Net Entropy Score (NES)

Measuring Brand Experience Consistency and Its Diagnostic Implications

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Abstract

This paper introduces the **Net Entropy Score (NES)**, a framework for measuring brand experience consistency across repeated customer interactions. Unlike existing approaches that prioritize satisfaction, awareness, or recommendation likelihood, NES isolates consistency-of-experience as a primary diagnostic variable.

The framework distinguishes between **Measured NES**, derived from behavioral and customer-reported data, and **Predicted NES**, inferred from structured analysis of public signals. The difference between the two readings, termed the **convergence gap**, is proposed as a diagnostic indicator of misalignment between brand architecture and delivered experience.

The framework is conceptually informed by Shannon's notion of entropy as uncertainty, by brand equity literature (Aaker, Keller), and by distinctive-asset theory (Sharp). Entropy is used here as a conceptual analogy rather than as a formal mathematical construct.

The framework is applied across a twelve-case retrospective cohort and a five-case prospective cohort. Initial findings are consistent with the hypothesis that consistency-of-experience may precede observable shifts in brand performance. These findings are exploratory and descriptive; statistical validation, out-of-sample prediction testing, and broader cohort generalizability remain open. The paper outlines the framework's structure, illustrates application, and explicitly states limitations.

Keywords: brand measurement, consistency-of-experience, customer experience, brand equity, methodology, framework, diagnostic

JEL Classification: M31 (Marketing), M37 (Advertising), L14 (Transactional Relationships)

1. Introduction

Brand measurement has traditionally focused on constructs such as brand equity (Aaker 1991; Keller 1993), satisfaction (Oliver 1980), and recommendation likelihood (Reichheld 2003). These constructs capture important dimensions of brand performance but do not directly measure whether a brand delivers a reproducible experience across repeated interactions.

This paper proposes that consistency-of-experience is a distinct and operationally significant variable. A brand may be well-known, well-liked, or frequently recommended, yet still exhibit high variability in delivered experience. Variability of this kind may have implications for retention, cohort behavior, and revenue stability, though the specific relationships are not formally tested in this paper.

The Net Entropy Score (NES) framework is introduced to quantify this property and provide a structured diagnostic system. The framework is positioned as exploratory: its central claims are diagnostic rather than predictive, its empirical illustrations are descriptive rather than confirmatory, and its limitations are explicitly acknowledged.

The paper is structured as follows. Section 2 establishes conceptual framing across information theory, brand equity, and distinctive-asset literature. Section 3 describes the measurement architecture, including the single-item instrument, the five-band response scale, and the score construction. Section 4 articulates the dual-reading framework: Measured NES from customer voice and behavior, Predicted NES from public-signal inference. Section 5 introduces the convergence gap as a diagnostic construct. Section 6 reports illustrative application across a twelve-case retrospective cohort and a five-case prospective cohort. Section 7 discusses implications. Section 8 enumerates limitations. Section 9 concludes. Appendix A documents the diagnostic toolkit used to compute Predicted NES. Appendix B describes case-selection criteria and the anonymization protocol.

2. Conceptual Framing

The NES framework draws conceptually on three literatures.

2.1 Entropy as Conceptual Analogy

Shannon (1948) defined entropy as the measure of uncertainty in a probability distribution. High entropy describes a distribution close to uniform; low entropy describes a distribution concentrated on a small number of outcomes. Applied to brand experience, this framing suggests that consistency-of-experience is the inverse of variability: a brand that delivers a similar experience each time exhibits low experiential variability, while a brand that delivers significantly different experiences across encounters exhibits high experiential variability.

The NES framework borrows the entropy framing as conceptual analogy rather than as formal mathematical construct. The framework's score formula does not compute Shannon entropy over experience distributions; it computes a net-percentage score across response bands. The use of entropy language is intended to motivate the construct of consistency-of-experience and to position it within an

information-theoretic frame, not to claim mathematical equivalence with Shannon entropy. Future work may formalize this relationship through entropy computation over response distributions; the present paper does not.

