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COFFEE BRAND PREFERENCE AND CONSUMER BEHAVIOR: AN INTEGRATED AHP-TOPSIS MULTI-CRITERIA DECISION ANALYSIS

Asst. Prof. Dr. Mustafa Seçkin Şalvarlı

Department of Office Services and Secretarial Studies,
İzmir Vocational School, Dokuz Eylül University, İzmir, Türkiye

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ABSTRACT

Coffee-brand choice requires simultaneous evaluation of sensory quality, price-value, trust, access, ethical sourcing, assortment, and service experience. This study develops an integrated Analytic Hierarchy Process (AHP)-Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS) framework linking consumer motives with coffee-brand preference. Seven criteria and five anonymized brand archetypes are assessed using a fully disclosed synthetic dataset. AHP yields a consistent priority structure ($CR = 0.009$), led by sensory quality (31.0%), price-value (19.1%), and brand trust and reputation (17.3%). TOPSIS ranks the specialty-roaster archetype first ($C = 0.544$), followed by the global premium chain (0.482), sustainability-led brand (0.469), domestic mainstream chain (0.461), and value retail brand (0.455). Segment scenarios produce preference reversals: specialty leads quality-focused consumers, value retail leads value-convenience consumers, and sustainability-led leads ethics-experience consumers. A 10,000-draw Dirichlet simulation assigns specialty a 69.3% first-rank probability, showing that weight uncertainty creates competitive risk. The framework contributes a transparent bridge between consumer-behavior constructs and brand strategy. Because all numerical inputs are illustrative, the findings demonstrate the method rather than estimate the market and should be replicated with survey, sensory, transaction, or expert data.

KEYWORDS: Coffee sector; brand preference; consumer behavior; AHP; TOPSIS; sustainability; customer experience; multi-criteria decision-making.

DATA STATUS: *All brand profiles, pair wise judgments, performance ratings, consumer-segment weights, and robustness simulations are illustrative and synthetic; they are not observations from actual consumers, experts, or commercial brands.*

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1.0 INTRODUCTION

Coffee purchases combine routine consumption with symbolic and experiential choice. A consumer may seek reliable taste on one occasion, rapid access on another, and origin transparency or a distinctive cafe atmosphere on a third. Reviews of coffee behavior therefore describe a decision system shaped by personal preferences, economic attributes, product cues, consumption context, and socio-demographic conditions (Samoggia & Riedel, 2018). Motives also extend beyond stimulation: taste and pleasure, habit, culture, socialization, functional needs, and emotional responses coexist in coffee consumption (Samoggia & Riedel, 2019; Samoggia et al., 2020). The implication is that brand preference cannot be represented adequately by a single attitude score or by market share alone.

Brand theory provides a complementary explanation. Customer-based brand equity rests on awareness and favorable, strong, and distinctive associations (Aaker, 1991; Keller, 1993). Perceived quality and value guide choice (Zeithaml, 1988; Sweeney & Soutar, 2001), while credibility and trust reduce perceived risk (Chaudhuri & Holbrook, 2001; Delgado-Ballester, 2004; Erdem & Swait, 2004). Satisfaction may then consolidate loyalty, but loyalty is a staged commitment rather than automatic repeat behavior (Anderson & Sullivan, 1993; Oliver, 1999). In service-intensive coffee settings, the brand is additionally performed through staff behavior, the servicescape, sensory cues, and digital interactions (Bitner, 1992; Brakus et al., 2009; Lemon & Verhoef, 2016).

The coffee context also makes ethical attributes unusually visible. Fair-trade, organic, bird-friendly, and related claims can influence willingness to pay and sometimes sensory judgments, although responses vary across individuals, information treatments, and price conditions (De Pelsmacker et al., 2005; Sörqvist et al., 2013; Van Loo et al., 2015; Fuller & Grebitus, 2023; Grunert et al., 2024). This heterogeneity creates a managerial problem: a brand may be superior on one criterion and inferior on another, and consumers disagree about the importance of each criterion.

Multi-criteria decision-making (MCDM) offers an auditable way to model such trade-offs. AHP structures and weights criteria through pairwise comparisons, while TOPSIS ranks alternatives by proximity to an ideal profile and distance from an anti-ideal profile (Saaty, 1980, 2008; Hwang & Yoon, 1981). The combination is useful when interpretability, consistency checking, and scenario analysis are more important than estimating causal effects. Despite extensive use of AHP and TOPSIS in operations and sustainability decisions (Ishizaka & Labib, 2011; Behzadian et al., 2012; Mardani et al., 2015), their transparent integration with coffee-brand choice remains underdeveloped.

Accordingly, this article asks four questions: (RQ1) Which criteria dominate an integrated evaluation of coffee brands? (RQ2) Which brand archetype is closest to the ideal profile? (RQ3) How do plausible consumer orientations alter the ranking? (RQ4) How robust is the result to uncertainty in criterion importance? The contribution is methodological and managerial: it translates established consumer-behavior constructs into a reproducible decision model, explicitly separates illustrative inputs from empirical evidence, and shows how aggregate preference can diverge from segment-level choice.

2.0 THEORETICAL BACKGROUND

2.1 Coffee Choice as a Multi-Attribute Decision

Consumer choice is contingent and constructive. Individuals adapt decision strategies to task complexity, information availability, and effort (Payne et al., 1993), often using reasons, heuristics, and salient cues rather than stable utility functions (Tversky & Kahneman, 1974; Simonson, 1989). Coffee is particularly suitable for a multi-attribute lens because the product combines search attributes (price, package, label, outlet access), experience attributes (taste, aroma, atmosphere), and credence attributes (ethical sourcing, environmental performance). Theoretical attitude-intention models further imply that evaluations, norms, and perceived control jointly shape behavior (Ajzen, 1991). Consequently, a defensible brand-choice model must expose both performance ratings and importance weights.

2.2 Sensory Quality and Price-Value

Food choice begins with expected and experienced quality. Sensory properties such as aroma, flavor, freshness, mouthfeel, and consistency anchor the coffee proposition, while package and origin information shape expectations before consumption (Grunert, 2005). Empirical coffee research links sensory attributes, price, and label information, and finds that aromatic cues can be influential in preference formation (Barahona et al., 2020). Specialty-coffee consumers may also acquire connoisseurship through repeated comparison and ritualized tasting, investing time, attention, and cultural capital in quality differentiation (Quintao et al., 2017).

