

PACKAGE MATERIAL INFLUENCE ON BEVERAGE BRAND EQUITY**Macaulay Onovughakpo Augustine (PhD)¹ and Asagba Samuel²****¹Department of Marketing, Delta State Maritime Polytechnic, Burutu, Delta State, Nigeria, ²Southern Delta University Ozoro, Delta State, Faculty of Management and Administration Department of Marketing,****¹Email: mclaugustine@gmail.com****² Email address asagbasamuel@gmail.com****Abstract**

Packaging materials represent a critical yet underexplored dimension of brand equity formation in consumer markets. While existing marketing scholarship has predominantly centred on advertising and product attributes as the principal drivers of brand value, the tangible, sensory, and symbolic properties of packaging materials remain insufficiently examined, particularly within emerging market contexts. This study investigates the influence of packaging material characteristics, specifically quality, durability, safety, sophistication, and perceived cost on three core dimensions of beverage brand equity: brand awareness, brand association, and brand trust. Adopting a quantitative research design, data were gathered from 346 postgraduate students drawn from four government-owned universities in Edo and Delta States, Nigeria, using a clustered convenience sampling approach. Multiple regression analysis was employed to test three hypotheses. The findings reveal that packaging material attributes jointly and significantly predict beverage brand awareness ($R^2 = 0.434$, $F = 52.051$, $p < 0.05$), with material durability and quality emerging as the strongest positive predictors. For brand association, packaging material durability exercised a significant inverse influence ($R^2 = 0.243$, $F = 21.841$, $p < 0.05$), while brand trust was substantially shaped by material durability and safety perceptions ($R^2 = 0.256$, $F = 23.345$, $p < 0.05$). These results confirm that packaging material characteristics are not merely functional containers but active communicators of brand identity and value. The study contributes theoretically to brand equity literature and provides practical insights for beverage manufacturers seeking to leverage packaging as a strategic brand management tool in competitive markets.

Keywords: *brand equity, packaging material, brand awareness, brand association, brand trust, beverage brands, Nigeria*

Introduction

In today's intensely competitive marketplace, the capacity of organisations to sustain growth and market relevance is increasingly contingent upon consumers' perceptions of and preferences for their products. Topoyan and Bulut (2008) observed that consumer perception represents one of the most significant determinants of organisational performance, as purchase decisions are rarely driven by objective product characteristics alone. Within this context, product packaging has emerged as a powerful, multifaceted marketing instrument that simultaneously communicates brand values, influences buyer affect, and differentiates products at the point of sale.

Product packaging may be understood as the totality of physical and symbolic attributes that give form and identity to a product. Keller (1993) acknowledged that packaging performs a vital symbolic communication function, while Underwood (2003) further argued that it contributes to a holistic understanding of the brand beyond its informational role. Several scholars have noted that consumers evaluate products not solely on functional attributes but also on their symbolic capacity to reflect personal identity,

status, and social meanings (Elliott & Wattanasuwan, 1998; Schmitt & Simonson, 1995). Despite this recognition, marketing research has historically accorded disproportionate attention to advertising as the primary channel for constructing and conveying cultural brand meaning, a bias noted by Underwood (2003) and that has progressively begun to be addressed by packaging scholars.

Emerging evidence from brand identity research suggests that packaging material properties consisting of perceived quality, durability, safety, sophistication, and cost signals of the material itself does exert measurable influence on how consumers interpret and evaluate brands. Batra and Homer (2004) demonstrated that packaging attributes can shape brand personality dimensions such as sophistication and fun, while Batra et al. (1993) and Domzal and Kernan (1992) linked symbolic package characteristics to consumer perceptions of status. Orth (2005) reinforced these arguments in his examination of wine brand choice, finding that consumers' packaging cues mediated their perception of the social benefits associated with a brand. Collectively, these studies suggest that packaging material is far more than a protective vessel, it is an active brand signal.

The concept of brand equity itself has undergone considerable theoretical evolution since gaining scholarly attention in the early 1980s. Prominent contributions from Barwise (1993) and Keller (1993, 1998) established foundational frameworks, yet consensus on a universal definition, dimensionality, and measurement of brand equity has remained elusive (Vazquez et al., 2002; Keller, 2003; Washburn, 2002). The prevailing scholarly consensus characterises brand equity largely in terms of consumer-based perceptual constructs, including brand associations and consumer perceptions (Chaudhuri, 1995), which aligns well with the present study's focus on awareness, association, and trust as outcome dimensions.

