



Brand Performance on Marketing

2025 Dunnhumby Carboload - Pasta

Case Analysis Proposal - Barilla



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Executive Summary & Recommend Actions

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Category Overview

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Competitive landscape (Barilla vs. Competitors)

5

Implication from Dirichlet-NBD model & Conclusion

Section 1: Executive Summary

1. Category Dynamics

- Pasta category is stable long term, with **predictable seasonal cycles** (Q6–Q7 peak, Q4 trough).
- Growth is primarily **penetration-led**, not loyalty-driven.
- Most customers buy once or not at all, highlighting retention challenges.

2. Barilla Performance

- Strong market presence: **15.2% revenue share** and **30.5% penetration**, reaching nearly 1 in 3 buyers.
- Balanced growth drivers: penetration + repeat purchase (2.2 avg. frequency).
- Positioned in **upper price tier**, reinforcing a premium image.

3. Competitive Landscape

- **Main rival = Private Label** (29.5% overlap).
- Secondary rivals include Ronzoni & Private Label Premium.
- Barilla shows slightly **better-than-expected loyalty** for its size, consistent with Double Jeopardy.

4. Key Insights

- Heavy buyers are only 4% of base but deliver ~48% of revenue.
- Penetration is the real constraint: **zero + once buyers dominate** (~88%).
- Opportunities exist in **converting once/light buyers** and differentiating vs. Private Label.

Section 1: Recommended Actions for Barilla

1

Top Priority Grow Penetration

- Expand reach beyond current ~30% buyers.
- Recruit **zero and once buyers** with simple, wide-reach campaigns.
- Ensure strong **distribution and shelf visibility**.

2

Targeted Retention & Loyalty

- **Win back at-risk buyers** promotions and reminders.
- Incentivize **mid-tier buyers** (Cluster 1) to increase frequency through upsell, cross-sell, and loyalty rewards.
- Nurture heavy buyers with premium experiences and brand advocacy initiatives.

3

Defend Against Aggressive Rivals

- **Value strategies:** multi-buy packs, coupons, avoid deep discounts that encourage trading down
- Reinforce **quality & heritage** in communication and packaging
- Maintain **assortment breadth** to avoid out-of-stocks

4

Pricing & Promotion

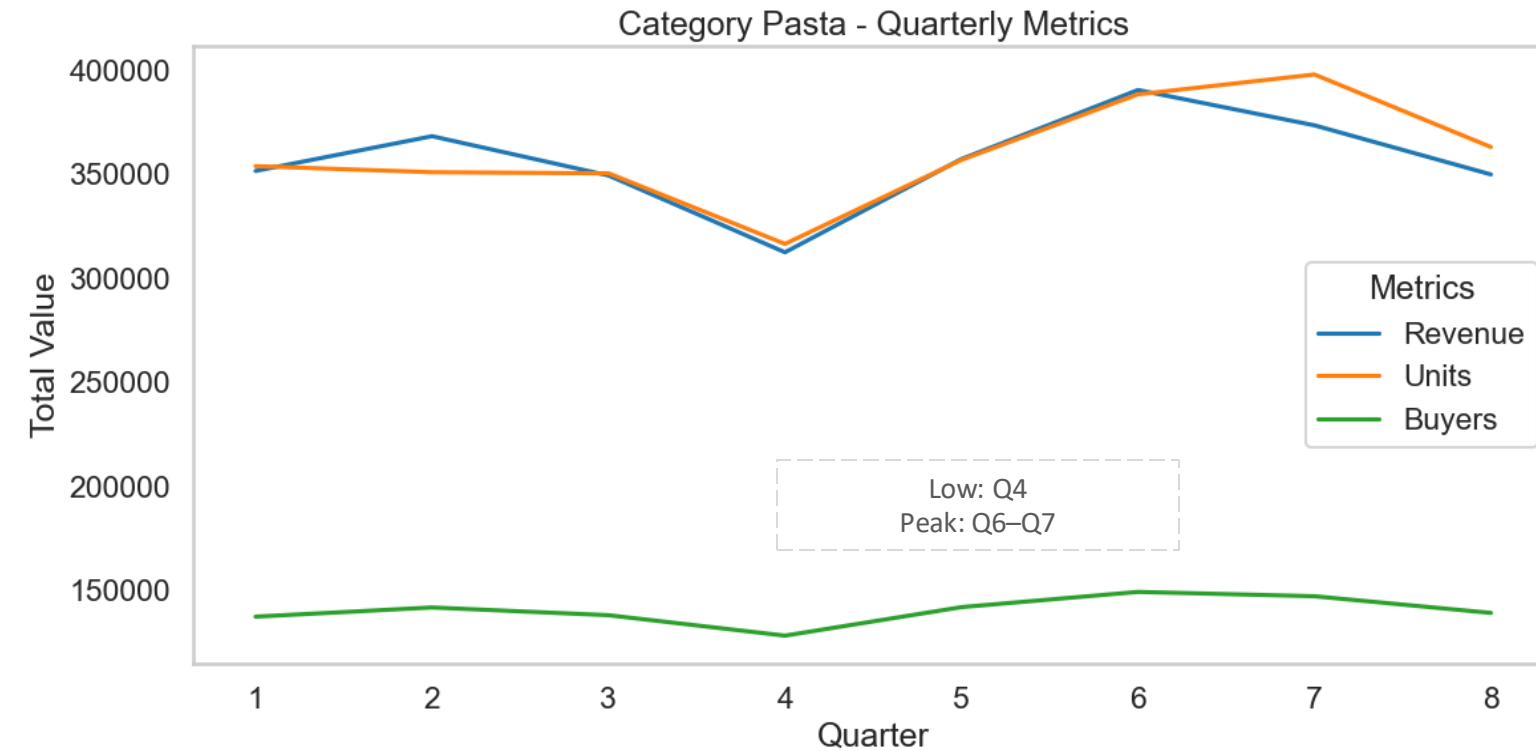
- Keep pricing in the **core band (~\$1.0–1.2)** while sustaining premium positioning.
- Use **premium SKUs** for brand equity and margin, not volume.
- Align promotions with seasonal spikes to maximize ROMI

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Section 2: Category Overview (Quarterly)

Penetration is the growth lever & Seasonal effects dominate & Customer Base's steady