Price is not merely a sacrifice; it can act as a quality signal, reference point, or fairness cue. The perceived-value literature defines value as a trade-off between benefits received and costs given (Zeithaml, 1988; Woodruff, 1997). Monetary and non-monetary benefits jointly form functional, emotional, and social value (Sweeney & Soutar, 2001). Price, brand, and store information can interact in product evaluation (Dodds et al., 1991), which is why this study models price-value as a benefit criterion rather than treating nominal price as a cost criterion.

2.3 Brand Equity, Trust, and Loyalty

Strong brands simplify choice by organizing memory and signaling predictable performance. Brand awareness and image create customer-based equity (Keller, 1993), while perceived quality, associations, and loyalty reinforce market response (Aaker, 1991; Yoo et al., 2000). Brand credibility can increase consideration and choice by lowering information costs and risk (Erdem & Swait, 2004; Erdem et al., 2006). Trust is especially relevant where quality varies by location, preparation, or employee, because consumers need confidence that the promised experience will be delivered (Chaudhuri & Holbrook, 2001; Delgado-Ballester, 2004). When positive associations become emotionally integrated, brand love can deepen identification and advocacy (Batra et al., 2012).

Loyalty requires more than repeat purchase. Dick and Basu (1994) distinguish relative attitude from patronage behavior; Oliver (1999) frames loyalty as cognitive, affective, conative, and action phases. Satisfaction is an important precursor (Fornell et al., 1996), yet service settings show that brand equity dimensions may affect loyalty directly and through satisfaction (Nam et al., 2011). Coffee-shop research similarly indicates that experiential marketing operates through brand image

and that sensory and intellectual experiences can support satisfaction, advocacy, and repurchase intentions (Chang, 2020; Meeprom & Kokkhangplu, 2025).

2.4 Convenience, Assortment, and Brand Experience

Convenience includes outlet reach, queue time, mobile ordering, delivery, opening hours, product availability, and frictionless payment. These features increase perceived behavioral control and reduce the effort component of value. Variety and innovation are related but distinct: consumers may value customization, brewing alternatives, seasonal offerings, dairy substitutes, and product discovery, yet excessive choice can also impose cognitive costs. This duality justifies keeping variety as a separate, relatively lower-weight criterion in the illustrative model.

Experience incorporates the consumer's sensory, affective, intellectual, and behavioral responses to brand stimuli (Brakus et al., 2009). The servicescape shapes approach and avoidance behaviors (Bitner, 1992), while experiential consumption emphasizes fantasy, feeling, and fun alongside utility (Holbrook & Hirschman, 1982; Schmitt, 1999). Across the customer journey, experiences accumulate through advertising, search, purchase, use, service recovery, and advocacy (Lemon & Verhoef, 2016). In coffee retail, this means that staff competence, music, aroma, seating, community, loyalty applications, and social-media interaction can all enter brand preference.

2.5 Sustainability and Ethical Sourcing

Ethical attributes are credence qualities: consumers generally cannot verify them through consumption and therefore depend on certification, traceability, and brand credibility. Fair-trade consumption research shows positive willingness-to-pay among identifiable segments, but premiums and price sensitivity vary (De Pelsmacker et al., 2005; Loureiro & Lotade, 2005; Arnot et al., 2006; Didier & Lucie, 2008; Andorfer & Liebe, 2012; Hainmueller et al., 2015; Lingnau et al., 2019). Cross-cultural research also documents value for origin and ethical production attributes (Sepulveda et al., 2016), while environmental and altruistic attitudes, visual attention, and certification design produce heterogeneous responses (Maaya et al., 2018; Van Loo et al., 2015; Liu et al., 2019).

Labels can change experienced taste through expectations, affect, or moral satisfaction (Grankvist et al., 2004). Eco-label cues have improved stated taste and willingness to pay even when the coffee itself was identical (Sorqvist et al., 2013). More recent evidence on bird-friendly coffee suggests that information can affect willingness to pay directly and indirectly through taste perception, although repetition can weaken or offset the effect (Grunert et al., 2024). Sustainable positioning therefore cannot substitute for sensory quality; it interacts with it. Attitude-behavior gaps also remain common in sustainable consumption (Vermeir & Verbeke, 2006; White et al., 2019).

Table 1: Operationalization of coffee-brand choice criteria

<i>Code</i>	<i>Criterion</i>	<i>Operational meaning</i>	<i>Selected foundation</i>
C1	Sensory quality	Taste, aroma, freshness, consistency	Samoggia & Riedel (2018); Barahona et al. (2020)
C2	Price-value	Perceived benefits relative to monetary	Zeithaml (1988); Sweeney

		sacrifice	& Soutar (2001)
C3	Brand trust and reputation	Credibility, reliability, familiarity	Keller (1993); Erdem & Swait (2004)
C4	Convenience and availability	Access, waiting time, channels, locations	Ajzen (1991); Lemon & Verhoef (2016)
C5	Sustainability and ethical sourcing	Credible environmental and social practices	Van Loo et al. (2015); Fuller & Grebitus (2023)
C6	Product variety and innovation	Range, customization, seasonal and novel offers	Payne et al. (1993); Samoggia & Riedel (2018)
C7	Service and brand experience	Staff, atmosphere, sensory and digital experience	Brakus et al. (2009); Chang (2020)

***Note.** The criteria are intentionally non-overlapping at the operational level, although consumer perceptions may be correlated in empirical data.*

2.6 Research Gap and Analytical Proposition

Existing studies identify important determinants of coffee consumption, brand relationships, sustainable labels, and cafe experience. However, explanatory models and choice experiments typically estimate average effects, while managerial selection problems require an explicit ranking under competing objectives. The AHP-TOPSIS framework addresses this gap by (a) translating theory into a criterion hierarchy, (b) testing whether judgments are internally consistent, (c) benchmarking brands against ideal and anti-ideal profiles, and (d) exposing preference reversals through segmentation and sensitivity analysis. The analytical proposition is that aggregate brand preference will be dominated by sensory quality and value, but segment priorities will produce different first-choice brands.