While several studies have examined the broader influence of product packaging on consumers' purchasing decisions (Veloutsou et al., 2004; Scott, 2008; Topoyan & Bulut, 2008; Laforet, 2011; Ladipo & Rahim, 2013; Nayyar, 2012; Kumar & Bishnoi, 2011; Underwood et al., 2001; Oladele & Akeke, 2012), their emphasis has predominantly been on package design aesthetics or general purchase intent rather than the material attributes of packaging per se. Lifu (2012) identified a strong positive association between attractive packaging and consumers' purchase choices, yet the specific role of material characteristics in shaping consumers' brand equity perceptions has received limited empirical attention. This study addresses that gap by examining the extent to which packaging material attributes influence beverage brand equity dimensions among postgraduate students in Edo and Delta States, Nigeria.

Objectives of the Study

The primary aim of this study is to determine the degree to which packaging material characteristics influence beverage brand equity among postgraduate students in Edo and Delta States, Nigeria. The following specific objectives guide the inquiry:

- i. To ascertain the influence of packaging material on beverage brand awareness among postgraduate students.
- ii. To determine the influence of packaging material on beverage brand association among postgraduate students.
- iii. To examine the influence of packaging material on beverage brand trust among postgraduate students.

Research Question

In alignment with the stated objectives, the following research questions were formulated:

- i. To what extent does packaging material influence beverage brand awareness among postgraduate students?

- ii. To what extent does packaging material influence beverage brand association among postgraduate students?
- iii. To what extent does packaging material influence beverage brand trust among postgraduate students?

Research Hypotheses

The following null hypotheses were formulated and subjected to empirical testing:

- H₁: There is no significant relationship between packaging material attributes and beverage brand awareness among postgraduate students.
- H₂: There is no significant relationship between packaging material attributes and beverage brand association among postgraduate students.
- H₃: There is no significant relationship between packaging material attributes and beverage brand trust among postgraduate students.

Scope of the Study

In terms of content, the study is confined to packaging material attributes and their influence on brand awareness, brand association, and brand trust as operationalised dimensions of brand equity. Geographically, the research covers postgraduate students enrolled in four government-owned universities in Edo and Delta States within the south-south geopolitical region of Nigeria. The unit of analysis is the individual postgraduate student, selected on the assumption that this population possesses sufficient cognitive engagement and consumption independence to make meaningful brand judgements.

Significance of the Study

Packaging material serves as a central tool for product differentiation, consumer guidance, and brand communication. The findings of this research offer actionable insights for beverage manufacturers and brand managers, informing decisions around packaging material selection and investment. Understanding how packaging material characteristics interact with consumer brand perceptions equips practitioners to design strategically superior packaging that enhances brand equity. Additionally, the study enriches the academic discourse on packaging and brand management, particularly within the African and developing economy context where empirical studies on this topic remain scarce.

Methodology

The study adopted a quantitative, cross-sectional survey design. The target population comprised postgraduate students enrolled in government-owned universities in Edo and Delta States, Nigeria. Given the impracticability of accessing the entire population, the study was delimited to postgraduate students across four universities in the two states, based on the premise that this group is educationally equipped for independent decision-making and constitutes an active segment of beverage consumers.

A clustered convenience sampling procedure was employed. Each university faculty was treated as a distinct cluster, yielding 34 clusters in total. Ten respondents were conveniently drawn from each cluster, producing a sample of 340, with a supplementary margin included to account for expected non-response. Data were collected through structured questionnaires administered directly to students entering or exiting postgraduate lecture halls across the sampled faculties and universities.

Of the 350 questionnaires distributed, 346 were returned in usable condition and were retained for analysis, representing a response rate of 98.9%. Data were processed using SPSS (Version 16.0). Descriptive statistics were used to characterise the distribution of responses, while multiple regression analysis was employed to examine the relationships

between the independent variables (packaging material quality, durability, safety, sophistication, and perceived cost) and the three dependent constructs (brand awareness, brand association, and brand trust).

4.0 Data Presentation and Analysis

Of the 346 valid respondents, 208 (60.1%) were male and 138 (39.9%) were female. The majority of participants were above 30 years of age and reported monthly earnings in excess of ₦90,000. Most respondents were enrolled in MSc/MA programmes, while only 7.2% were pursuing doctoral degrees.