2.2 Brand Equity (Aaker 1991, 1996; Keller 1993)

Aaker's brand equity framework identifies four pillars: brand awareness, perceived quality, brand associations, and brand loyalty. Keller's customer-based brand equity model articulates a hierarchical structure of brand knowledge in customer memory. Both frameworks treat consistency as a contributor to equity but do not isolate consistency-of-experience as a measurable construct in its own right. The NES framework proposes that consistency-of-experience can be measured separately from brand equity and may behave differently from awareness, perceived quality, or loyalty in observable ways.

2.3 Distinctive Brand Assets (Sharp 2010)

Sharp's empirical work on distinctive brand assets emphasizes that brand recognition operates through reliably reproduced sensory and conceptual cues, and that brand growth is driven primarily by mental availability and physical availability. The NES framework's Identity Coherence component (Appendix A) operationalizes a portion of Sharp's distinctive-asset logic, focused specifically on the reproducibility dimension.

2.4 Positioning of the Construct

The framework positions consistency-of-experience as a potential upstream variable relative to satisfaction and recommendation, though this directional relationship is hypothesized rather than tested. The NES construct does not claim to replace satisfaction or recommendation measures; it claims to measure a distinct property that existing measures do not directly capture.

3. Measurement Architecture

3.1 Core Instrument

The NES framework is anchored in a single survey item:

How consistent is your experience with [Brand] each time you use it?

Responses are recorded on a 0 to 10 scale. This question functions as the primary measurement instrument in the current version of the framework. Consistency-of-experience is the construct the framework seeks to isolate, and a single-item measure is used as a practical starting point for operational deployment. The choice reflects a trade-off between measurement simplicity and psychometric depth, and is not intended as a claim of optimal measurement design.

The current formulation is compatible with extension to multi-item measurement as the methodology and data work mature. Potential extensions may include experience-band specificity (identifying which dimensions of consistency vary for a given respondent), bimodality detection (whether experience differs

systematically across contexts), and confidence in the reported consistency. These extensions are conceptual at this stage and have not been empirically tested.

3.2 Response Band Structure

Responses are categorized into five bands intended to capture qualitatively distinct levels of perceived consistency:

Band	Score Range	Interpretation
Coherent	9–10	Highly consistent each time; experience reliably reproduced
Reliable	7–8	Mostly consistent with minor variation
Variable	5–6	Noticeable variation each time
Scattered	3–4	Significant variation; experience unpredictable
Disordered	0–2	Highly inconsistent; experience chaotic or contradictory

3.3 Score Construction

The framework's headline score is computed as a net percentage across the extreme bands:

NES = % Coherent − % (Scattered + Disordered)

The result ranges from −100 (no Coherent responses, all responses concentrated in Scattered or Disordered) to +100 (all responses in Coherent, none in Scattered or Disordered). The Reliable and Variable bands are not subtracted from either pole; this construction reflects an assumption that mid-range responses represent stable equilibrium states rather than indicators of decay or compounding. This assumption has not been empirically validated.

3.4 Zone Bands

The −100 to +100 range is segmented into qualitative zone bands intended to support interpretation. The zone-band thresholds were derived through cross-cohort observation and should be regarded as provisional rather than empirically calibrated.

Zone	Range	Interpretation
Strong compounding (proposed)	≥ +50	Brand consistency may function as a structural growth driver
Healthy-but-constrained (proposed)	+20 to +50	Brand consistency present but capped by specific drag factors
Fragile equilibrium (proposed)	0 to +20	Brand consistency is unstable; growth may be at risk

Zone	Range	Interpretation
Structural decay (proposed)	< 0	Cohort decay may exceed cohort renewal; recovery may require substantial operational investment

4. Dual-Reading Framework

4.1 Measured NES

Measured NES is derived from customer-anchored data:

Behavioral data: return rates, refund rates, repeat purchase rates, exchange rates, cancellation rates. Behavioral data is treated as the highest-reliability signal because it is less susceptible to selection bias or response bias than survey or review data.