3.0 METHODOLOGY

3.1 Research Design and Data Status

This is a methodological demonstration, not an empirical report. All pairwise comparisons and alternative scores are synthetic, literature-informed inputs constructed to represent plausible strategic profiles. No respondents, experts, transactions, or named commercial brands were evaluated. This design permits full disclosure and reproducibility while avoiding false claims of data collection. For an empirical replication, researchers should replace the AHP matrix with geometrically aggregated expert or consumer judgments and replace the TOPSIS matrix with standardized survey, sensory-panel, transaction, audit, or mystery-shopping measures. Group judgments should be aggregated at the judgment level when the decision unit is collective (Forman & Peniwati, 1998).

The unit of analysis is a brand archetype rather than a particular company. Five archetypes cover common competitive positions in coffee retail and packaged coffee. Anonymization avoids implying factual performance for real firms and makes the framework portable across countries.

Table 2: Illustrative brand archetypes evaluated in the model

<i>Alt.</i>	<i>Archetype</i>	<i>Strategic profile</i>
A	Global premium chain	High recognition, broad access, standardized experience
B	Domestic mainstream chain	Local familiarity, competitive value, dense urban access
C	Specialty roaster	Origin-led coffee, superior sensory proposition, narrower reach
D	Value retail brand	Price-value leadership and broad convenience
E	Sustainability-led brand	Certified sourcing and purpose-led positioning

Note. Alternative labels A-E are used throughout the calculations. Profiles are not descriptions of actual companies.

3.2 AHP Weighting

AHP decomposes the goal into criteria and elicits the relative importance of each pair using Saaty's fundamental scale. For reciprocal matrix $A = [a_{ij}]$, a_{ij} expresses the importance of criterion i relative to criterion j , $a_{ji} = 1/a_{ij}$, and $a_{ii} = 1$. The priority vector w is obtained from the principal right eigenvector:

$$A w = \lambda_{\max} w, \quad \sum_i w_i = 1$$

Judgment coherence is evaluated with the consistency index $CI = (\lambda_{\max} - n)/(n - 1)$ and consistency ratio $CR = CI/RI$. For $n = 7$, the random index RI is 1.32; CR below 0.10 is conventionally considered acceptable (Saaty, 2008). Reviews note that AHP's value lies in structured decomposition, ratio priorities, and explicit consistency diagnostics, but also emphasize sensitivity analysis and careful elicitation (Ishizaka & Labib, 2011; Aguaron & Moreno-Jimenez, 2003).

Table 3: Saaty's fundamental pair wise-comparison scale

<i>Intensity</i>	<i>Interpretation</i>	<i>Use</i>
1	Equal importance	Two criteria contribute equally
3	Moderate importance	Experience slightly favors one criterion
5	Strong importance	Evidence or judgment strongly favors one
7	Very strong importance	Dominance is demonstrated in practice
9	Extreme importance	Highest defensible order of dominance
2, 4, 6, 8	Intermediate values	Compromise between adjacent judgments
Reciprocals	Inverse comparison	If $a_{ij} = x$, then $a_{ji} = 1/x$

3.3 TOPSIS Ranking

TOPSIS selects the alternative that is simultaneously nearest to the positive ideal and farthest from the negative ideal (Hwang & Yoon, 1981). Its intuitive geometry and computational transparency explain its broad adoption (Behzadian et al., 2012). Because C2 is defined as price-value rather than nominal price, all seven criteria are benefit criteria. The vector-normalized performance matrix is:

$$r_{ij} = x_{ij} / \sqrt{\sum_i x_{ij}^2}; \quad v_{ij} = w_j r_{ij}$$

Positive and negative ideal points are $A^+ = \{\max_i v_{ij}\}$ and $A^- = \{\min_i v_{ij}\}$. Euclidean separations and relative closeness are:

$$S_i^+ = \sqrt{\sum_j (v_{ij} - v_j^+)^2}; \quad S_i^- = \sqrt{\sum_j (v_{ij} - v_j^-)^2}$$

$$C_i = S_i^- / (S_i^+ + S_i^-), \quad 0 \leq C_i \leq 1$$

A larger C_i indicates a position closer to the ideal. TOPSIS is compensatory: strong performance on one criterion may offset weakness on another. This assumption should be reviewed before application, particularly if a brand must satisfy non-compensable thresholds for safety, certification, or service quality (Opricovic & Tzeng, 2004).

3.4 Segment and Robustness Analysis

Three consumer orientations are modeled with distinct, sum-to-one weight vectors: quality-focused, value-convenience, and ethics-experience. They are analytical scenarios, not statistically estimated segments. Robustness is assessed in three ways. First, equal weights provide a method-neutral benchmark. Second, every AHP weight is changed by -20% and +20%, one at a time, with re-normalization. Third, 10,000 weight vectors are drawn from a Dirichlet distribution centered on the AHP weights (concentration = 80; seed = 42). The simulation preserves positivity and unit sum and reports first-rank acceptability rather than a false confidence interval.

4.0 RESULTS

4.1 AHP Priorities and Consistency

Table 4: Illustrative AHP pairwise-comparison matrix

	C1	C2	C3	C4	C5	C6	C7
C1	1.000	2.000	2.000	3.000	3.000	5.000	4.000
C2	0.500	1.000	1.000	2.000	2.000	4.000	3.000
C3	0.500	1.000	1.000	2.000	2.000	3.000	2.000
C4	0.333	0.500	0.500	1.000	1.000	2.000	2.000
C5	0.333	0.500	0.500	1.000	1.000	2.000	1.000
C6	0.200	0.250	0.333	0.500	0.500	1.000	0.500
C7	0.250	0.333	0.500	0.500	1.000	2.000	1.000