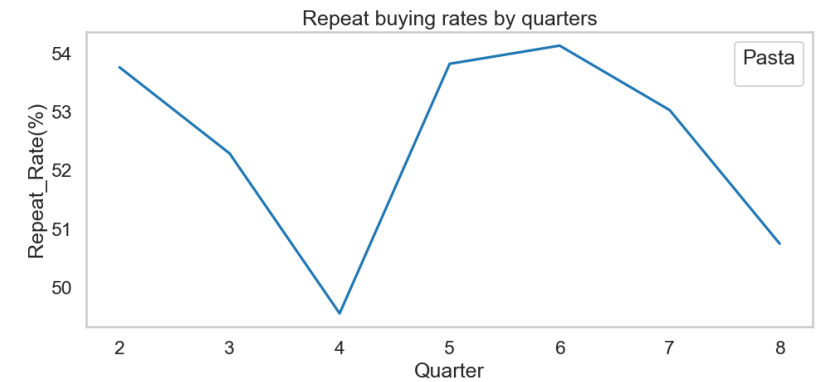


➤ Revenue & units tightly coupled

- Pricing stable & demand (penetration/volume) drives results
- Growth comes mainly from penetration, not higher loyalty
- Q6–Q7 peaks happen without big buyer growth → mostly heavier/extra trips from existing shoppers

➤ Buyers remain flat

- Gains came from frequency/basket
- Buyer count ranges ≈130–150k and barely grows. The Q6–Q7 peak happens without a big buyer increase, implying higher trips or units per buyer drove the lift

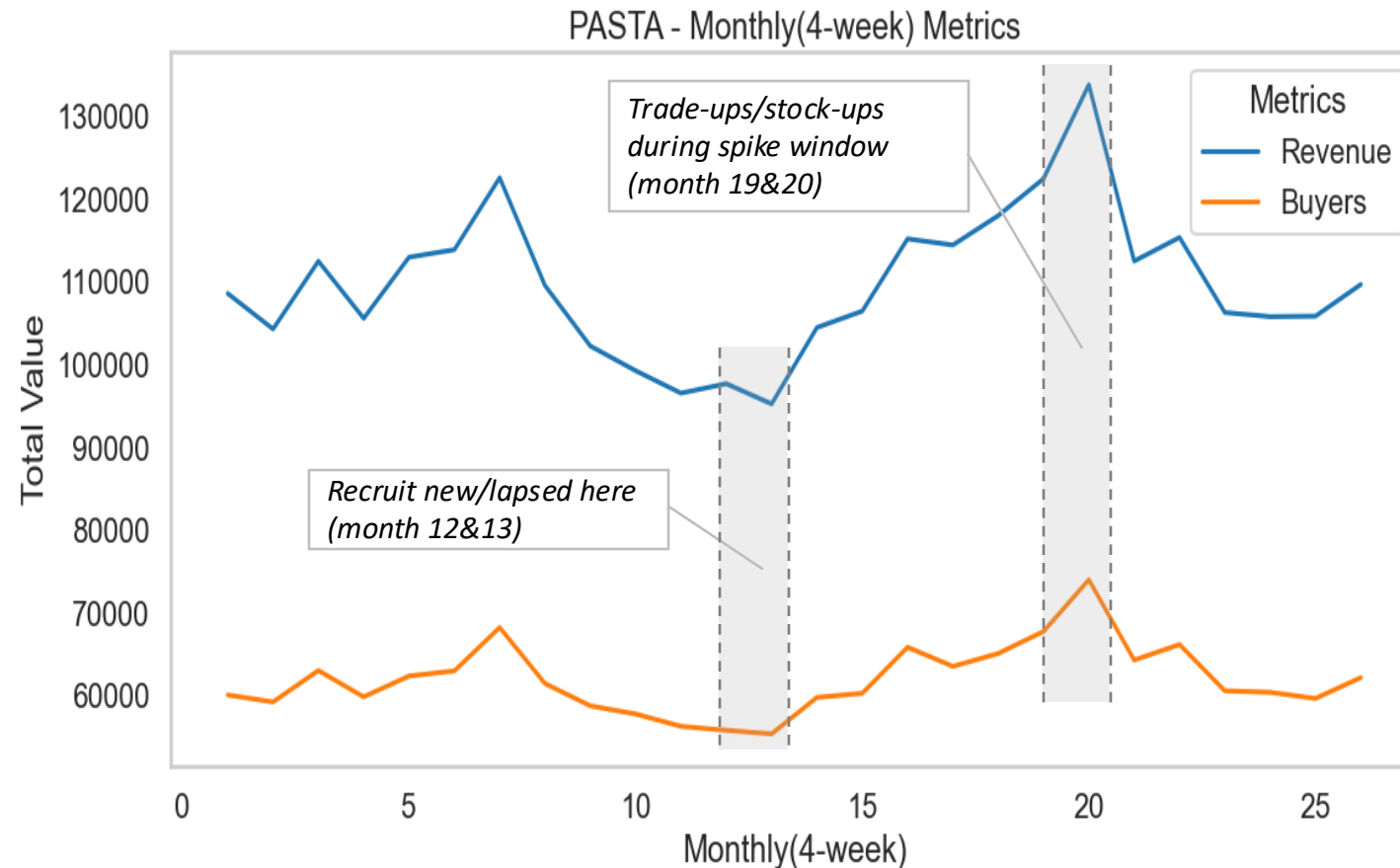


Repeat is stable at ~50–54% and softens in Q4 & Q8; Shifts are seasonal and revert to norm — consistent with EB's Law of Buyer Moderation

- ✓ **Revenue & units move together**
- ✓ **Buyer base fluctuates less**
- ✓ **Growth = penetration-led**
- ✓ **Category shows seasonal cycles but is stable long-term.**

Section 2: Drill down to Month

Monthly trend shows trough M12–13 and spike M19–20; best timing windows are clear



Revenue and buyers rise and fall together

- ✓ confirms demand shifts are **penetration-led**, not loyalty-led.

Seasonal cycles visible

- ✓ strong peaks (e.g., around period 7 and 20) reflect predictable category demand.

