eco-certification, ingredient transparency), to uncover which signals have the greatest impact on the perception of healthiness and intention to purchase.

5.7 Conclusion

This study explains the ways in which sustainability-oriented clean labeling translates into purchase intent for SME brands: clean labeling has a direct effect on purchase intent and a further indirect effect through increasing the perceived healthiness, while a credible green brand image adds to the persuasiveness of clean labeling. These relationships are put in context in an integrated pathway of signalling, Value–Attitude–Behaviour, and a more complete picture of the clean-label-to-intent pathway is offered, along with actionable suggestions for SME managers aiming to make sustainability a chosen purchase in the competitive Golden Triangle.

References

- Babbie, E. R. (2020). *The practice of social research* (15th ed.). Cengage Learning.
- Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, 16(1), 78–117. <https://doi.org/10.1177/0049124187016001004>
- Büttner, V., Gassler, B., & Teuber, R. (2024). Does the Eco-Score lead to a halo effect? Influence of a sustainability label on product perceptions and purchase intention. *Food Quality and Preference*. <https://doi.org/10.1016/j.foodqual.2024.105206>

- Chang, M.-Y., & Chen, H.-S. (2022). Understanding consumers' intentions to purchase clean label products: Evidence from Taiwan. *Nutrients*, 14(18), Article 3684. <https://doi.org/10.3390/nu14183684>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology*, 29(1), 1–19. <https://doi.org/10.1007/s10869-013-9308-7>
- Do, A. D., Ha, D. L., Phan, T. T. L., Bui, T. M., Le, T. B. N., Tran, M. N., Dang, D. Q., & Nguyen, T. Q. (2025). Antecedents of Gen Z's green purchase intention in Vietnam's fashion industry with the moderating role of greenwash perception. *PLOS ONE*, 20(5), Article e0324923. <https://doi.org/10.1371/journal.pone.0324923>
- Durrani, N., Raziq, A., Mahmood, T., & Khan, M. R. (2024). Barriers to adaptation of environmental sustainability in SMEs: A qualitative study. *PLOS ONE*, 19(5), Article e0298580. <https://doi.org/10.1371/journal.pone.0298580>
- Eichin, K. N., Effert, A., Renner, B., & Sproesser, G. (2025). The 'healthy = sustainable' heuristic: Effects of health and sustainability labels on perceived sustainability and healthiness of foods. *Applied Psychology: Health and Well-Being*. <https://doi.org/10.1111/aphw.70031>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Homer, P. M., & Kahle, L. R. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology*, 54(4), 638–646. <https://doi.org/10.1037/0022-3514.54.4.638>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879–891. <https://doi.org/10.3758/BRM.40.3.879>

- Rehman, A. U., Kumar, S., Alghafes, R., Broccardo, L., & Patel, A. K. (2025). Role of greenwashing in influencing brand attitude and consumption: Identifying sustainable business strategies. *Business Strategy and the Environment*, 34(6), 6686–6703. <https://doi.org/10.1002/bse.4300>
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education.
- Suri, H. (2011). Purposeful sampling in qualitative research synthesis. *Qualitative Research Journal*, 11(2), 63–75. <https://doi.org/10.3316/QRJ1102063>
- Suttharattagul, S. L., & Manotungvorapun, N. (2025). Driving sustainable consumption: How social influence, brand image, and perceived quality shape Thai Gen Z's purchase intentions. *Frontiers in Sustainability*, 6, Article 1716245. <https://doi.org/10.3389/frsus.2025.1716245>
- Taillie, L. S., Wolfson, J. A., Prestemon, C. E., Bercholz, M., Ewoldt, L., Ruggles, P. R., & Hall, M. G. (2024). The impact of an eco-score label on US consumers' perceptions of environmental sustainability and intentions to purchase food: A randomized experiment. *PLOS ONE*, 19(6), Article e0306123. <https://doi.org/10.1371/journal.pone.0306123>
- Wang, Y. M., Zaman, H. M. F., & Alvi, A. K. (2022). Linkage of green brand positioning and green customer value with green purchase intention: The mediating and moderating role of attitude toward green brand and green trust. *SAGE Open*, 12(2). <https://doi.org/10.1177/21582440221102441>
- Zaman, M., Tanewski, G., & Ekanayake, G. (2025). What does sustainability mean for small and medium enterprises: A systematic literature review. *Journal of Cleaner Production*, 492, Article 144830. <https://doi.org/10.1016/j.jclepro.2025.144830>