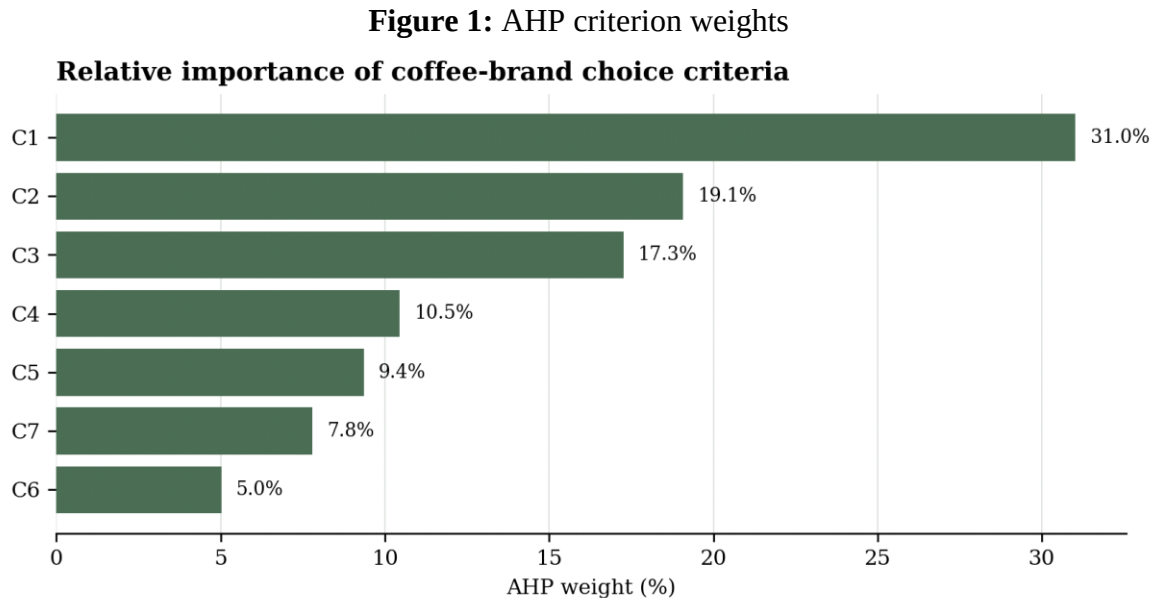
Note. Entries above the diagonal are illustrative judgments; entries below the diagonal are reciprocals. Values use the 1-9 AHP scale and its reciprocals.

Table 5: AHP criterion weights and consistency diagnostics

Cod e	Criterion	Weight	Share	Rank / diagnostic
C1	Sensory quality	0.3102	31.0%	1
C2	Price-value	0.1908	19.1%	2
C3	Brand trust and reputation	0.1727	17.3%	3
C4	Convenience and availability	0.1046	10.5%	4
C5	Sustainability and ethical sourcing	0.0935	9.4%	5
C6	Product variety and innovation	0.0503	5.0%	7

C7	Service and brand experience	0.0780	7.8%	6
-	Consistency diagnostics	$\lambda_{\max} = 7.0748$	CI = 0.0125	CR = 0.0094

Note. CR = 0.0094 is below 0.10, indicating acceptable internal consistency for the illustrative judgment matrix.



Note. C1 sensory quality is the dominant criterion; C1-C3 jointly account for 67.4% of total priority.

Sensory quality receives the largest weight (31.0%), followed by price-value (19.1%) and brand trust and reputation (17.3%). Together these criteria account for 67.4% of the decision. Convenience (10.5%) and sustainability (9.4%) form a second tier, while service experience (7.8%) and variety (5.0%) remain relevant but less decisive in the aggregate scenario. The pattern supports a hierarchy in which the core cup and the credibility-value proposition dominate supplementary benefits.

4.2 TOPSIS Performance Matrix and Ideal Solutions

Table 6: Illustrative brand performance decision matrix (1-9 benefit scale)

Alt.	C1	C2	C3	C4	C5	C6	C7
A	8.6	5.8	8.8	9.2	7.6	8.7	8.9
B	7.8	7.6	7.9	8.5	6.8	8.1	8.2
C	9.4	6.2	8.1	6.3	8.8	7.4	8.6
D	6.9	9.1	7.2	8.9	5.9	6.8	6.4
E	8.3	6.7	7.8	6.9	9.5	7.7	7.9

Note. All values are synthetic. Higher scores are better. C2 is perceived price-value, not nominal price.

Table 7: Weighted normalized TOPSIS matrix

Alt.	C1	C2	C3	C4	C5	C6	C7
A	0.1448	0.0690	0.0852	0.0535	0.0406	0.0252	0.0386

B	0.1313	0.0904	0.0765	0.0494	0.0363	0.0234	0.0355
C	0.1582	0.0737	0.0784	0.0366	0.0470	0.0214	0.0373
D	0.1161	0.1082	0.0697	0.0517	0.0315	0.0197	0.0277
E	0.1397	0.0797	0.0755	0.0401	0.0508	0.0223	0.0342

Table 8: Positive and negative ideal solutions

<i>Solution</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C5</i>	<i>C6</i>	<i>C7</i>
Positive ideal (A+)	0.1582	0.1082	0.0852	0.0535	0.0508	0.0252	0.0386
Negative ideal (A-)	0.1161	0.0690	0.0697	0.0366	0.0315	0.0197	0.0277