Revenue moves more steeply than buyers

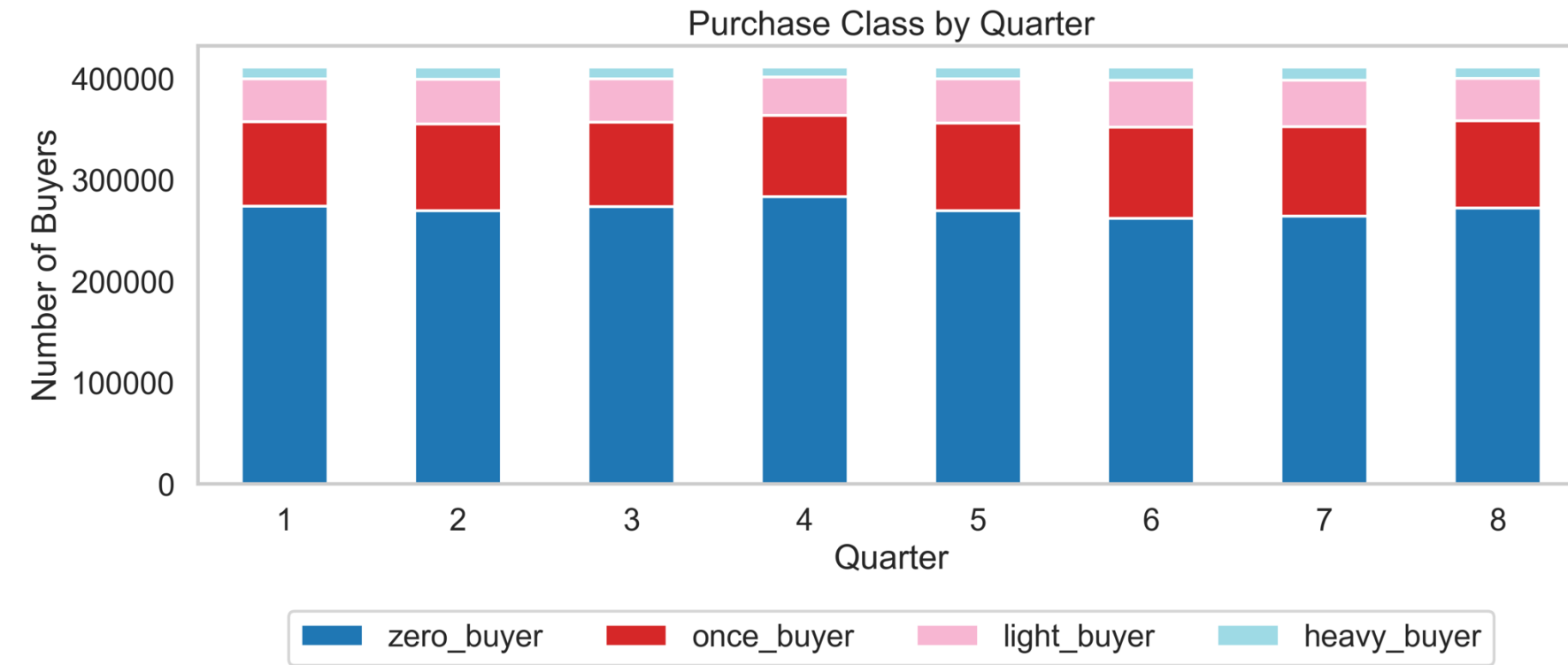
- ✓ growth bursts come from **increased purchase frequency/volume per buyer** as well as more households.

Category remains stable long term

- ✓ fluctuations follow regular patterns, consistent with Ehrenberg–Bass view of predictable category demand.

Section 2: Category Distribution of Buyer Classes Overview

Distribution is relatively stable & Most Customers Buy Once or Not at All (inertia)



Zero buyers

- **Largest segment**
- high customer inactivity

Once buyers

- **Second largest group**
- many customers purchase only once (retention challenges)

Light buyers (2–3 purchases)

- Smaller share
- **repeat purchase behavior**
- opportunity to strengthen engagement

Heavy buyers (4+ purchases)

- **Smallest**

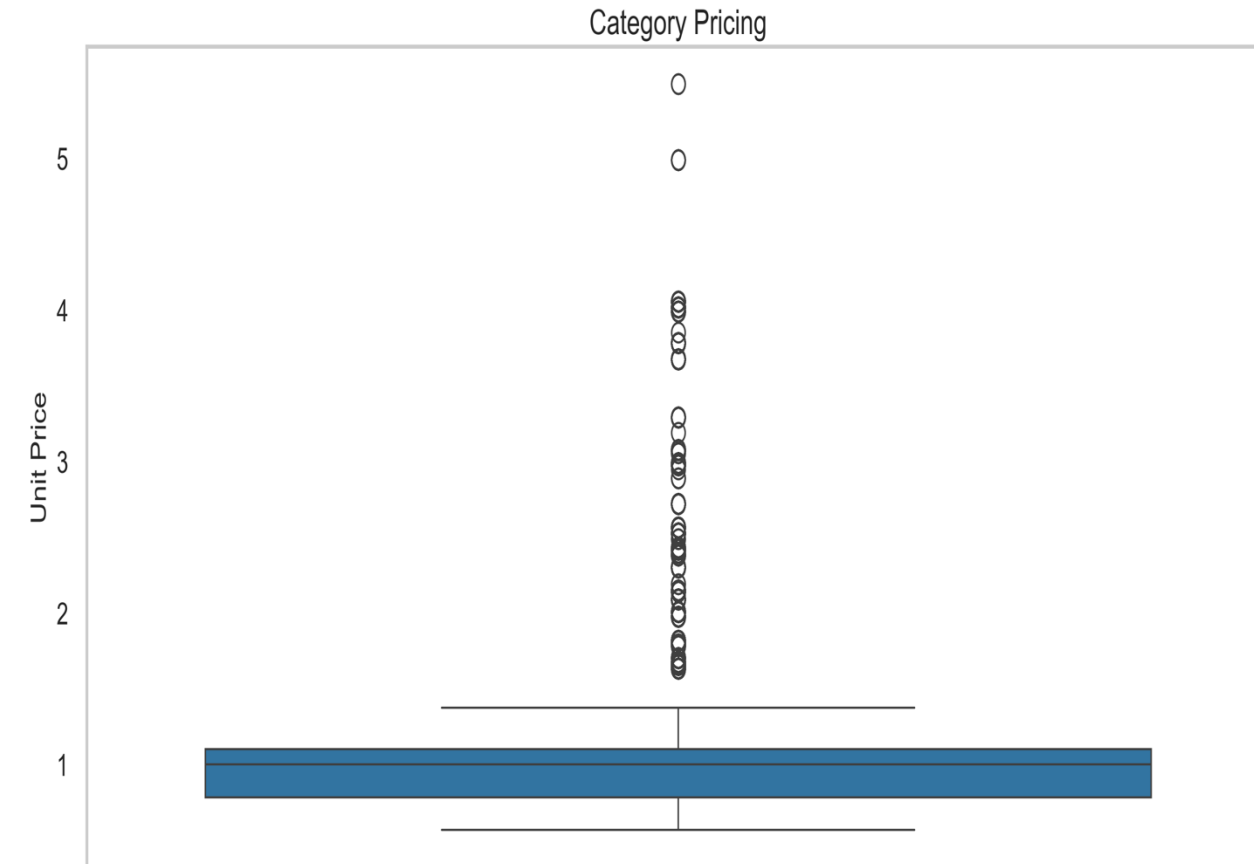
Most of our customers remain inactive or buy only once, while only a small group makes repeat purchases — highlighting a big opportunity to focus on retention and loyalty growth.🎯

Call-to-action

- ✓ Focus on converting once/light buyers into repeat buyers through targeted offers and engagement programs
- ✓ Strengthening loyalty initiatives to retain and reward our heavy buyers

Section 2: Category Pricing Overview

Most volume around \$1; Outliers reflect niche premium SKUs



Tight core price band

- Median unit price \approx **\$1.05**; most items sit in **~\$0.8–\$1.2** (narrow IQR).