Table 1: Beverage Purchase Patterns Among Respondents

Purchase Pattern	Frequency	Percent	Valid Percent	Cumulative Percent
Weekly from supermarkets/retail shops or local markets	52	15.0	15.0	15.0
Daily from retail outlets	154	44.5	44.5	59.5
On the way to/from school or work	70	20.2	20.2	79.8
Usually from bars or restaurants	52	15.0	15.0	94.8
Someone else in the household buys beverages	18	5.2	5.2	100.0
Total	346	100.0	100.0	

Source: Field Survey, 2025

The data in Table 1 indicate that the largest proportion of respondents (44.5%) purchase beverages daily from retail outlets, suggesting that packaging material is encountered frequently and has a habitual — rather than occasional — influence on brand-related cognitions. A further 20.2% purchase on commute, pointing to impulse-driven purchasing contexts in which visual and material packaging cues assume heightened salience. Only 5.2% of respondents delegate beverage procurement to another household member, affirming that the majority of the sample exercises direct purchase autonomy.

Table 2: Extent to Which Beverage Package Material Influences Respondents' Value Judgement

Package Material Attribute	Very Large Extent	Large Extent	Undecided	Little Extent	Very Little Extent
Material Quality	88 (25.4%)	84 (24.3%)	54 (15.6%)	104 (30.1%)	36 (10.6%)
Material Durability	70 (20.2%)	138 (39.9%)	—	70 (20.2%)	68 (19.7%)
Material Safety	72 (20.8%)	84 (24.3%)	54 (15.6%)	68 (19.7%)	68 (19.7%)
Material Sophistication	70 (20.2%)	88 (25.4%)	36 (10.6%)	120 (34.7%)	32 (9.2%)
Perceived Cost	122	104	102	68	52

	(35.3%)	(30.1%)	(29.5%)	(19.7%)	(15.0%)
Ease of Handling	52 (15.0%)	122 (35.3%)	52 (15.0%)	70 (20.2%)	50 (14.5%)

Source: Field Survey, 2025

Table 2 reveals that packaging material durability, perceived cost, and ease of handling are most consistently valued by respondents. Durability recorded the highest combined positive response, with 60.1% indicating that it influences their value judgement to a large or very large extent — a finding that resonates with Underwood's (2003) assertion that packaging contributes substantively to brand comprehension. The relatively high importance assigned to perceived cost (65.4% positive responses) is consistent with Batra and Homer's (2004) finding that packaging communicates price-quality inferences. Responses regarding material quality and sophistication were more polarised, suggesting that consumers apply differentiated standards to these attributes depending on individual values and product involvement levels.

Table 3: Respondents' Level of Beverage Brand Awareness

Brand Awareness Item	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I can recall my preferred beverage brand at any time	72 (20.8%)	84 (24.3%)	54 (15.6%)	68 (19.7%)	68 (19.7%)
I have adequate knowledge of my preferred beverage brand	114 (32.9%)	134 (38.7%)	56 (16.2%)	30 (8.7%)	12 (3.5%)
I can recognise my preferred beverage brand from a distance	216 (62.4%)	111 (32.1%)	10 (2.9%)	7 (2.0%)	2 (0.6%)
I can differentiate my preferred beverage brand from others	84 (24.3%)	122 (35.3%)	70 (20.2%)	36 (10.4%)	34 (9.8%)

Source: Field Survey, 2025

The brand awareness data in Table 3 indicate high levels of recognition competency among respondents. Notably, 94.5% of participants agreed or strongly agreed that they can visually identify their preferred beverage brand from a distance, underscoring the potency of packaging as a visual cue system. A further 71.6% claimed adequate brand knowledge and 59.6% demonstrated the capacity to differentiate their preferred brand from competitors. These findings are aligned with Keller's (1993) conceptualisation of brand awareness as encompassing both recognition and recall, and they affirm the centrality of distinctive packaging cues — including material properties — in facilitating brand identification.