Marketplace and third-party reviews: reviews on third-party platforms (e.g., Amazon, Myntra, Nykaa, G2, Capterra, TripAdvisor) carry less curatorial selection than brand-controlled reviews and may approximate the broader customer cohort more closely.

Brand-controlled reviews: reviews on the brand's own surfaces carry positive selection bias by construction. They remain useful as depth signals but should not anchor Measured NES alone.

Forum sentiment and complaint corpora: Reddit, Quora, consumer court filings, and equivalent sources capture the dissatisfied tail and serve as a counterbalance to positive selection bias.

Mapping a review or behavioral corpus to the five-band scale requires interpretive judgment by the analyst. This introduces analyst-rater variability that future work should formally measure through inter-rater reliability testing.

4.2 Predicted NES

Predicted NES is inferred from a structured analysis of publicly observable signals using the diagnostic toolkit documented in Appendix A. The toolkit decomposes Predicted NES into ten components grouped into Growth Energy contributors (Momentum, Trust, Cohort Renewal, Recovery Capacity, Validation) and Entropy Load drag factors (Identity Confusion, Trust Deficit, Audience Concentration, Regulatory Risk, Operational Dependency). Each component is scored 0 to 20 against a tiered data ladder.

Predicted NES is exposed to subjectivity in public-signal interpretation. Different analysts applying the same toolkit to the same brand may arrive at component-level scores that differ within a noticeable range. The framework does not currently provide an empirically derived confidence band for Predicted NES; reported readings should be interpreted as directional rather than precise.

5. The Convergence Gap

The framework's central diagnostic construct is the convergence gap:

Gap = Measured NES − Predicted NES

The convergence gap is intended to capture the difference between what the brand appears to be from external observation and what customers experience in repeat use. Three interpretive patterns are proposed:

Pattern	Direction	Interpretation (proposed)
Convergence	|Gap| < ~10	External signals broadly consistent with customer experience
Positive divergence	Gap > ~15	External signals appear to overstate delivered customer experience
Negative divergence	Gap < 0	External signals appear to understate delivered customer experience (often associated with non-mainstream channel ecosystems)

The convergence gap is positioned as a diagnostic indicator. The framework hypothesizes that large positive divergences may be associated with subsequent operational difficulty as marketplace algorithms, repeat behavior, and word-of-mouth dynamics integrate the customer signal. This hypothesis is exploratory and has not been statistically validated.

5.1 Review-First Application Discipline

The framework's application discipline (locked April 2026) prescribes that Measured NES be computed first when customer data is accessible, with Predicted NES computed in parallel. The convergence gap is then interpreted as the primary diagnostic finding. Where customer data is unavailable (cold-engagement contexts), Predicted NES alone is reported with explicit caveat that empirical anchoring is pending. This sequencing reflects the framework's positioning of customer voice and behavior as the primary measurement and public-signal inference as a prediction layer.

6. Empirical Application

6.1 Case Selection Criteria

The empirical illustrations in this paper are organized into a twelve-case retrospective cohort and a five-case prospective cohort. Case selection criteria are stated explicitly to guard against the appearance of post-hoc narrative fitting:

Retrospective cohort criteria. Cases were selected to span variation in observed brand trajectories rather than to support framework conclusions. The selection includes brands with sustained growth, brands that experienced category-level disruption, brands subject to discrete regulatory or trust shocks, and brands facing concentration-related vulnerabilities. Cases include brands whose subsequent trajectories the framework would describe as both compounding and decaying. Cases were not randomly sampled; selection was purposive to illustrate the range of patterns the framework attempts to describe. The cohort should therefore be regarded as illustrative rather than statistically representative.