Right-skewed distribution

- Long upper tail; whiskers extend to **~\$0.6–\$1.4** with **many high-price outliers** up to **~\$5–5.5 (premium brand)**

Implication

- Compete and price-position in the **core band**
- Use **premium SKUs** for margin and brand building, not volume
- Avoid promo depths that push below the lower whisker (**~\$0.6**) to prevent **value erosion/brand devaluation**

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Section 3: Barilla Brand Performance Snapshot

Healthy penetration and frequency underpin strong revenue share



Market & Buyers

Revenue: \$433.9K

Revenue share: 15.2%

Brand buyers: 125,508

Penetration (b): 30.5%



Buying Behavior

Transactions: 277,192

Purchase frequency (w): 2.21



Spend

Avg spend per buyer: \$3.46

Strong reach: Barilla penetrates ~30% of the category, reaching nearly 1 in 3 buyers.

Balanced growth driver: Both **scale of buyers (penetration)** and **repeat rate (w=2.2)** contribute to revenue.

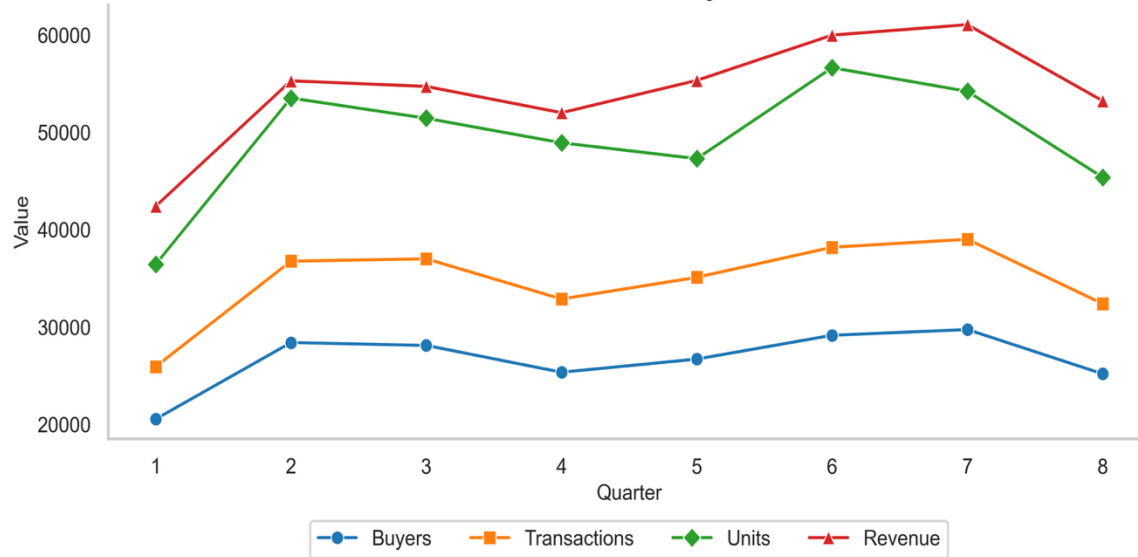
Revenue share leadership: With ~15% share, Barilla is among the top brands in the category.

Moderate spend per buyer (\$3.46): Growth opportunity lies in **expanding penetration further** rather than relying on heavier spending from current buyers (consistent with Ehrenberg-Bass).

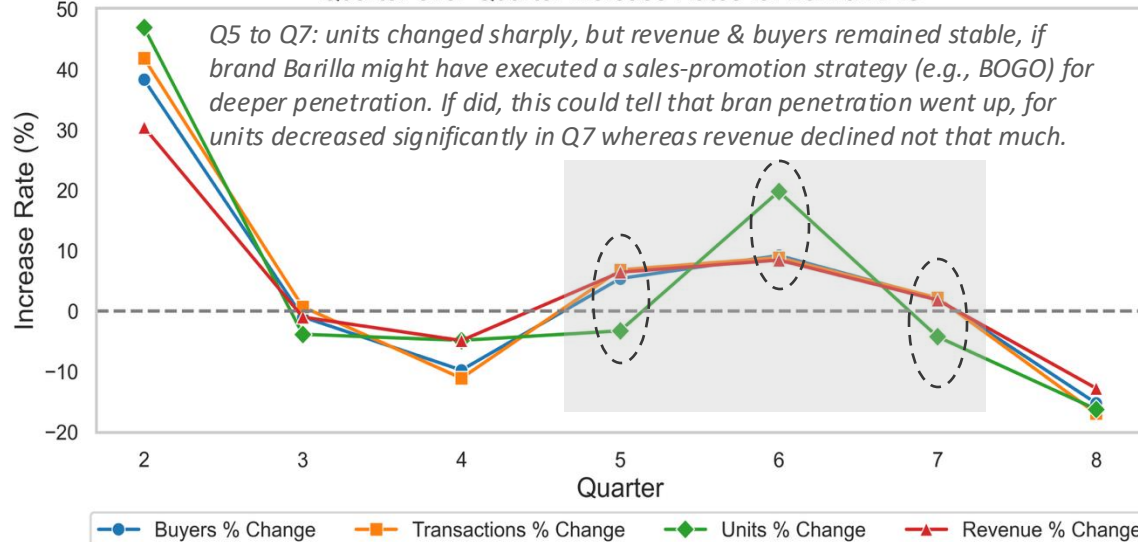
Section 3: Barilla's KPIs Overview (Quarterly)

Growth Driven by Buyer Numbers, Not Just Loyalty

Trends of Barilla's KPIs by Quarters



Quarter-over-Quarter Increase Rates for Barilla KPIs



Buyers drive growth

- Revenue and units closely follow the rise and fall of total buyers
- growth comes from increasing penetration (sales promotion or else), not deepening loyalty

Transactions per buyer are stable

- Number of transactions per buyer doesn't dramatically increase
- "Double Jeopardy Law" - smaller brands have fewer buyers and slightly less loyal ones