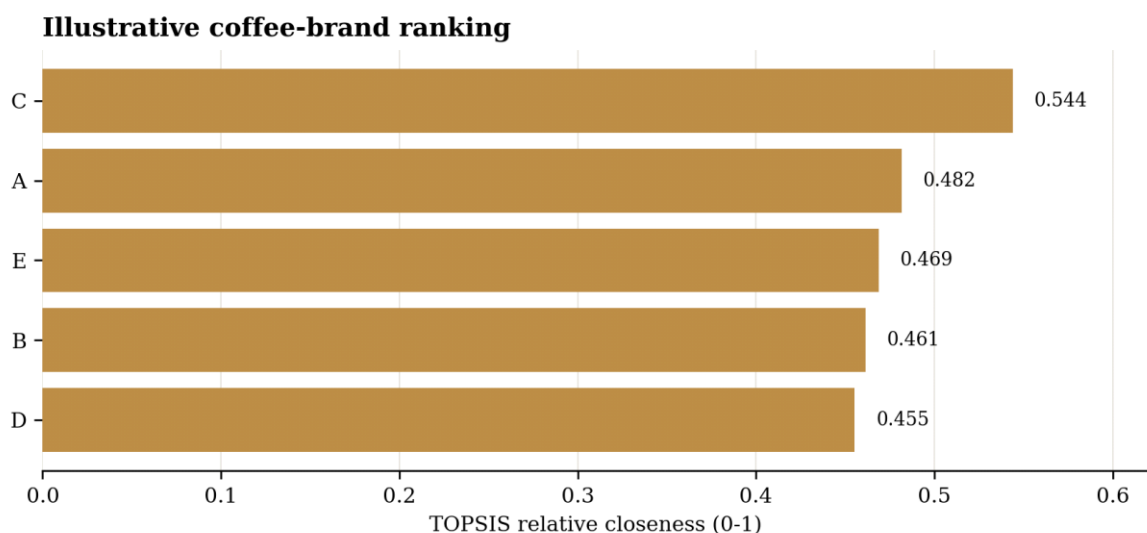
4.3 Aggregate Ranking

Table 9: TOPSIS distances, relative closeness, and final ranking

<i>Alt.</i>	<i>Brand archetype</i>	<i>S+</i>	<i>S-</i>	<i>C</i>	<i>Rank</i>
C	Specialty roaster	0.0394	0.0469	0.5440	1
A	Global premium chain	0.0427	0.0397	0.4815	2
E	Sustainability-led brand	0.0382	0.0337	0.4688	3
B	Domestic mainstream chain	0.0368	0.0315	0.4614	4
D	Value retail brand	0.0503	0.0420	0.4552	5

Note. A larger *C* value indicates greater relative proximity to the ideal brand profile.

Figure 2: Aggregate TOPSIS relative-closeness scores



Note. Alternative *C* is first. The compressed A-E middle range signals meaningful competitive substitutability and motivates robustness analysis.

Alternative C, the specialty roaster, ranks first ($C = 0.5440$). Its sensory-quality leadership and strong sustainability and experience scores compensate for weaker convenience and price-value. Alternative A is second (0.4815), supported by trust, convenience, assortment, and experience but constrained by value. Alternative E follows (0.4688) because its sustainability leadership is not

fully reinforced by access or value. Alternatives B (0.4614) and D (0.4552) remain competitive, and their proximity to the middle tier indicates that modest changes in consumer priorities can alter ordering.

4.4 Consumer-Orientation Scenarios

Table 10: Segment-specific weights and rankings

<i>Consumer orientation</i>	<i>Criterion-weight vector</i>	<i>Leader</i>	<i>Full ordering</i>
Quality-focused	C1=0.42, C2=0.10, C3=0.15, C4=0.08, C5=0.07, C6=0.06, C7=0.12	C	C>A>E>B>D
Value-convenience	C1=0.18, C2=0.33, C3=0.12, C4=0.20, C5=0.05, C6=0.05, C7=0.07	D	D>B>A>E>C
Ethics-experience	C1=0.22, C2=0.08, C3=0.14, C4=0.06, C5=0.28, C6=0.06, C7=0.16	E	E>C>A>B>D

Note. Segments are analytical scenarios, not clusters estimated from respondents.

The segment analysis produces three different leaders. Alternative C leads the quality-focused scenario ($C = 0.7190$), D leads the value-convenience scenario (0.7049), and E narrowly leads the ethics-experience scenario (0.7294) over C (0.7282). This is the central consumer-behavior finding: the same brand performance matrix generates preference reversals solely because consumers value attributes differently. Aggregate positioning should therefore be supplemented with segment-level value propositions.

4.5 Sensitivity and Rank Robustness

Table 11: One-at-a-time criterion-weight sensitivity analysis

<i>Scenario</i>	<i>Leader</i>	<i>Full ordering</i>
Equal weights	A	A>E>B>C>D
C1 -20%	C	C>D>B>A>E
C1 +20%	C	C>A>E>B>D
C2 -20%	C	C>A>E>B>D
C2 +20%	C	C>D>B>E>A
C3 -20%	C	C>A>E>B>D
C3 +20%	C	C>A>E>B>D
C4 -20%	C	C>E>A>B>D
C4 +20%	C	C>A>B>E>D
C5 -20%	C	C>A>B>D>E
C5 +20%	C	C>E>A>B>D
C6 -20%	C	C>A>E>B>D
C6 +20%	C	C>A>E>B>D
C7 -20%	C	C>A>E>B>D
C7 +20%	C	C>A>E>B>D

Note. The equal-weight benchmark ranks A first. In each perturbation scenario, the selected AHP weight is multiplied by 0.8 or 1.2 and the full vector is re-normalized. C remains first in all 14 perturbations; lower positions are less stable.

Table 12: Probabilistic rank acceptability under uncertain weights (10,000 draws)

<i>Alt.</i>	<i>Archetype</i>	<i>Rank 1</i>	<i>Rank 2</i>	<i>Rank 3</i>	<i>Mean C</i>
A	Global premium chain	7.7%	41.1%	18.1%	0.490
B	Domestic mainstream chain	0.5%	17.7%	26.9%	0.463
C	Specialty roaster	69.3%	13.1%	12.4%	0.545
D	Value retail brand	21.4%	10.9%	6.4%	0.450
E	Sustainability-led brand	1.1%	17.2%	36.2%	0.471

Note. *Dirichlet draws are centered on the AHP weights with concentration 80 and random seed 42. Percentages may not sum across the displayed ranks because ranks 4-5 are omitted.*

The equal-weight benchmark ranks A first ($A > E > B > C > D$), confirming that the AHP preference structure materially affects the result. The deterministic perturbations support a stable first-place result for C, but the complete ordering changes in most scenarios. The probabilistic analysis is more demanding: C ranks first in 69.3% of draws, while D ranks first in 21.4%, A in 7.7%, E in 1.1%, and B in 0.5%. D's first-rank share reflects sensitivity to the price-value and convenience weights. Thus, C is the robust aggregate leader under the stated AHP model, but not a universal winner.

5.0 DISCUSSION

5.1 Interpretation of the Main Pattern

The priority structure places the core product ahead of peripheral differentiation. This aligns with research that treats taste and pleasure as primary coffee motives and shows links among sensory attributes, label information, and price (Samoggia & Riedel, 2018; Barahona et al., 2020). Trust ranks third because coffee quality is difficult to inspect before purchase and may vary across batches, baristas, and outlets. A credible brand lowers this uncertainty and turns past experience into an expectation of future performance (Erdem & Swait, 2004).