Prospective cohort criteria. Prospective cohort cases are drawn from active engagements during which the framework was applied at a defined point in time. All identifying details are anonymized; specific brand names, founder names, and identifying revenue scales are excluded. Selection was opportunistic rather than systematic. The five cases span DTC fashion, alt-wellness supplements, mass-market FMCG, luxury hospitality, and B2B SaaS, providing categorical variation but not statistical generalizability.

Reporting of inconsistent cases. The retrospective cohort includes one case (Maggi 2015) where the framework's reading was direction-correct but magnitude-too-pessimistic regarding short-term recovery, and one case (Apple 2026) where the framework's current reading places the brand below its earlier reading despite continued commercial success. These are reported here as instances where the framework's directional reading and observed outcomes do not converge cleanly. Additional cases of framework-outcome misalignment may emerge as the prospective cohort matures.

Disclaimer. All brand references in this paper are based on publicly available information and are used solely for illustrative and analytical purposes. No affiliation or endorsement is implied.

6.2 Retrospective Cohort: Illustrative Cases

Eleven retrospective cases are summarized below. Each case is reported as an illustrative observation rather than as confirmatory evidence. Predicted NES readings reported here were derived through analyst application of the diagnostic toolkit (Appendix A) to historical public signals as of the stated anchor date.

6.2.1 Apple (2013)

Anchor date: 2013 Q3, during a period of negative press sentiment. **Predicted NES:** +73 (strong-compounding zone). **Subsequent observation:** Apple subsequently demonstrated sustained growth and reached approximately $3 trillion market capitalization by 2024. **Pattern:** the framework's reading remained directionally stable during a period of bearish press coverage. This is consistent with the construct positioning that consistency-of-experience may be observable independently of press sentiment.

6.2.2 Tesla (2024)

Anchor date: 2024 Q4. **Predicted NES:** approximately −10 (boundary of structural decay zone). **Status:** live observation; partial directional consistency observed through 2025 share movements and audience polarization indicators. Full framework-outcome assessment requires longer observation window.

6.2.3 Kodak (2000 and 2007)

Anchor date 1: 2000. **Predicted NES under earlier framework version:** +38. **Predicted NES under current framework version (with category vitality adjustment):** +20. **Anchor date 2:** 2007. **Predicted NES:** approximately 0. **Subsequent outcome:** Kodak filed for bankruptcy in 2012. **Pattern:** Predicted NES decreased between the two anchor dates. The framework's current category-vitality adjustment produces a substantially lower reading at the 2000 anchor than the earlier version did. The retrospective application illustrates how framework refinement can change the reading at a given anchor date; this is methodologically informative but does not constitute prospective predictive validation.

6.2.4 Theranos (2014)

Anchor date: 2014, peak public visibility phase. **Predicted NES:** approximately −24 (structural decay zone). **Subsequent outcome:** company dissolved 2018. **Pattern:** the framework's Operational Dependency component produced a high score at the anchor date, consistent with the brand's dependence on a single product claim that subsequently could not be substantiated. This pattern is consistent with the framework's directional reading, but the validation is partly tautological: the framework predicts via Operational Dependency, and outcomes are interpreted through the same construct. This circular-validation risk is acknowledged in Section 8.

6.2.5 WeWork (2018)

Anchor date: 2018, pre-IPO period. **Predicted NES (current framework version):** approximately +18. **Subsequent outcome:** withdrawn IPO 2019; Chapter 11 filing 2023. **Pattern:** external validation signals were high during the anchor period (extensive favorable press coverage, large funding rounds), while inferred structural drag factors (Identity Confusion, Operational Dependency) produced a constraining reading. This is consistent with the framework's diagnostic intent of distinguishing external visibility from inferred structural condition.

6.2.6 Peloton (2021)

Anchor date: 2021 peak. **Predicted NES:** approximately +49. **Subsequent outcome:** demand compression 2022; CEO transition February 2022. **Pattern:** Operational Dependency on a single product platform was high at the anchor date. The framework's reading was in the healthy zone overall but with a concentrated drag factor; subsequent commercial difficulty was concentrated in the same factor.