Quarterly peaks and dips align across KPIs

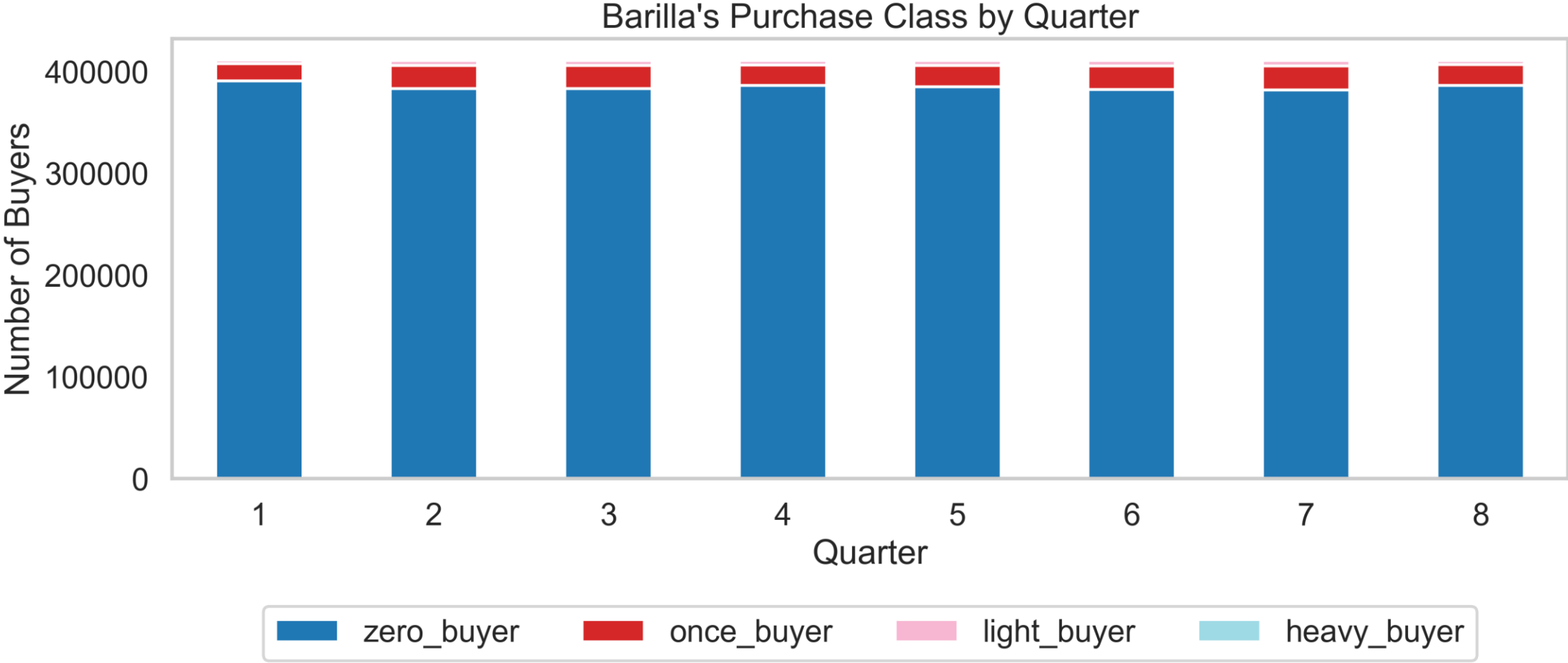
- Revenue, units, and transactions move in parallel with buyer counts - loyalty metrics alone don't explain growth

Strategic implication

- ✓ Prioritize **acquiring more buyers** and **reaching all category buyers** consistently
- ✓ Do not over-focus on heavy users

Section 3: Barilla's Customer Base

Distribution of buyer class aligns with Category trend – zero-buyer dominates



Section 3: Sales contribution by buyer classes – Barilla

Penetration is the constraint; Revenue contribution is aligned with the **60/20 Pareto Law**

<i>Purchase Class</i>	<i>Number of Buyers</i>	<i>Total Revenue \$</i>	<i>Total Items</i>	<i>Percent of Total Buyers %</i>	<i>Percent of Total Revenue %</i>
Zero buyer	285994	0	0	70	0
Once buyer	75182	110276	102516	18	25
Light buyer	32808	115372	104943	8	27
Heavy buyer	17518	208246	186261	4	48

Brand Choice is Largely Inertia-Based

- Most category buyers didn't buy Barilla this period
- Zero buyers ≈ **285,894** → ~**70%** of category buyers (≈411k)

Buyer base is dominated by once/light buyers

- ~**70%** once, ~**26%** light (2–3), ~**4%** heavy (4+)
- Regression to the mean in purchasing

Heavy buyers contribute to less than 60% of revenue

- Heavy = **4%** of buyers contribute to **48%** of revenue
- Align with 60/20 Pareto Law rather than 80/20

Implication

- Growth won't come from squeezing more out of the heavy minority
- Future sales will come from **increasing penetration** (more zero buyers, more once buyers and light users)

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Section 4: Competitive Landscape (main competitors)

30% of Barilla buyers also purchased Private Label, as the main rival in household overlap

Brand	Duplication rate
Barilla	100%
Private Label	29.5%
Ronzoni	13.0%
Private Label Premium	11.2%
Creamette	7.9%
Mueller	7.7%

➤ Private Label

- Nearly 3 in 10 Barilla buyers also bought Private Label.
- This is Barilla’s largest overlap → strongest household-level competitor.

➤ Ronzoni & Private Label Premium

- 11%~13% of Barilla buyers also bought Ronzoni.
- Moderate overlap, possibly because both compete in similar product ranges.
- Barilla competes with both standard and premium tiers of private label.

➤ Creamette & Mueller

- ~8% of Barilla buyers also bought each
- Smaller overlaps, but still notable competition in the mainstream pasta category

Key insights for Barilla

- Primary rival: Private Label (highest duplication rate).
- Secondary rivals: Ronzoni, Private Label Premium.
- Other overlaps: Creamette, Mueller.
- The duplication pattern is very consistent with the Duplication of Purchase Law