Table 4: Respondents' Beverage Brand Trust

Brand Trust Item	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I am very confident about my preferred beverage brand	70 (20.2%)	88 (25.4%)	36 (10.6%)	120 (34.7%)	32 (9.2%)
I believe in my preferred beverage brand	68 (19.7%)	122 (35.3%)	54 (15.6%)	86 (24.0%)	16 (4.6%)

I rely on my preferred beverage brand for what it stands for	106 (30.6%)	102 (29.5%)	122 (35.3%)	—	16 (4.6%)
I can differentiate my preferred brand from alternatives	84 (24.3%)	122 (35.3%)	70 (20.2%)	36 (10.4%)	34 (9.8%)

Source: Field Survey, 2025

Table 4 reflects a nuanced brand trust landscape. While a substantial proportion (60.1%) of respondents reported relying on their preferred beverage brand for what it represents, only 45.6% expressed high confidence in their brand choice, suggesting that trust is multidimensional and may be more strongly grounded in functional reliance than in emotional conviction. This finding is consistent with Chaudhuri's (1995) characterisation of brand equity as rooted in perceptual associations, which can be differentially reinforced depending on the nature of packaging cues encountered.

Table 5: Respondents' Beverage Brand Association

Brand Association Item	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
My preferred beverage brand is fault-free	104 (30.1%)	102 (26.5%)	104 (30.1%)	18 (5.2%)	18 (5.2%)
My preferred beverage brand is nutritionally rich	86 (24.9%)	104 (30.1%)	88 (25.4%)	34 (9.8%)	34 (9.8%)
My preferred beverage brand is flawless in its production	106 (30.6%)	102 (29.5%)	122 (35.3%)	11 (3.2%)	5 (1.5%)

Source: Field Survey, 2025

The brand association data in Table 5 suggest predominantly positive brand associations among respondents. Approximately 56.6% agreed that their preferred beverage brand is fault-free, and 60.1% perceived their brand as flawless in production. Nutritional richness generated a less settled response, with 25.4% undecided — an indication that packaging material may be less effective in communicating nutritional attributes than product quality or production standards. This aligns with Underwood's (2003) argument that symbolic packaging features shape brand associations at the cognitive level.

Data Analysis and Hypothesis Testing

Multiple regression analysis was conducted to test each of the three null hypotheses. The independent variables in each model comprised five packaging material attributes: material quality (X_1), material durability (X_2), material safety (X_3), material sophistication (X_4), and perceived material cost (X_5). The regression equation applied was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Hypothesis One: Package Material and Brand Awareness

H_0 : There is no significant relationship between packaging material attributes and beverage brand awareness among postgraduate students.

Table 6: Model Summary — Brand Awareness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.658	.434	.425	.91970

Source: SPSS Output, 2025

Table 7: ANOVA — Brand Awareness

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	220.136	5	44.027	52.051	.000
Residual	287.586	340	.846		
Total	507.723	345			

Source: SPSS Output, 2025

Table 8: Coefficients — Brand Awareness

Predictor Variable	B	Std. Error	Beta	t	Sig.
(Constant)	1.874	.279		6.709	.000
Material Quality (X ₁)	.191	.040	.208	4.790	.000
Material Durability (X ₂)	.344	.042	.417	8.114	.000
Material Safety (X ₃)	-.090	.044	-.107	-2.040	.042
Material Sophistication (X ₄)	-.357	.041	-.392	-8.729	.000
Perceived Material Cost (X ₅)	.148	.055	.130	2.700	.007

Source: SPSS Output, 2025

The regression results for brand awareness demonstrate a moderate-to-strong positive association between packaging material attributes and brand awareness ($R = 0.658$, $R^2 = 0.434$, $F = 52.051$, $p < 0.001$). The model accounts for 43.4% of the variance in brand awareness, with the adjusted R^2 of 0.425 confirming the model's stability across variable additions or deletions. Three predictors — material quality, durability, and perceived cost — registered positive and statistically significant beta values, while material sophistication and safety exerted significant negative effects. The resulting model is expressed as:

$$\text{Brand Awareness} = 1.874 + 0.191 (\text{Material Quality}) + 0.344 (\text{Material Durability}) + 0.148 (\text{Perceived Cost}) - 0.357 (\text{Material Sophistication}) - 0.090 (\text{Material Safety})$$

These findings support the rejection of the first null hypothesis and confirm a significant relationship between packaging material attributes and beverage brand awareness. Material durability emerged as the most potent positive predictor ($\beta = 0.417$), which aligns with Underwood et al.'s (2001) argument that structural packaging features that communicate product longevity and reliability reinforce brand salience in the consumer's mind. The negative influence of material sophistication on awareness warrants attention: it suggests that overly elaborate or premium-signalling packaging may paradoxically reduce the cognitive accessibility of the brand, possibly by creating perceptual complexity or misalignment with the consumer's price-quality schema — a phenomenon consistent with the cue incongruity findings of Schmitt and Simonson (1995).