6.2.7 BlackBerry (2010)

Anchor date: 2010. **Predicted NES (current framework version):** approximately +12. **Subsequent outcome:** share collapse 2011 to 2013. **Pattern:** Operational Dependency on a closed hardware-software ecosystem produced a high drag-factor reading at the anchor date. Identity Obsolescence (a sub-axis under Identity Confusion in the current framework version) was triggered by the platform-ecosystem shift.

6.2.8 Maggi (2015)

Anchor date: June 2015, at peak FSSAI controversy. **Predicted NES:** approximately −31. **Subsequent outcome:** the brand experienced substantial recovery within approximately 18 months, although consumer-trust indicators remained below pre-2015 levels. **Pattern:** the framework's reading was direction-correct on the long-term scar but appears to have been magnitude-too-pessimistic on short-term recovery. This is one of two cases in the cohort where the framework's reading and the observed outcome do not converge cleanly. It motivated subsequent revisions including discrete-shock treatment of Trust Deficit and per-regulator weighting of Regulatory Risk.

6.2.9 Nike

Applied at multiple anchor dates as a calibration reference for consumer category brands at strong-compounding territory. Predicted NES readings fell in approximately +60 to +75 range across anchors, consistent with sustained category position.

6.2.10 Apple (2026)

Anchor date: 2026 Q1. **Predicted NES:** approximately +33 (healthy-but-constrained zone). **Pattern:** the current reading is materially lower than the 2013 anchor reading despite continued commercial success. The reduction is driven by revenue-weighted Regulatory Risk (substantially higher than at 2013) and by Identity-Obsolescence pressure on category positioning. Whether the framework's lower current reading proves to be directionally informative or whether the brand continues to demonstrate the resilience pattern observed at 2013 remains an open empirical question.

6.3 Cross-Case Observations from the Retrospective Cohort

Across the twelve cases, three observations emerge. None should be interpreted as statistically validated.

First, the framework's Operational Dependency component appears in the directional reading of multiple cases that subsequently experienced commercial difficulty. This is partly a structural feature of the framework: Operational Dependency is one of the framework's five Entropy Load components, and brands with concentration risk on a single platform or product naturally score high on it. The recurrence of this component in the analysis carries a circular-validation risk, since the framework predicts and the framework interprets outcomes through the same construct.

Second, the framework's reading was direction-correct in approximately ten of twelve retrospective cases at the broad zone-band level, with two cases (Maggi 2015 and Apple 2026) where the reading and observed outcome do not cleanly converge. This level of directional consistency is provisional and has not been compared to a control framework or a null model.

Third, framework refinements between earlier and current versions changed several historical readings (most notably Kodak 2000, BlackBerry 2010, and WeWork 2018) toward more constrained zone classifications. This reflects the framework's iterative development; it is methodologically informative but should not be conflated with prospective predictive accuracy.

6.4 Prospective Cohort: Illustrative Anonymized Cases

A five-brand prospective cohort is currently under observation. All cases are anonymized to protect client confidentiality.

6.4.1 Case 1 — DTC Fashion Brand

Predicted NES: high, in strong-compounding zone. **Measured NES:** low, in fragile-equilibrium zone. **Convergence gap:** large positive (approximately 47 points). **Behavioral signal:** operator-disclosed return rate of approximately 50 percent. **Observation:** external signals (multi-channel distribution, multi-category portfolio, coherent identity) appear to overstate the customer-experience reading. The

convergence gap surfaces a quantifiable operational issue (returns rate) that the public-signal reading alone does not capture.

6.4.2 Case 2 — Alt-Wellness Supplement Brand

Predicted NES (buyer cohort): low, in fragile-equilibrium zone. **Measured NES (buyer cohort):** moderate, in healthy-but-constrained zone. **Convergence gap (buyer cohort):** negative. **Observation:** the brand operates in a non-mainstream channel ecosystem. Standard public-signal proxies (mainstream review platforms, mainstream press) appear to under-score the customer-experience reading from the alt-channel cohort. This may indicate that the framework's proxy ladder requires refinement for non-mainstream brands.

