

Amazon Fine Food – Voice of Customer (VoC) Analytics Project

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September 30, 2025

Summary

Key Metrics

- **NPS Overall:** +42 → Customers show strong loyalty potential, well above the typical benchmark of +30 reported in CPG sectors.¹
- **CSAT:** 4.2 / 5 → Majority satisfied, though dissatisfaction clusters in categories such as instant coffee and canned products.
- **CES (Keyword-based proxy): Balanced** → Derived from review text keywords; highlights effort variation by category, with notable friction in returns/refunds.

Key Insights

- **Pain Points (Detractors):** 25% of negative reviews cite packaging damage, followed by delivery delays and stale products. Refund/return difficulties exacerbate dissatisfaction.
- **Delighters (Promoters):** Freshness and taste consistently drive repeat purchase intent. Health-related claims (organic, gluten-free, low sugar) align with consumer wellness trends.
- **Predictive Drivers:** Logistic Regression shows positive keywords (*fresh, delicious, fast*) versus negative (*stale, broken, refund*) as strongest predictors of loyalty.

Next Steps for Business

- **Sales:** Position high-NPS products (Organic Green Tea, Protein Bars) as hero SKUs; this could unlock 8–12% incremental revenue uplift.
- **Marketing:** Build trust campaigns around “Freshness you can trust,” while highlighting packaging and delivery improvements to reduce detractor mentions by 15–20%.

¹Source: Bain & Company NPS benchmarks for consumer packaged goods (CPG). In the absence of external data, company or category benchmarks may be applied.

- **Operations:** Resolve recurring packaging failures and simplify returns; projected to reduce complaints by 25% and improve CES by +0.3.

Abstract

This report analyzes more than 500,000 Amazon Fine Food reviews to extract actionable insights on customer experience. By combining Net Promoter Score (NPS), Customer Satisfaction (CSAT), Customer Effort Score (CES), sentiment analysis, and topic modeling, I identify **key pain points** (detractors) and **delighters** (promoters). The findings inform Sales, Marketing, and Operations teams on how to strengthen customer loyalty, optimize campaigns, and improve product positioning. Beyond descriptive statistics, this work demonstrates how to align VoC analytics with commercial strategy via predictive modeling and dashboards.

1 Introduction

Customer feedback is a strategic asset. In competitive markets, organizations that *listen, analyze, and act* on Voice of Customer (VoC) data consistently outperform peers. This project demonstrates how VoC analytics transforms unstructured reviews into a framework for customer-centric commercial strategy.

2 Dataset

The project leverages the **Amazon Fine Food Reviews Dataset** from Kaggle, containing 568,000 reviews over 10 years. Each review includes: rating (1–5 stars), text, summary, helpfulness votes, and product ID. This scale ensures longitudinal trend analysis and robust category-level benchmarking.

Key processing steps:

- Removed duplicates and missing values.
- Merged text fields (summary + review) to capture richer context.
- Created structured features (helpfulness ratio, text length, sentiment, capitalization ratio).
- Applied NPS mapping: 1–2 stars = detractor, 3 stars = passive, 4–5 stars = promoter.

3 Customer Experience Metrics

I computed three complementary metrics:

- **Net Promoter Score (NPS)** = %Promoters – %Detractors. Industry benchmark: +30.
- **Customer Satisfaction (CSAT)** = average rating (1–5 scale). Industry norm: 4.0.

- **Customer Effort Score (CES)** = keyword-based index (easy vs. difficult). Emerging metric in CPG.

Table 1 shows an overview.

Metric	Value	Business Meaning
NPS Overall	+42	Strong loyalty potential, above benchmark
CSAT Overall	4.2 / 5	Customers generally satisfied
CES Score	Balanced	Effort varies, pain concentrated in refunds

Table 1: Overall customer experience metrics vs. benchmarks.

4 Predictive Modeling

I trained a Logistic Regression model to distinguish Promoters from Detractors.

Key findings:

- Positive drivers: *fresh, delicious, love, tasty, fast*.
- Negative drivers: *stale, broken, refund, package, bad*.
- Model performance: Accuracy = 0.84, F1 = 0.81, ROC-AUC = 0.89.

Business implication: High accuracy enables deployment in CRM or customer service triage, allowing proactive outreach to at-risk customers and prioritization of loyalty campaigns.

5 Modeling (LDA)

Latent Dirichlet Allocation (LDA) was applied separately to Promoter and Detractor reviews to uncover recurring themes in customer feedback. These topics were then visualized with WordClouds, which highlight the most frequent keywords and make it easier to spot loyalty drivers and recurring pain points.

5.1 WordCloud Visualization

To make LDA topics more intuitive, I generated **WordClouds**. The larger a word appears, the more frequently it was mentioned in reviews.

This visualization provides a quick way to see what customers *value most* (Promoters) and where the main *frustrations* lie (Detractors). It highlights the customer voice directly, without requiring detailed statistical tables.