Hypothesis Two: Package Material and Brand Association

H₀: There is no significant relationship between packaging material attributes and beverage brand association among postgraduate students.

Table 9: Model Summary — Brand Association

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.493	.243	.232	.96532

Source: SPSS Output, 2025

Table 10: ANOVA — Brand Association

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	101.761	5	20.352	21.841	.000
Residual	316.828	340	.932		
Total	418.590	345			

Source: SPSS Output, 2025

Table 11: Coefficients — Brand Association

Predictor Variable	B	Std. Error	Beta	t	Sig.
(Constant)	3.065	.293		10.452	.000
Material Quality (X ₁)	.079	.042	.094	1.877	.061
Material Durability (X ₂)	-.374	.044	-.499	-8.404	.000
Material Safety (X ₃)	.001	.047	.002	.026	.979
Material Sophistication (X ₄)	-.039	.043	-.047	-.909	.364
Perceived Material Cost (X ₅)	.057	.058	.055	.981	.327

Source: SPSS Output, 2025

The brand association model yielded a moderate relationship ($R = 0.493$, $R^2 = 0.243$, $F = 21.841$, $p < 0.001$), with packaging material attributes collectively accounting for 24.3% of the variance in brand association. Material durability was the sole statistically significant predictor ($\beta = -0.499$, $p < 0.001$), and its negative coefficient is theoretically noteworthy. The derived model is:

$$\text{Brand Association} = 3.065 - 0.374 (\text{Material Durability})$$

The inverse relationship between material durability and brand association suggests a counterintuitive dynamic: as consumers' valuation of packaging durability increases, their positive associative beliefs about the brand (e.g., fault-free quality and nutritional richness) may actually decline. One plausible interpretation is that when packaging material durability is particularly salient to consumers, it may draw cognitive attention to the packaging itself rather than to the brand's product attributes, thereby diluting the associative network around product quality. This finding bears conceptual similarity to Keller's (1993) warning that package-level associations can sometimes overshadow or compete with product-level brand associations, particularly when the packaging cue is disproportionately prominent. The null hypothesis for brand association is accordingly rejected.

Hypothesis Three: Package Material and Brand Trust

H₀: There is no significant relationship between packaging material attributes and beverage brand trust among postgraduate students.

Table 12: Model Summary — Brand Trust

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.506	.256	.245	.73092

Source: SPSS Output, 2025

Table 13: ANOVA — Brand Trust

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	62.359	5	12.472	23.345	.000
Residual	181.641	340	.534		
Total	244.000	345			

Source: SPSS Output, 2025

Table 14: Coefficients — Brand Trust

Predictor Variable	B	Std. Error	Beta	t	Sig.
(Constant)	2.950	.222		13.287	.000
Material Quality (X ₁)	.014	.032	.022	.448	.655
Material Durability (X ₂)	-.318	.034	-.556	-9.448	.000
Material Safety (X ₃)	-.161	.035	-.275	-4.576	.000
Material Sophistication (X ₄)	.036	.033	.058	1.120	.264
Perceived Material Cost (X ₅)	.124	.044	.157	2.837	.005

Source: SPSS Output, 2025

For brand trust, the regression analysis yielded $R = 0.506$, $R^2 = 0.256$, and $F = 23.345$ ($p < 0.001$), indicating a statistically significant model that accounts for 25.6% of the variance in consumer brand trust. Two predictors — material durability and material safety — were significant at $p < 0.001$, both exerting negative effects, while perceived cost emerged as a positive and significant predictor ($p = 0.005$). The derived model is:

Brand Trust = 2.950 - 0.318 (Material Durability) - 0.161 (Material Safety) + 0.124 (Perceived Cost)

The negative effects of durability and safety on brand trust may appear counterintuitive at first glance; however, they may reflect an expectation gap: when consumers assign high importance to packaging durability and safety, their trust in the brand may be inversely shaped by perceived shortfalls in these attributes rather than their presence alone. This is consistent with the expectancy-disconfirmation paradigm, wherein heightened consumer expectations generated by packaging cues create vulnerability to trust erosion when those expectations are not fully met (Oliver, 1980). Conversely, the positive influence of perceived cost on brand trust aligns with price-quality heuristics documented in

consumer behaviour literature (Batra & Homer, 2004), where a premium cost signal embedded in packaging enhances perceptions of brand reliability and worth. The null hypothesis for brand trust is therefore rejected.