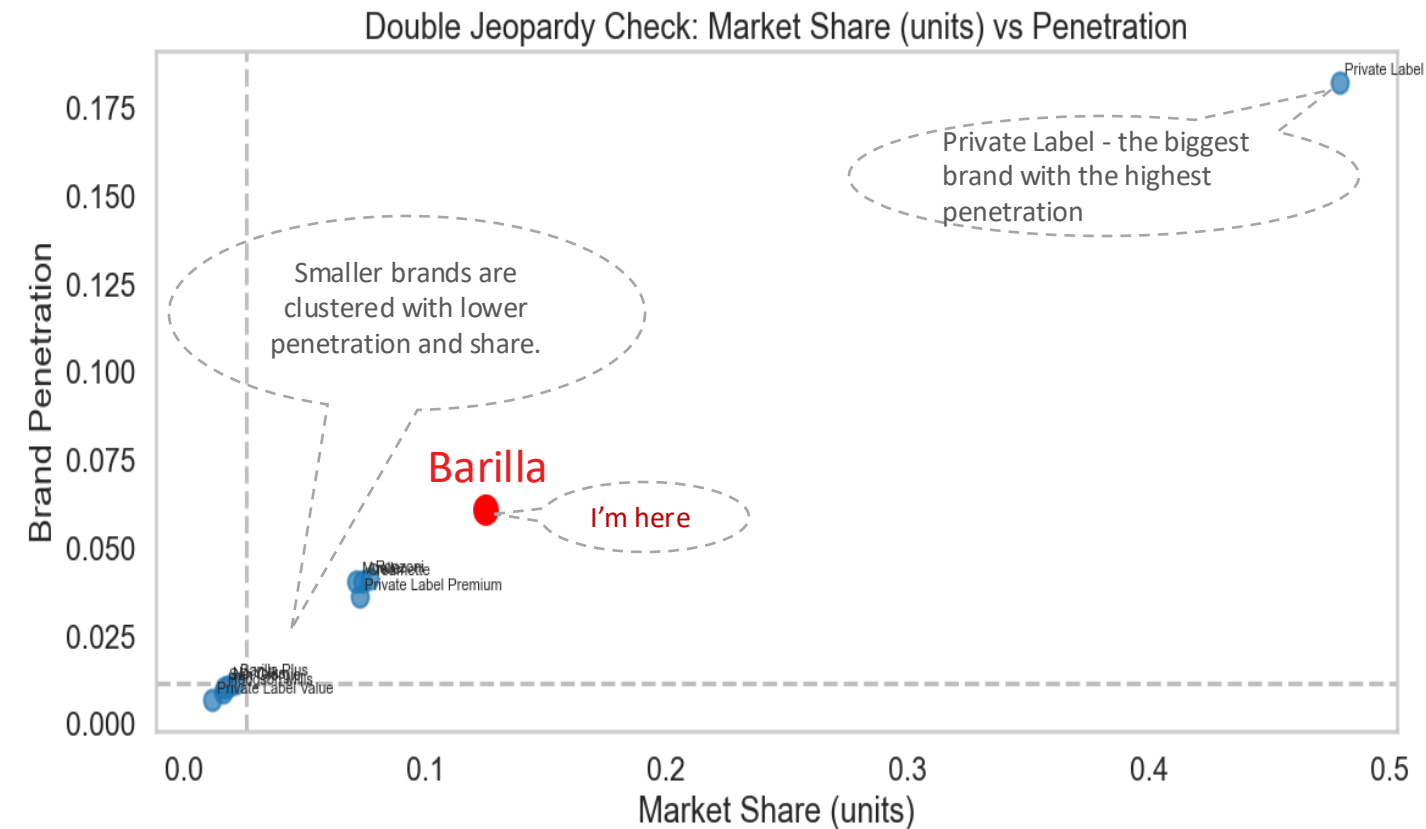
Duplication of Purchase Law

Buyers of one brand will buy another brand in proportion to that second brand's market penetration, or market share. This law indicates that the customers of a larger brand are more likely to also buy other large brands, and a small brand's customers are more likely to buy other small brands.

Section 4: Competitive Landscape - Penetration (in the last quarter)

Barilla outperforms expectations, showing stronger penetration than peers at a similar level

Brands align along a diagonal pattern (higher share \rightarrow higher penetration)



Barilla has a **moderate market share (~0.12)** and **above-average penetration (~0.06)** compared to peers of similar size, **slightly above the “main pack”** of brands, suggesting it attracts a broader base of buyers than others at similar share levels.

Double Jeopardy effect

- Smaller brands suffer twice — they have fewer buyers (low penetration) and those buyers are less loyal (lower repeat purchase rates)
- Larger brands win both on penetration and loyalty

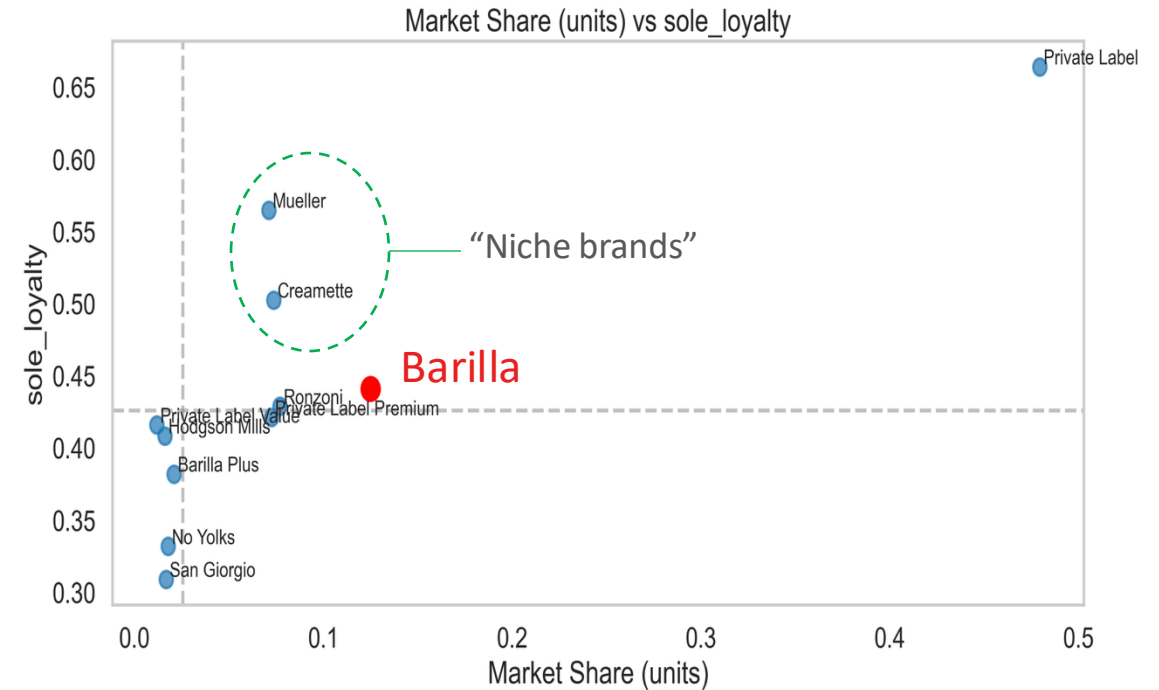
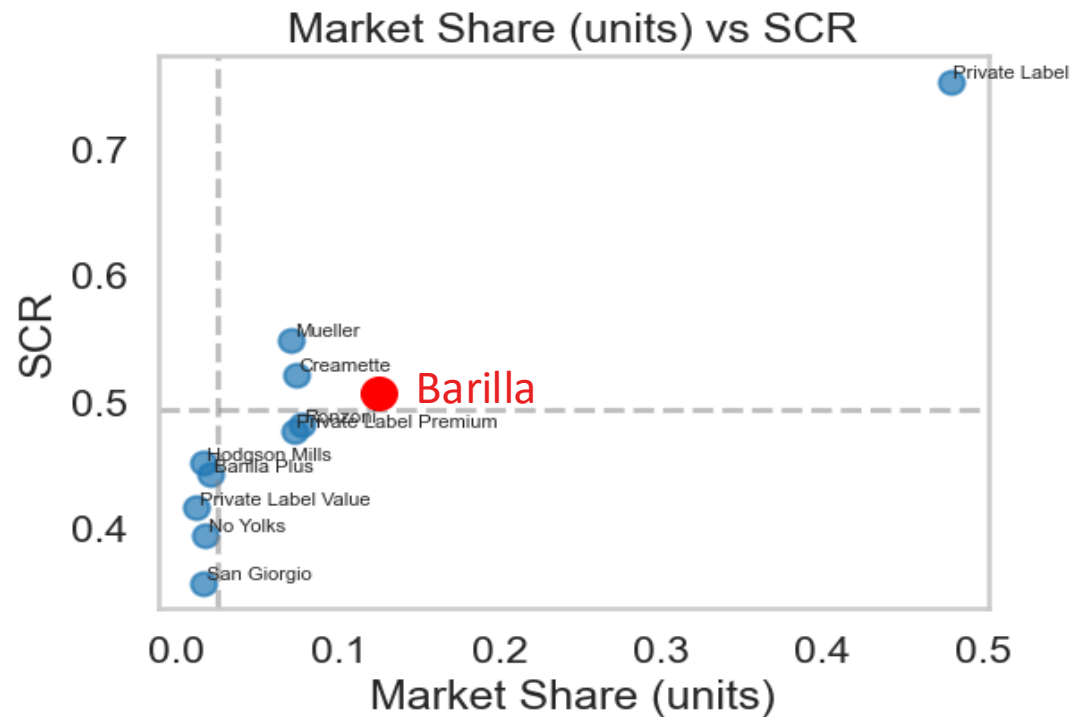
Most consumers buy from a repertoire of brands, rather than being loyal to one