6.4.3 Case 3 — Mass-Market FMCG Brand

Predicted NES: high, near strong-compounding boundary. **Measured NES:** comparable, in healthy-but-constrained zone. **Convergence gap:** minimal. **Observation:** the public-signal reading and the customer-experience reading are broadly aligned. The brand may illustrate a convergent pattern in which external architecture and delivered experience agree.

6.4.4 Case 4 — Wellness Hospitality Brand

Predicted NES: moderate, in healthy-but-constrained zone. **Measured NES:** moderate, slightly below Predicted. **Convergence gap:** modest. **Observation:** the gap appears to reflect cohort variation (wellness-believer versus value-conscious customer segments) rather than operational-execution issues. This may indicate a bimodality in the customer experience that single-population scoring does not capture.

6.4.5 Case 5 — B2B SaaS Brand

Predicted NES: high, in healthy-but-constrained zone. **Measured NES:** moderate, lower than Predicted. **Convergence gap:** monitor zone. **Observation:** the gap may be associated with a difference in experience between native customers and customers acquired through legacy platforms via M&A. The pattern is consistent with the framework's bimodality interpretation but has not been confirmed through dedicated cohort-level survey work.

6.5 Q-Commerce Share Observation

During application to one brand in the prospective cohort, the framework's diagnostic toolkit produced an estimate of Q-commerce share of total revenue at approximately 4 to 5 percent based on category penetration patterns and channel-mix analysis. Subsequent disclosure of actual data established the brand's Q-commerce share at approximately 4.01 percent, within the estimated range. This is reported as a single observation rather than as a generalizable claim about predictive precision; the framework does not claim demonstrated precision at this level. A single sub-component estimate falling within the predicted range does not generalize to headline NES accuracy.

7. Discussion

The NES framework offers a structured approach to measuring consistency-of-experience as a distinct dimension of brand performance. The dual-reading model (Measured NES from customer voice and behavior, Predicted NES from public-signal inference) introduces a diagnostic lens for evaluating misalignment between brand positioning and execution.

Three implications are suggested. First, brands with similar levels of awareness or satisfaction may differ meaningfully in delivered consistency-of-experience, and that difference may have operational implications that conventional brand measurement does not surface. Second, the convergence gap construct may be useful as a diagnostic input for operators considering where to allocate operational versus strategic investment. Third, the framework's directional readings appear to be informative across a variety of brand categories and trajectories, though the cases in this paper are illustrative rather than confirmatory.

These implications are exploratory. The framework's predictive validity has not been statistically demonstrated. The cases reported here are subject to selection bias, and the framework's interpretive constructs (notably Operational Dependency) are used both for prediction and for retrospective interpretation, introducing circular-validation risk. The framework's contribution at this stage is structural and exploratory: a measurement instrument, a dual-reading methodology, and a diagnostic construct (the convergence gap) that may merit further empirical investigation.

8. Limitations

The framework is positioned as v1.0 of an actively developing methodology. Several limitations are explicit and material.

8.1 No Statistical Validation

The framework has not been subjected to formal statistical testing. The retrospective cohort cases are illustrative, the prospective cohort is small (n = 5) and ongoing, and no out-of-sample prediction tests have been conducted. The framework's claim that consistency-of-experience may precede observable revenue trajectory shifts is exploratory and has not been confirmed through controlled empirical work. Researchers and practitioners should not interpret the framework as a validated predictive tool.

8.2 Single-Item Measurement

The framework's core instrument is a single survey item, used in this version of the framework as a practical starting point for operational deployment. Single-item measures are widely recognized as carrying lower psychometric reliability than multi-item scales for complex constructs, and the framework's instrument has not yet been validated against multi-item brand consistency scales. Construct validity relative to behavioral measures of consistency has not been formally tested. As noted in Section 3.1, the current formulation is compatible with extension to multi-item measurement as empirical work

matures. The single-item instrument should therefore be interpreted as the framework's primary measurement in the current version rather than as an end-state design.