Discussion of Findings and Conclusion

This study set out to empirically determine whether and how packaging material attributes influence three core dimensions of beverage brand equity — brand awareness, brand association, and brand trust — among postgraduate students in Edo and Delta States, Nigeria. The findings convincingly support the proposition that packaging material is not a peripheral or purely functional concern but a strategically active element of brand equity formation.

With respect to brand awareness, packaging material characteristics collectively explain 43.4% of variance, with material durability and quality functioning as the strongest positive drivers. This indicates that consumers whose value systems are anchored in durable, quality-signalling packaging are more likely to develop deep, recall-ready brand awareness. These findings extend and corroborate the theoretical positions advanced by Keller (1993) on the role of brand cues in awareness formation and by Underwood (2003) on the symbolic communicative role of packaging.

Regarding brand association, the model explains 24.3% of variance, with material durability exerting a significant negative effect. The unexpected inverse relationship between packaging durability and brand association invites theoretical reflection: it suggests that when packaging durability becomes a salient cognitive reference point for consumers, it may reshape how they mentally categorise the brand's product-level attributes. Brands whose packaging is perceived as highly durable may face the challenge of separating packaging equity from product equity in the consumer's associative memory.

For brand trust, the study finds that durability and safety perceptions negatively predict trust, while perceived cost acts as a positive trust-builder. The combined explanation of 25.6% of variance by packaging material factors is substantial, given that brand trust is widely acknowledged to be shaped by a broad constellation of variables including personal experience, word-of-mouth, and corporate reputation. The implication is that packaging material signals of cost and quality credibility play a meaningful role in the consumer's overall trust calculus.

Collectively, these findings affirm that packaging material characteristics constitute a legitimate and measurable antecedent of consumer-based brand equity in the beverage sector. They extend existing consumer behaviour and brand management literature into an under-studied African market context, offering both theoretical enrichment and empirical grounding for packaging-as-brand-equity scholarship.

Recommendations

Based on the study's findings, the following recommendations are offered to beverage manufacturers, brand managers, and packaging designers operating in the Nigerian market and similar emerging economy contexts:

First, beverage manufacturers should invest deliberately in the durability and quality of packaging materials as core brand-building instruments, not merely as cost items. Given that material durability was the strongest positive predictor of brand awareness, firms that prioritise packaging robustness are likely to cultivate more visible and recall-efficient brands in competitive shelf environments. This investment should be treated as a brand asset rather than an operational expense, aligning packaging strategy with the broader brand equity framework advocated by Keller (1993).

Second, since material durability was found to inversely relate to brand association, brand managers must be attentive to the risk of packaging-product dissociation. When packaging material durability commands disproportionate consumer attention, the product's core attributes and personality may be overshadowed. Brands should ensure that durable packaging communicates not only physical resilience but also the quality and identity of the enclosed product through complementary visual and informational design elements. A holistic packaging design approach that integrates material quality with product attribute signalling is recommended.

Third, given that perceived packaging cost positively predicts brand trust, brands targeting trust-sensitive consumer segments should consider the strategic use of premium material cues — even at modest cost premiums — to enhance consumer confidence. Price-quality associations embedded in packaging material can serve as a low-cost trust-signalling mechanism, particularly relevant in markets where other trust-building channels (e.g., formal brand communication or established brand heritage) are less accessible.

Fourth, the finding that packaging safety has a negative relationship with brand trust warrants a consumer education dimension in brand communication strategies. Brands should proactively communicate safety credentials through labelling, certification marks, and regulatory compliance information embedded in or attached to the packaging. This can help convert abstract safety concerns into trust-building brand attributes, reducing the expectation-gap dynamics identified in this study.

Fifth, future research should extend the scope of this inquiry to broader demographic and geographic samples, including female-majority samples, rural consumers, and lower-income market segments, which may exhibit different brand equity sensitivity to packaging material cues. Longitudinal designs would also be valuable in capturing the cumulative and evolving effects of packaging material attributes on brand equity over time. Researchers may additionally consider examining interaction effects between packaging material attributes and product category characteristics to develop more nuanced theoretical models.

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