Sustainability receives a material but non-dominant aggregate weight. This is consistent with the literature's mixed message: consumers often express positive attitudes and willingness to pay for ethical attributes, yet price, attention, credibility, and context constrains translation into purchase (De Pelsmacker et al., 2005; Van Loo et al., 2015; Fuller & Grebitus, 2023; Merbah & Benito-Hernandez, 2024). The near-tie between C and E among ethics-experience consumers also illustrates that ethical positioning competes through interaction with sensory and experiential quality, not through certification alone.

The rank reversal across segments is theoretically important. Aggregate weights describe a synthetic center of gravity, not a typical individual. A quality-focused consumer tolerates lower access to obtain superior sensory performance; a value-convenience consumer rewards availability and economic utility; an ethics-experience consumer prefers a purpose-led brand but still values taste and trust. This is compatible with adaptive decision-making and reason-based choice: preference is contingent on goals and context rather than fixed across occasions (Simonson, 1989; Payne et al., 1993).

5.2 Theoretical Contributions

- Construct integration: The model combines consumer-value, brand-equity, experiential, and sustainable-consumption constructs in a single explicit hierarchy.
- Preference decomposition: It distinguishes how much a criterion matters (AHP weight) from how well a brand performs (TOPSIS score), avoiding the common conflation of salience and performance.
- Heterogeneity visibility: Segment scenarios demonstrate that a market-wide rank is not a behavioral law; preference reversals are expected when value systems differ.
- Robustness as theory testing: Sensitivity analysis identifies which theoretical priorities must change before the managerial conclusion changes.
- Transparency: The study treats synthetic analysis as a reproducible proposition and specifies exactly how empirical data should replace illustrative inputs.

5.3 Managerial Implications

Table 13: Strategic implications by illustrative brand archetype

<i>Archetype</i>	<i>Priority</i>	<i>Recommended action</i>	<i>Primary risk</i>
A: Global premium	Defend trust and experience; close the price-value gap	Tiered offers, loyalty value, visible quality consistency	Price sensitivity
B: Domestic mainstream	Convert balanced performance into a distinctive reason to choose	Local relevance, signature products, service consistency	Strategic indistinctness
C: Specialty roaster	Scale access without diluting sensory authority	Selective channels, subscriptions, origin education	Convenience and value
D: Value retail	Protect value leadership while improving experience and ethics	Quality assurance, credible sourcing, service basics	Low differentiation
E: Sustainability-led	Translate purpose into sensory proof and easier access	Traceability, tasting evidence, channel expansion	Ethics-quality disconnect

Managers should not maximize every attribute indiscriminately. The weights indicate where marginal improvement is most likely to matter, while the performance matrix shows which gaps are brand-specific. For C, distribution and value communication are more urgent than adding variety. For D, modest improvements in sensory consistency, trust, and sourcing credibility may reduce its dependence on price. For E, sustainability claims should be paired with sensory demonstrations, transparent evidence, and convenient access. A and B need sharper value narratives to prevent their broad competence from becoming strategic sameness.

The model can also support resource allocation. A brand can replace synthetic scores with audited KPIs, simulate an improvement budget, and calculate whether raising a criterion score changes rank

or only narrows distance to the leader. Importantly, TOPSIS scores are relative to the considered set. Adding a disruptive low-price entrant, a digital-only subscription brand, or a luxury micro-roaster can change the ideal points and rankings; portfolio reviews should therefore define the competitive set carefully.

5.4 Implications for Consumer Research

An empirical study should combine stated and observed evidence. AHP or best-worst elicitation can estimate importance; blind and informed tastings can separate intrinsic sensory quality from label effects; transaction data can capture actual repeat purchase and price response; and audit data can measure access and sourcing claims. Latent-class or cluster analysis can first identify behavioral segments, after which group-specific AHP-TOPSIS models can be estimated. Researchers should test measurement invariance across countries and consumption modes because packaged coffee, takeaway beverages, and cafe visits involve different levels of service and social experience.

6.0 LIMITATIONS AND FUTURE RESEARCH

The main limitation is intentional: the numerical dataset is synthetic. The results demonstrate method behavior but cannot support prevalence estimates, causal claims, or recommendations about named companies. Second, the model assumes criteria independence and full compensability. In practice, sustainability information can alter taste perception, trust can condition label effects, and minimum standards may be non-compensable. Analytic Network Process, Choquet integrals, or outranking methods could model interaction or veto thresholds. Third, crisp scores suppress uncertainty in linguistic judgments; fuzzy AHP-TOPSIS or interval methods may be appropriate when respondents cannot express precise ratios.

Fourth, TOPSIS outcomes depend on normalization, distance metric, and competitive set. Replication should compare vector and linear normalization and, where useful, test VIKOR, PROMETHEE, or ELECTRE (Opricovic & Tzeng, 2004). Fifth, scenario segments are theory-driven rather than empirically recovered. Future work should estimate segment membership and validate rank predictions against real choice, willingness to pay, and retention. Longitudinal research could examine whether preferences shift with inflation, sustainability controversies, new product launches, or repeated exposure to specialty-coffee education.

7.0 CONCLUSION

Coffee-brand preference is a structured trade-off among the cup, the price-value exchange, the brand promise, access, ethical meaning, assortment, and experience. The integrated AHP-TOPSIS model makes those trade-offs visible. In the illustrative application, sensory quality dominates, the specialty-roaster archetype is the aggregate leader, and the first rank is stable under deterministic perturbations. Yet segment scenarios and probabilistic robustness analysis show that the value brand and sustainability-led brand can become preferred when consumer priorities change.

The practical lesson is not that one archetype is universally superior. It is that strategy should be evaluated against a transparent preference structure, differentiated by consumer orientation, and tested for robustness before resources are committed. The article provides a complete

computational template for doing so, while its disclosure safeguards a necessary boundary: illustrative analysis is a model to be tested, not evidence to be claimed.