8.3 Conceptual Use of Entropy

The framework borrows the entropy framing as conceptual analogy. The score formula is a net-percentage construct rather than a Shannon-entropy computation over response distributions. Readers familiar with information theory should not interpret the framework's entropy language as claiming mathematical equivalence with Shannon entropy. Future work may formalize the relationship; the present paper does not.

8.4 Case-Selection Bias

The retrospective cohort cases are widely documented and frequently discussed in business literature. The cases were selected to span variation in brand trajectories rather than for statistical representativeness, and were not randomly sampled from a defined population. Cases where the framework's reading does not converge cleanly with observed outcomes (Maggi 2015, Apple 2026) are reported in the cohort, but it cannot be ruled out that the cohort selection has favored cases where the framework's reading appears informative. A genuine out-of-sample test against a randomly sampled cohort with pre-registered framework readings would substantially strengthen the framework's claims.

8.5 Subjectivity in Predicted NES

Predicted NES depends on analyst interpretation of public signals across ten components and a five-axis identity-coherence screen. Different analysts applying the same framework to the same brand may produce component-level scores that differ within a noticeable range. The framework does not currently provide an empirically derived inter-rater reliability estimate, nor a confidence band derived from rater-variance testing. Reported Predicted NES values should be interpreted as directional readings subject to analyst variance.

8.6 Circular-Validation Risk

The framework predicts brand outcomes through constructs (notably Operational Dependency) that are then used to interpret observed outcomes. This carries circular-validation risk: a brand that scores high on Operational Dependency and subsequently experiences difficulty is interpreted as a confirmation of the framework's directional reading, when the brand's difficulty may be characterizable through other constructs that the framework does not measure. Pre-registration of framework readings, blind retrospective application, and comparison against control frameworks would help separate genuine informational content from circular-validation effects.

8.7 No Confidence Band Derivation

The paper does not report an empirically derived confidence band for Predicted NES. The framework's directional readings should be interpreted as approximations rather than precise values. Future work

should derive confidence bands through inter-rater testing, retrospective stability analysis across framework versions, and out-of-sample prediction error measurement.

8.8 Conceptual Constructs Not Operationally Defined

Several auxiliary constructs in the framework (notably the activation-energy formula referenced for phase-transition cost estimation) are conceptually motivated but lack clearly defined measurement procedures. These constructs are best regarded as scaffolding for practitioner interpretation rather than as quantitative operators. Their formalization is a matter for future work.

8.9 Cross-Category and Geographic Generalizability

The cohort is concentrated in consumer technology, B2B platforms, FMCG, fashion DTC, and luxury hospitality, primarily in US and Indian markets. Categories such as financial services, healthcare provider services, education, and government brands are not represented. Geographic generalizability to East Asian, Middle Eastern, and African markets has not been tested. The framework's proxy ladder appears to require category-specific and geography-specific calibration, as suggested by the prospective cohort's negative-divergence case.

9. Conclusion

This paper introduces the Net Entropy Score as a framework for measuring brand experience consistency and for diagnosing alignment between perception and delivery. The framework comprises a single-item survey instrument, a five-band response structure, a net-percentage scoring formula, a dual-reading methodology that distinguishes Measured NES from Predicted NES, and a convergence-gap construct as the primary diagnostic finding.

Initial application across a twelve-case retrospective cohort and a five-case prospective cohort suggests that consistency-of-experience may be a useful construct to measure separately from awareness, satisfaction, and recommendation. The framework's directional readings appear informative across a range of brand categories and trajectories, though the empirical evidence reported here is illustrative rather than confirmatory.