- high share, high penetration — Private Label
- Most other brands are clustered in the bottom-left (low-to-moderate share and penetration)

Note: Each bubble represents a brand with >5% market share

Section 4: Competitive Landscape –SCR & Sole loyalty (in the last quarter)

Barilla enjoys slightly higher loyalty than expected for its size, reinforcing the Double Jeopardy



Positive loyalty performance

Barilla (red) has a **SCR of ~0.51** and a **sole loyalty of ~0.45**, both slightly above the category average

In line with Double Jeopardy

Larger brands (e.g., Private Label) show higher loyalty, while smaller brands show lower loyalty

Niche brands

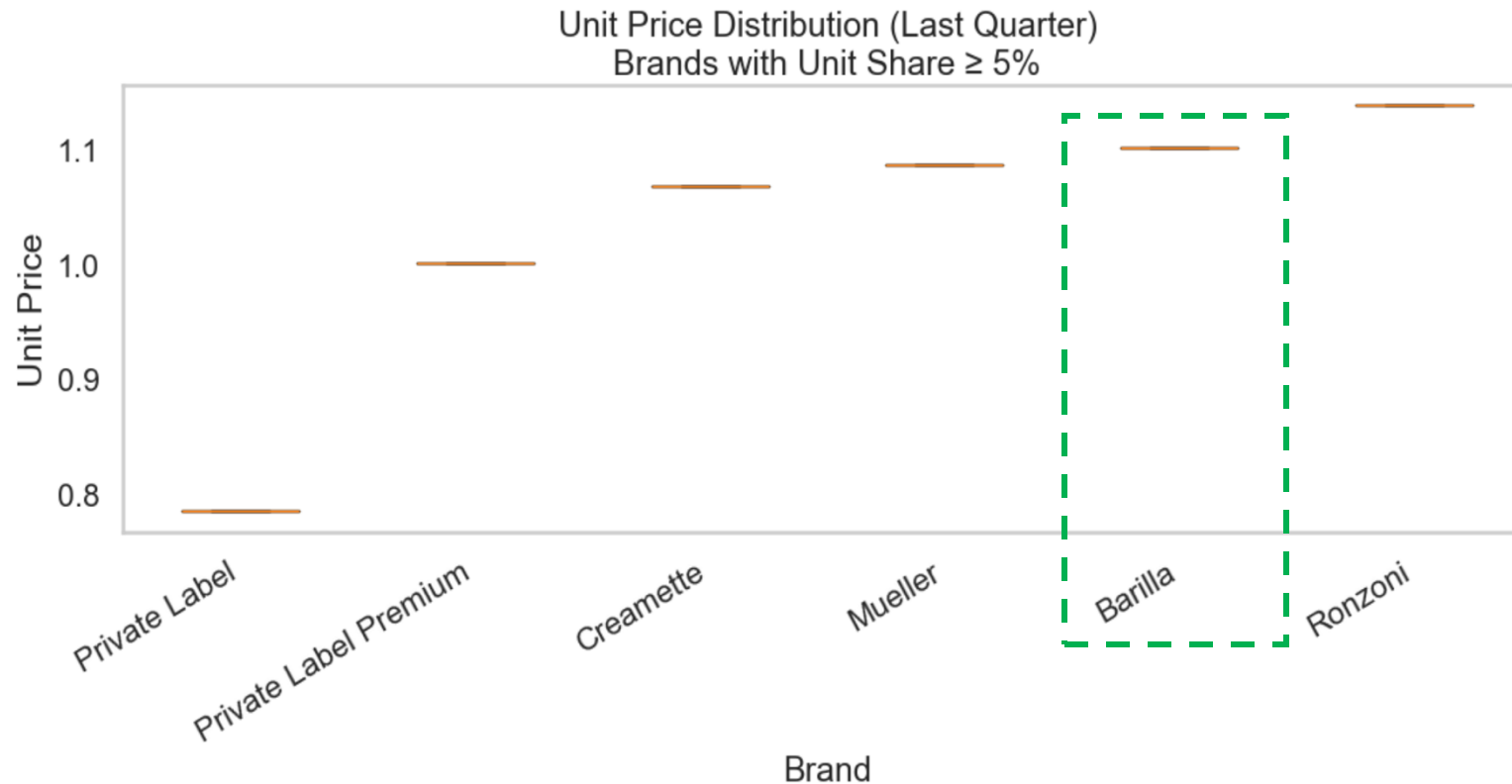
Low market share with high sole loyalty may indicate “Niche brands”

Competitive edge

Barilla outperforms other mid-sized brands, suggesting **stronger loyalty bonds** with its customer base.