REFERENCES

- Aaker, D. A. (1991). Managing brand equity. Free Press.
- Aguaron, J., & Moreno-Jimenez, J. M. (2003). The geometric consistency index: Approximated thresholds. *European Journal of Operational Research*, 147(1), 137-145. [https://doi.org/10.1016/S0377-2217\(02\)00255-1](https://doi.org/10.1016/S0377-2217(02)00255-1)
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Anderson, E. W., & Sullivan, M. W. (1993). The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, 12(2), 125-143. <https://doi.org/10.1287/mksc.12.2.125>
- Andorfer, V. A., & Liebe, U. (2012). Research on fair trade consumption-A review. *Journal of Business Ethics*, 106, 415-435. <https://doi.org/10.1007/s10551-011-1008-5>
- Arnot, C., Boxall, P. C., & Cash, S. B. (2006). Do ethical consumers care about price? A revealed preference analysis of fair trade coffee purchases. *Canadian Journal of Agricultural Economics*, 54(4), 555-565. <https://doi.org/10.1111/j.1744-7976.2006.00066.x>
- Barahona, I., Sanmiguel Jaimes, E. M., & Yang, J.-B. (2020). Sensory attributes of coffee beverages and their relation to price and package information: A case study of Colombian customers' preferences. *Food Science & Nutrition*, 8(2), 1173-1186. <https://doi.org/10.1002/fsn3.1404>
- Batra, R., Ahuvia, A., & Bagozzi, R. P. (2012). Brand love. *Journal of Marketing*, 76(2), 1-16. <https://doi.org/10.1509/jm.09.0339>
- Behzadian, M., Otaghsara, S. K., Yazdani, M., & Ignatius, J. (2012). A state-of-the-art survey of TOPSIS applications. *Expert Systems with Applications*, 39(17), 13051-13069. <https://doi.org/10.1016/j.eswa.2012.05.056>
- Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing*, 56(2), 57-71. <https://doi.org/10.1177/002224299205600205>
- Brakus, J. J., Schmitt, B. H., & Zarantonello, L. (2009). Brand experience: What is it? How is it measured? Does it affect loyalty? *Journal of Marketing*, 73(3), 52-68. <https://doi.org/10.1509/jmkg.73.3.52>
- Chang, W.-J. (2020). Experiential marketing, brand image and brand loyalty: A case study of Starbucks. *British Food Journal*, 123(1), 209-223. <https://doi.org/10.1108/BFJ-01-2020-0014>
- Chaudhuri, A., & Holbrook, M. B. (2001). The chain of effects from brand trust and brand affect to brand performance: The role of brand loyalty. *Journal of Marketing*, 65(2), 81-93. <https://doi.org/10.1509/jmkg.65.2.81.18255>
- De Pelsmacker, P., Driesen, L., & Rayp, G. (2005). Do consumers care about ethics? Willingness to pay for fair-trade coffee. *Journal of Consumer Affairs*, 39(2), 363-385. <https://doi.org/10.1111/j.1745-6606.2005.00019.x>
- Delgado-Ballester, E. (2004). Applicability of a brand trust scale across product categories: A multigroup invariance analysis. *European Journal of Marketing*, 38(5/6), 573-592. <https://doi.org/10.1108/03090560410529222>

- Dick, A. S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22, 99-113. <https://doi.org/10.1177/0092070394222001>
- Didier, T., & Lucie, S. (2008). Measuring consumer's willingness to pay for organic and fair trade products. *International Journal of Consumer Studies*, 32(5), 479-490. <https://doi.org/10.1111/j.1470-6431.2008.00714.x>
- Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, 28(3), 307-319. <https://doi.org/10.1177/002224379102800305>
- Erdem, T., & Swait, J. (2004). Brand credibility, brand consideration, and choice. *Journal of Consumer Research*, 31(1), 191-198. <https://doi.org/10.1086/383434>
- Erdem, T., Swait, J., & Valenzuela, A. (2006). Brands as signals: A cross-country validation study. *Journal of Marketing*, 70(1), 34-49. <https://doi.org/10.1509/jmkg.2006.70.1.34>
- Forman, E., & Peniwati, K. (1998). Aggregating individual judgments and priorities with the analytic hierarchy process. *European Journal of Operational Research*, 108(1), 165-169. [https://doi.org/10.1016/S0377-2217\(97\)00244-0](https://doi.org/10.1016/S0377-2217(97)00244-0)
- Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American Customer Satisfaction Index: Nature, purpose, and findings. *Journal of Marketing*, 60(4), 7-18. <https://doi.org/10.1177/002224299606000403>
- Fuller, K., & Grebitus, C. (2023). Consumers' preferences and willingness to pay for coffee sustainability labels. *Agribusiness*, 39(4), 1007-1025. <https://doi.org/10.1002/agr.21810>
- Grankvist, G., Lekedal, H., & Marmendal, M. (2004). Values and eco- and fair-trade labelled products. *European Review of Applied Psychology*, 54(4), 299-305. <https://doi.org/10.1016/j.erap.2004.06.017>
- Grunert, K. G. (2005). Food quality and safety: Consumer perception and demand. *European Review of Agricultural Economics*, 32(3), 369-391. <https://doi.org/10.1093/eurrag/jbi011>
- Grunert, K. G., Seo, H.-S., Fang, D., Hogan, V. J., & Nayga, R. M. (2024). Sustainability information, taste perception and willingness to pay: The case of bird-friendly coffee. *Food Quality and Preference*, 115, 105124. <https://doi.org/10.1016/j.foodqual.2024.105124>
- Hainmueller, J., Hiscox, M. J., & Sequeira, S. (2015). Consumer demand for fair trade: Evidence from a multistore field experiment. *Review of Economics and Statistics*, 97(2), 242-256. https://doi.org/10.1162/REST_a_00467
- Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. *Journal of Consumer Research*, 9(2), 132-140. <https://doi.org/10.1086/208906>
- Hwang, C.-L., & Yoon, K. (1981). Multiple attribute decision making: Methods and applications. Springer-Verlag.
- Ishizaka, A., & Labib, A. (2011). Review of the main developments in the analytic hierarchy process. *Expert Systems with Applications*, 38(11), 14336-14345. <https://doi.org/10.1016/j.eswa.2011.04.143>
- Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing*, 57(1), 1-22. <https://doi.org/10.1177/002224299305700101>
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69-96. <https://doi.org/10.1509/jm.15.0420>