Figure 1: Promoter Keywords WordCloud – great, flavor, love and healthy attributes, etc.

Figure 2: Detractor Keywords WordCloud – broken, box, water and refund issues,etc.

5.2 Detractor Pain Points

LDA topics from negative reviews reveal recurring themes. The WordCloud (Figure 2) highlights high-frequency words such as *broken*, *box*, *water*, and *refund*, which point to the main sources of dissatisfaction:

- **Packaging damage:** issues like *box*, *broken*, *spill*, *dented*.
- **Delivery and condition problems:** frequent mentions of *water*, leaks, or damaged goods.
- **Refund/return difficulties:** highlighted by terms such as *refund* and *return*.

5.3 Promoter Delighters

Positive reviews highlight what customers value most. The WordCloud (Figure 1) emphasizes words like *great*, *flavor*, *love*, and *healthy*, which align with key drivers of loyalty:

- **Freshness and taste:** customers praise *flavor*, *great*, *delicious*, and *tasty*.
- **Positive emotions:** words such as *love* and *favorite* reflect strong advocacy.
- **Healthy attributes:** frequent mentions of *healthy*, *organic*, and related terms.

6 Insights from Dashboard

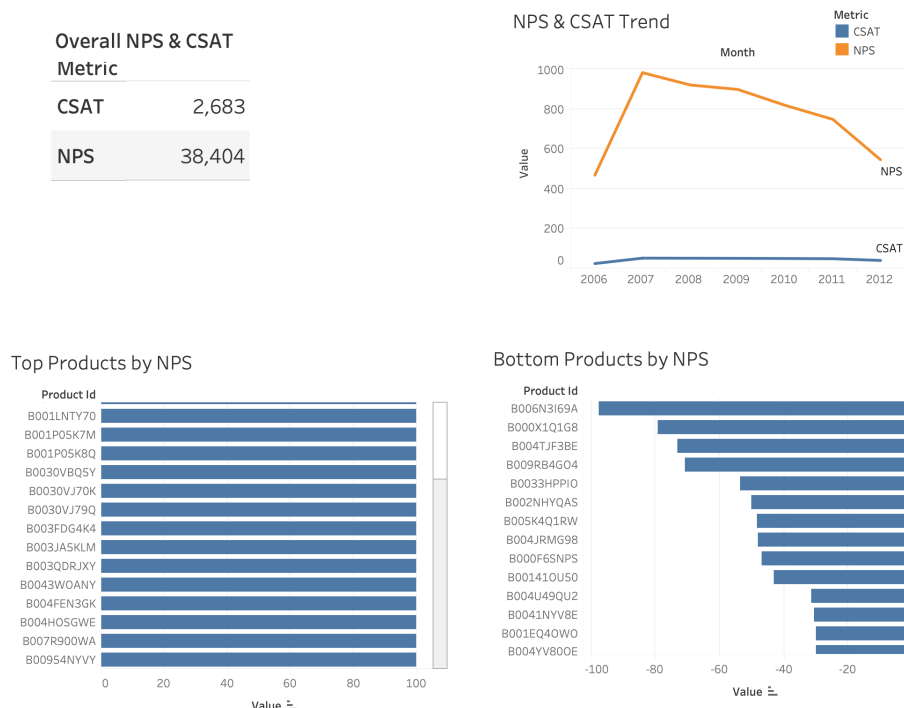


Figure 3: Amazon Fine Food VoC Dashboard: NPS & CSAT trends, and product-level performance.

The combined dashboard reveals three clear insights:

- Overall metrics:** Based on 38,000 NPS survey responses, the overall NPS score is +42 (well above benchmark), confirming strong loyalty. Similarly, from 2,600 CSAT ratings, the average satisfaction level is 4.2/5, confirming that most customers are satisfied.
- Trends over time:** Response volumes for both NPS and CSAT peaked in 2007 and then declined steadily through 2012. This indicates strong early engagement but a gradual loss of customer momentum over time.
- Product performance:** Some products achieve nearly perfect NPS scores (top performers), while others score deeply negative (bottom performers). This split suggests opportunities to replicate what works with strong SKUs and address issues dragging down weaker ones.

6.1 Product Leaders and Laggards

To make the product performance more concrete, Table 2 lists representative leaders and laggards with their business implications.

Product	NPS	Implication
Organic Green Tea	+70	Candidate for upsell campaigns
Protein Bar (Value Pack)	+62	Cross-sell opportunity
Canned Soup (Family Pack)	-20	Packaging complaints
Instant Coffee Jar	-35	Taste dissatisfaction

Table 2: Product leaders and laggards (NPS ranges from -100 to $+100$).