The framework's predictive claims are exploratory and have not been statistically validated. Selection bias, single-item measurement limitations, conceptual entropy framing, analyst subjectivity in Predicted NES inference, and circular-validation risk in retrospective interpretation are explicitly acknowledged. The framework's contribution at this stage is structural rather than confirmatory: a measurement instrument, a dual-reading methodology, and a diagnostic construct that may merit further empirical investigation.

Future work should pursue inter-rater reliability testing of Predicted NES, multi-item extension of the consistency-of-experience instrument as the model and empirical data work mature, pre-registered out-of-sample prediction tests, formal entropy computation over response distributions, and comparison against control frameworks. A v2.0 release is projected for 2027 incorporating prospective cohort

observation, multi-item instrument expansion, methodology refinements, and named case studies subject to participant consent.

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Appendix A: Diagnostic Toolkit for Predicted NES

Predicted NES is computed by aggregating ten components into Growth Energy contributors and Entropy Load drag factors. Each component is scored 0 to 20 against a tiered data ladder. Tier 1 represents primary first-party data; Tier 4 represents an analyst-applied default in the absence of higher-tier sources.

Predicted NES = (M + T + C + R + V) − (IC + TD + AC + RR + OD)

Growth Energy components:

Component	Definition (summary)
M Momentum	Revenue growth trajectory, market-share trajectory, earned-media velocity
T Trust	Customer review density, rating consistency, retention behavior
C Cohort Renewal	Demographic cohort fit, cross-generational adoption, addressable-market depth
R Recovery Capacity	Channel diversification (algorithm-mediated versus direct), geographic and revenue-source diversification
V Validation	Tier-1 press density, analyst recognition, industry awards, practitioner endorsement

Entropy Load components:

Component	Definition (summary)
IC Identity Confusion	Five-axis screen for identity coherence, including identity-obsolescence sub-axis
TD Trust Deficit	Negative-review density, mainstream press tone, observable trust-break events
AC Audience Concentration	HHI-based concentration risk across customer segments and geographies
RR Regulatory Risk	Active regulatory enforcement, revenue-weighted exposure, per-regulator coefficient
OD Operational Dependency	Concentration risk on single platforms, suppliers, founders, or product lines

The toolkit's score is bounded at −100 to +100 by construction. Empirical observation across the retrospective cohort places typical observed scores in approximately −30 to +75; this range is descriptive rather than a pre-defined operating constraint.

The framework maintains a calibration backlog of refinements identified through application but not yet promoted to specification, including: alt-channel proxy ladder refinement for non-mainstream ecosystems; working capital exposure as a separate component; paid acquisition dependency weighting in Recovery Capacity; agency-versus-in-house team composition signal; behavioral return-rate weighting for inventory-intensive categories; and review corpus quality tiering. These items are identified as candidates for future framework versions.

Appendix B: Case Selection and Anonymization Protocol

The retrospective cohort comprises twelve cases selected from widely documented business literature. Selection was purposive rather than random: cases were chosen to span variation across consumer technology, B2B platforms, FMCG, consumer hardware, and luxury hospitality, and across observed trajectories including sustained growth, structural decline, regulatory shock, and concentration-related vulnerability. The cohort includes cases where the framework's reading converges cleanly with observed outcomes and cases where it does not. The cohort is illustrative; statistical generalizability is not claimed.

The prospective cohort comprises five active engagements during which the framework was applied at a defined anchor point. All identifying details are anonymized: specific brand names, founder names, and revenue scales precise enough to enable identification are excluded. Categorical descriptions, channel-mix archetypes, and component-level scoring are reported in directional terms. Detailed component-level scoring is available on request from the author, subject to the same anonymization protocol.

Researchers seeking access to anonymized component-level scoring or the underlying methodology documents may contact the author. The framework's calibration backlog and version history are documented separately.

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v1.0. First public draft of the framework. Future versions will incorporate inter-rater reliability testing, multi-item instrument extension, pre-registered out-of-sample prediction work, and prospective cohort observation results.