- Lingnau, V., Fuchs, F., & Beham, F. (2019). The impact of sustainability in coffee production on consumers' willingness to pay-new evidence from the field of ethical consumption. *Journal of Management Control*, 30, 65-93. <https://doi.org/10.1007/s00187-019-00276-x>
- Liu, C.-C., Chen, C.-W., & Chen, H.-S. (2019). Measuring consumer preferences and willingness to pay for coffee certification labels in Taiwan. *Sustainability*, 11(5), 1297. <https://doi.org/10.3390/su11051297>
- Loureiro, M. L., & Lotade, J. (2005). Do fair trade and eco-labels in coffee wake up the consumer conscience? *Ecological Economics*, 53(1), 129-138. <https://doi.org/10.1016/j.ecolecon.2004.11.002>
- Maaya, L., Meulders, M., Surmont, N., & Vandebroek, M. (2018). Effect of environmental and altruistic attitudes on willingness-to-pay for organic and fair trade coffee in Flanders. *Sustainability*, 10(12), 4496. <https://doi.org/10.3390/su10124496>
- Mardani, A., Jusoh, A., Nor, K. M. D., Khalifah, Z., Zakwan, N., & Valipour, A. (2015). Multiple criteria decision-making techniques and their applications-A review of the literature from 2000 to 2014. *Economic Research-Ekonomska Istrazivanja*, 28(1), 516-571. <https://doi.org/10.1080/1331677X.2015.1075139>
- Meeprom, S., & Kokkhangplu, A. (2025). Customer experience and satisfaction in coffee consumption: An experiential marketing perspective. *Cogent Business & Management*, 12(1), 2450296. <https://doi.org/10.1080/23311975.2025.2450296>
- Merbah, N., & Benito-Hernandez, S. (2024). Consumer willingness-to-pay for sustainable coffee: Evidence from a choice experiment on Fairtrade and UTZ certification. *Sustainability*, 16(8), 3222. <https://doi.org/10.3390/su16083222>
- Nam, J., Ekinci, Y., & Whyatt, G. (2011). Brand equity, brand loyalty and consumer satisfaction. *Annals of Tourism Research*, 38(3), 1009-1030. <https://doi.org/10.1016/j.annals.2011.01.015>
- Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing*, 63(Special Issue), 33-44. <https://doi.org/10.1177/00222429990634s105>
- Opricovic, S., & Tzeng, G.-H. (2004). Compromise solution by MCDM methods: A comparative analysis of VIKOR and TOPSIS. *European Journal of Operational Research*, 156(2), 445-455. [https://doi.org/10.1016/S0377-2217\(03\)00020-1](https://doi.org/10.1016/S0377-2217(03)00020-1)
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1993). *The adaptive decision maker*. Cambridge University Press.
- Quintao, R. T., Brito, E. P. Z., & Belk, R. W. (2017). The taste transformation ritual in the specialty coffee market. *Revista de Administracao de Empresas*, 57(5), 483-494. <https://doi.org/10.1590/S0034-759020170506>
- Saaty, T. L. (1980). *The analytic hierarchy process*. McGraw-Hill.
- Saaty, T. L. (2008). Decision making with the analytic hierarchy process. *International Journal of Services Sciences*, 1(1), 83-98. <https://doi.org/10.1504/IJSSCI.2008.017590>
- Samoggia, A., & Riedel, B. (2018). Coffee consumption and purchasing behavior review: Insights for further research. *Appetite*, 129, 70-81. <https://doi.org/10.1016/j.appet.2018.07.002>
- Samoggia, A., Del Prete, M., & Argenti, C. (2020). Functional needs, emotions, and perceptions of coffee consumers and non-consumers. *Sustainability*, 12(14), 5694. <https://doi.org/10.3390/su12145694>

- Samoggia, A., & Riedel, B. (2019). Consumers' perceptions of coffee health benefits and motives for coffee consumption and purchasing. *Nutrients*, 11(3), 653. <https://doi.org/10.3390/nu11030653>
- Schmitt, B. H. (1999). *Experiential marketing*. Free Press.
- Sepulveda, W. S., Chekmam, L., Maza, M. T., & Mancilla, N. O. (2016). Consumers' preference for the origin and quality attributes associated with production of specialty coffees: Results from a cross-cultural study. *Food Research International*, 89, 997-1003. <https://doi.org/10.1016/j.foodres.2016.03.039>
- Simonson, I. (1989). Choice based on reasons: The case of attraction and compromise effects. *Journal of Consumer Research*, 16(2), 158-174. <https://doi.org/10.1086/209205>
- Sorqvist, P., Hedblom, D., Holmgren, M., Haga, A., Langeborg, L., Nostl, A., & Kareklint, A. (2013). Who needs cream and sugar when there is eco-labeling? Taste and willingness to pay for eco-friendly coffee. *PLOS ONE*, 8(12), e80719. <https://doi.org/10.1371/journal.pone.0080719>
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203-220. [https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/10.1016/S0022-4359(01)00041-0)
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185(4157), 1124-1131. <https://doi.org/10.1126/science.185.4157.1124>
- Van Loo, E. J., Caputo, V., Nayga, R. M., Jr., Seo, H.-S., Zhang, B., & Verbeke, W. (2015). Sustainability labels on coffee: Consumer preferences, willingness-to-pay and visual attention to attributes. *Ecological Economics*, 118, 215-225. <https://doi.org/10.1016/j.ecolecon.2015.07.011>
- Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer attitude-behavioral intention gap. *Journal of Agricultural and Environmental Ethics*, 19, 169-194. <https://doi.org/10.1007/s10806-005-5485-3>
- White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, 83(3), 22-49. <https://doi.org/10.1177/0022242919825649>
- Woodruff, R. B. (1997). Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science*, 25, 139-153. <https://doi.org/10.1007/BF02894350>
- Yoo, B., Donthu, N., & Lee, S. (2000). An examination of selected marketing mix elements and brand equity. *Journal of the Academy of Marketing Science*, 28, 195-211. <https://doi.org/10.1177/0092070300282002>
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22. <https://doi.org/10.1177/002224298805200302>

APPENDIX A. CRITERION AND ALTERNATIVE LEGEND

Code	Meaning
C1	Sensory quality
C2	Price-value
C3	Brand trust and reputation
C4	Convenience and availability
C5	Sustainability and ethical sourcing
C6	Product variety and innovation

C7	Service and brand experience
A	Global premium chain
B	Domestic mainstream chain
C	Specialty roaster
D	Value retail brand
E	Sustainability-led brand