Section 4: Competitive Landscape - Price positioning

Barilla's in the upper price tier, its unit price is higher than most mainstream



Barilla is positioned as a **premium-priced brand**, second only to Ronzoni in this set.

- Barilla's box is around 1.08–1.09 per unit.
- That places it above Creamette (≈ 1.04), Private Label Premium (≈ 1.00), and Private Label (≈ 0.79).
- Only Ronzoni (~ 1.12) has a slightly higher median price.

Barilla's unit price is higher than most mainstream brands and close to Ronzoni. This positions Barilla in the **upper price tier**, reinforcing its premium image.

Section 4: Competitive actions

Mind down-trade risk (easy-switching), brand positioning, and differentiation

Implications (based on previous two slides)

Down-trade risk & Primary household rival = Private Label

- 30% of Barilla buyers also bought Private Label—biggest overlap and the cheapest brand
- Clear down-trade risk for Barilla's light/price-sensitive buyers

Quality positioning & upper-tier positioning

- Barilla's median unit price is above most mainstream brands and just below Ronzoni
- Barilla also competes **up-market** for premium buyers; differentiation matters (quality cues, heritage)

Watch retailer premium tiers - Private Label Premium

- Private Label Premium shows non-trivial overlap (~11%) at a price below Barilla but above standard PL
- Mind retailer premium tiers since they can siphon value-seeking "quality" shoppers

Pattern fits the Duplication Law

- High overlaps with big-share brands (especially PL) are expected

Action

1

Protect against trading down to PL

- Run **tactical value** (multi-buy / larger packs / coupons) in stores where PL share is high.
- Coordinate promo cadence to avoid deep discounts that train switching.

Action

2

Differentiate vs premium substitutes (Ronzoni, PL Premium)

- Emphasize **quality/heritage/texture** in comms and packaging.
- Maintain **assortment breadth** on popular shapes/SKUs; keep out-of-stocks near zero.

Action

3

Penetration growth = light buyers

- Target **light/occasional buyers** with low-lift offers (on-pack, basket add-ons).
- Ensure **distribution coverage** and shelf visibility (eye-level, shoulder-level)

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Section 5: Dirichlet Model Fitting as Benchmark (the last quarter)

Dirichlet Fit Confirms Repertoire Buying

Metrics	Market share (%)	Penetration - b			Purchase frequency - w			SCR			Sole loyalty%		
Brands	OBS	OBS	THE	APE	OBS	THE	APE	OBS	THE	APE	OBS	THE	APE
Private Label	48%	18%	16%	10%	1.50	1.36	9%	75%	68%	9%	66%	59%	12%
Barilla	12%	6%	5%	15%	1.29	1.11	14%	51%	49%	4%	44%	41%	7%
Ronzoni	8%	4%	3%	20%	1.25	1.08	14%	48%	46%	4%	43%	39%	9%
Creamette	7%	4%	3%	21%	1.28	1.08	16%	52%	46%	12%	50%	39%	22%
Private Label Premium	7%	4%	3%	13%	1.25	1.07	14%	48%	46%	4%	42%	39%	8%
Mueller	7%	4%	3%	24%	1.26	1.07	15%	55%	46%	16%	56%	39%	31%
Others	10%	5%	4%	20%	1.28	1.09	15%	56%	47%	16%	42%	40%	5%
AVG	14%	6%	5%	18%	1.30	1.12	14%	55%	50%	9%	49%	42%	13%

APE (Absolute Percentage Error) = (OBS - THE)/OBS, here: OBS – observed value, THE - theoretical value

Barilla: balanced profile. APEs are **mid-pack** (+15% b, +14% w, +4% SCR, +7% sole) → **close to Dirichlet norms**; nothing extreme (stable, scalable).

Private Label: remains category leader. APEs are moderate (+9–10% for b & SCR), so it’s **performing near expectation** given its size.

Mueller & Creamette

- strongest outperformance
- underestimated by theory → reach more buyers than expected for their size and buyers purchase slightly more often than theory suggests
- a **larger exclusive core** than predicted

Section 5: Dirichlet Model Fitting as Benchmark (the last quarter)

6/8 tests passed; perfect rank-order fit, small level bias remains

Model Fitting Statistics					
K	.435	A	1.1	s^	50.00
Penetration			Purchases Per Buyer		
AVE%	13.8%	x	AVE%	13.7%	x
.r	1.00	✓	.r	0.99	✓
MAD%	13.8%	✓	MAD%	13.7%	✓
MAPE	16.0%	✓	MAPE	13.8%	✓
Number of Tests Passed			6	out of	8

Note: Category inputs (B & W) not on the mass market, just using a within-scope customer base

S^ ≈ 50: typical **repertoire intensity** (normal switching; no extreme “cult-brand” loyalty)

K ≈ 0.435: reasonable dispersion in **purchase incidence** across households (some buy more often than others).

A ≈ 1.1: mild time-aggregation/over-dispersion; consistent with real-world variability.

- **Category looks “normal”:** K≈0.435, A≈1.1, ŝ≈50 indicate a **repertoire market** with predictable switching—**consistent** with “Double Jeopardy Law”
- The model now has a **clean, closed brand partition** (good), and it **predicts relative differences perfectly**
- Passes **6/8** statistical checks; **excellent rank order** (r≈1.0).
- Small **level bias** (~14%): acceptable for benchmarking “theo. vs. obs.”
- Use outputs to **identify brands above/below expectation** and prioritize **distribution & salience** levers.

Section 5: Conclusion & Recommendations

Conclusion

- The pasta category is **stable but penetration-led**, with strong seasonal peaks (Q6–Q7).
- Barilla holds a **leading position** with ~15% revenue share and ~30% penetration, slightly outperforming peers in loyalty.
- Growth is constrained by the **large share of zero and once-buyers**, and competition from **Private Label** poses down-trade risks.

Recommendations

Expand Penetration

- Recruit *zero and once-buyers* during seasonal troughs with awareness campaigns and trial-driving promotions.

Strengthen Retention & Loyalty

- Convert *light buyers* into repeat customers through targeted offers and loyalty programs.

Defend Against Private Label & Premium Rivals

- Use value tactics to reduce down-trading.
- Differentiate Barilla with quality, heritage, and texture cues versus premium competitors

THANKS