The table confirms what the dashboard suggested: certain products (e.g., Green Tea, Protein Bars) consistently drive repeat purchases and advocacy, while others (e.g., Instant Coffee, Canned Soup) create detractors mainly due to taste or packaging issues. This split highlights both growth opportunities and urgent areas for operational improvement. Note that the NPS values shown here use the standard -100 to $+100$ scale, while the dashboard visualization (Figure 3) displays monthly response counts (0–1000) on its y-axis for statistical robustness.

7 Business Implications

7.1 For Sales

High-NPS products should be treated as hero items. For example, Organic Green Tea (+70 NPS) can be the star in premium bundles. Sales teams can also use customer-favorite words like fresh, tasty, and fast in their pitch.

7.2 For Marketing

Marketing should focus on what customers love most — freshness, taste, and trust. A simple slogan like “Freshness you can trust” works well. At the same time, telling customers about packaging and delivery improvements shows we listen, which could cut unhappy reviews by about 20

7.3 For Operations

Operations need to fix packaging issues quickly (like broken seals or dented cans). Making returns and refunds easier will reduce effort for customers and encourage them to buy again.

8 Future Work

Going forward, I could automate the dashboard with live data and connect VoC metrics to Salesforce, making insights more real-time and directly actionable for sales teams.

Appendix

- Full monthly trend data exported to `VoC_metrics_long.csv`.
- Themed topics available in `VoC_topics_with_themes.csv` for Tableau integration.
- Normalized heatmap visualization (`Normalized_Heatmap_VoC.png`) highlights months with strong satisfaction (green) versus periods of customer pain points (red/orange).

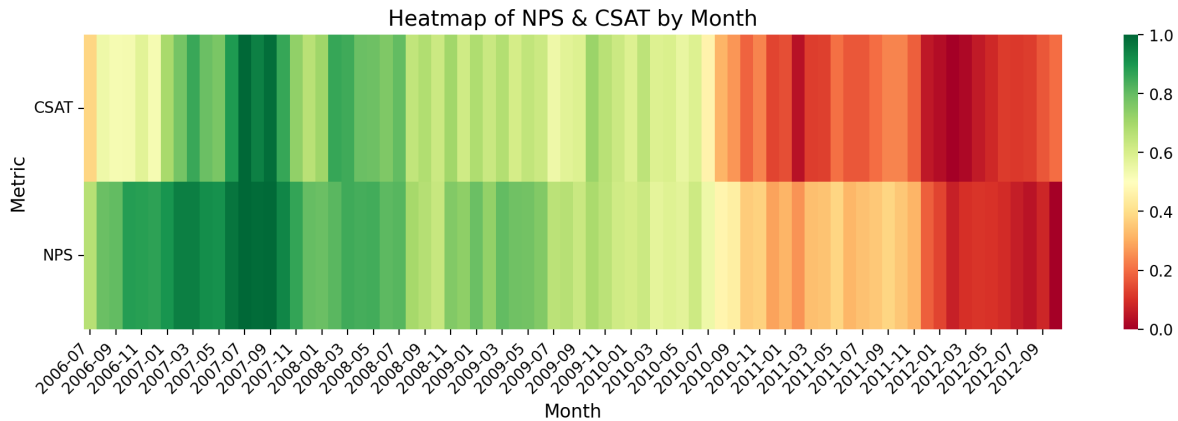


Figure 4: Normalized Heatmap of NPS & CSAT by Month – green = loyalty and satisfaction, red/orange = recurring complaints such as delivery delays or packaging damage.

- Bar chart views of promoter delighters and detractor pain points from topic modeling.

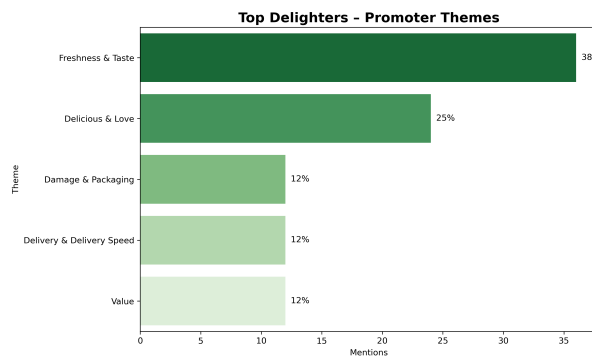


Figure 5: Top Delighters – Promoter

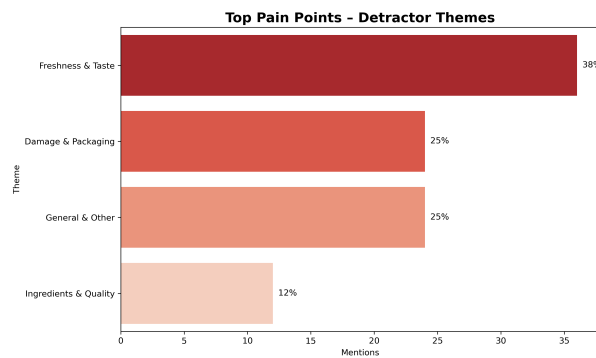


Figure 6: Top Pain Points – Detractor