

Data Analytics Simulation: Strategic Decision Making

Reflection Report

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1. Strategic Overview and Pre-Game Analysis

Blue entered Year 5 as the weakest of four competing brands, with 11.0% market share and cumulative operating profit of \$75.4M across Years 1-4. Turbo led the market at 44.1% share and a price of \$10.00 per 100 loads. Fresh held 26.3% at \$8.00, positioning on scent and freshness. Store competed at \$6.00 with 18.6% share, undifferentiated except on price. Blue at \$7.00 occupied an awkward middle position: too expensive to be the clear value choice, without the product credentials to justify a premium over Fresh. Blue's share had been flat at 9-11% across Years 1-4 despite the overall market growing, indicating a structural positioning problem rather than a temporary performance dip. By Year 8, the turnaround delivered 14.1% final market share, \$242.0M cumulative profit and \$1,819.4M cumulative revenue.

Before decisions were made, the K-W Vision platform was used systematically across its key modules: the Data Explorer for formulation, attribute and channel demand trends, the Geographic Demand screen for regional variation, the Social Media sentiment tracker, and the Income Statement and Production vs Demand reports. Several signals emerged clearly. Pods showed the highest formulation demand at 189.3M units in Year 4, ahead of Liquid (162.2M) and Powder (135.5M). Odour elimination was the dominant brand attribute at 143.9M units, leading Cold Water by 18M. Convenience was the top trade channel at 75.2M units. Price point data showed the \$5-\$7 demand bracket at 97.3M units, 48% larger than the \$7-\$9 bracket at 51.6M, confirming the case for holding Blue at \$7.00. A cut to \$6.00 would have placed Blue directly alongside Store brand with no meaningful differentiation and worse margin.

The strategy entering Year 5 rested on four pillars: switch formulation to Pods, anchor positioning on odour elimination, over-index trade spend toward Convenience and

Mass, and target Digital Ads and TV toward a 35-54 demographic in the Southeast and West. Club was intentionally held at 10% in Year 5 despite being the second-highest demand channel, because Club buyers skew toward wealthier bulk-purchasing households that did not match the lower-income target segment at that stage; spend was raised progressively to 25% as income targeting broadened in later years. This was grounded in Kotler's STP framework (Kotler, 1994), which holds that sustainable competitive advantage in a segmented market comes from concentrating resources on segments where differentiated positioning is achievable, rather than spreading spend to chase all groups simultaneously. Figure 14 shows the repositioning trajectory across all four brands.

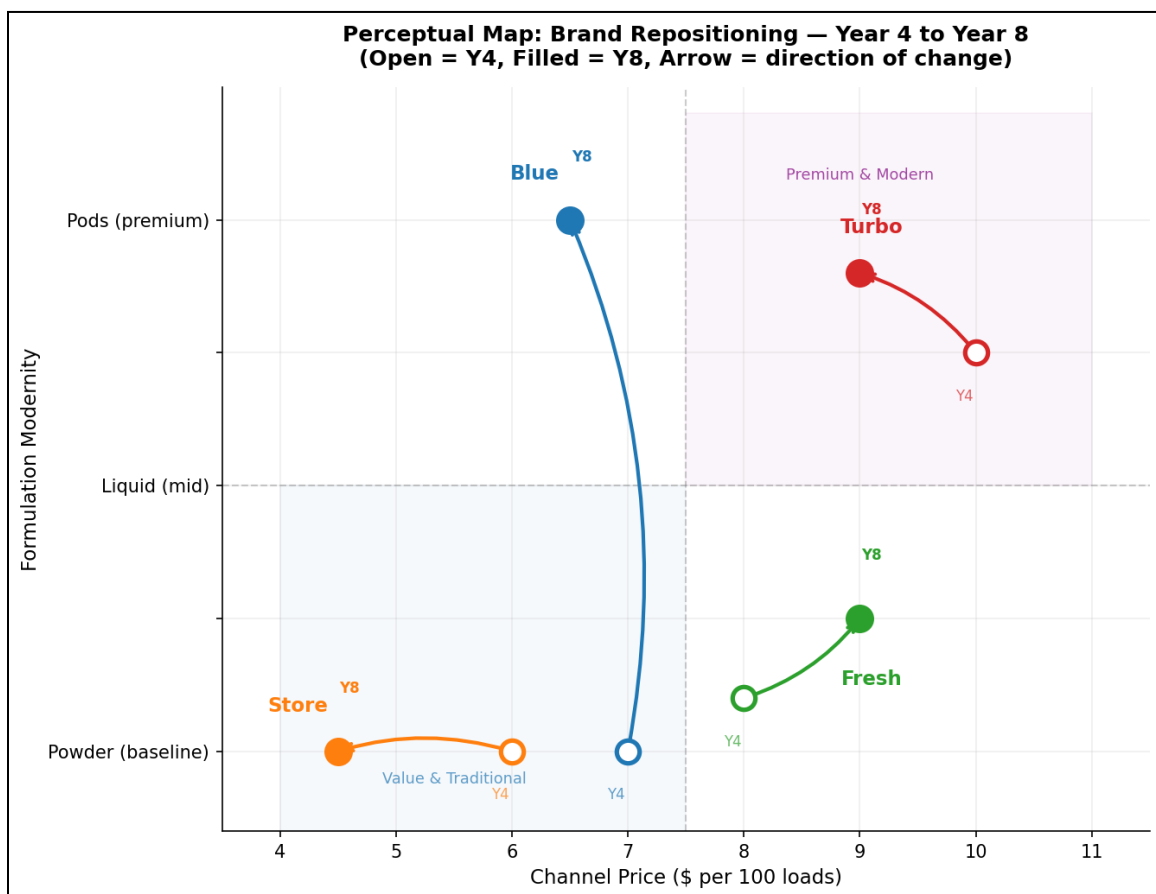


Figure 14: Perceptual map of brand repositioning from Year 4 to Year 8 across price and formulation modernity.

Fresh's trajectory was the most consequential for Blue: it drifted upmarket on price while losing share throughout the player years, freeing up a mid-tier customer segment that Blue partially captured in Year 8 by broadening its targeting and reducing price to \$6.50.

2. Decisions and Financial Outcomes by Year

Figure 1 shows the full market share trajectory. Blue grew from 8.9% in Year 1 to 14.1% in Year 8, with the sharpest single-year gain in Year 6. The Year 7 dip and Year 8 recovery reflect the tension between a higher variable cost base from Pods and renewed demand from the price reduction and broadened targeting. The full decision history for Years 5-8 is set out in Table A4 in the Appendix; the financial story behind the trajectory is in Table A1 and Figure 2. What follows focuses on the strategic and operational decisions that drove each year's result.

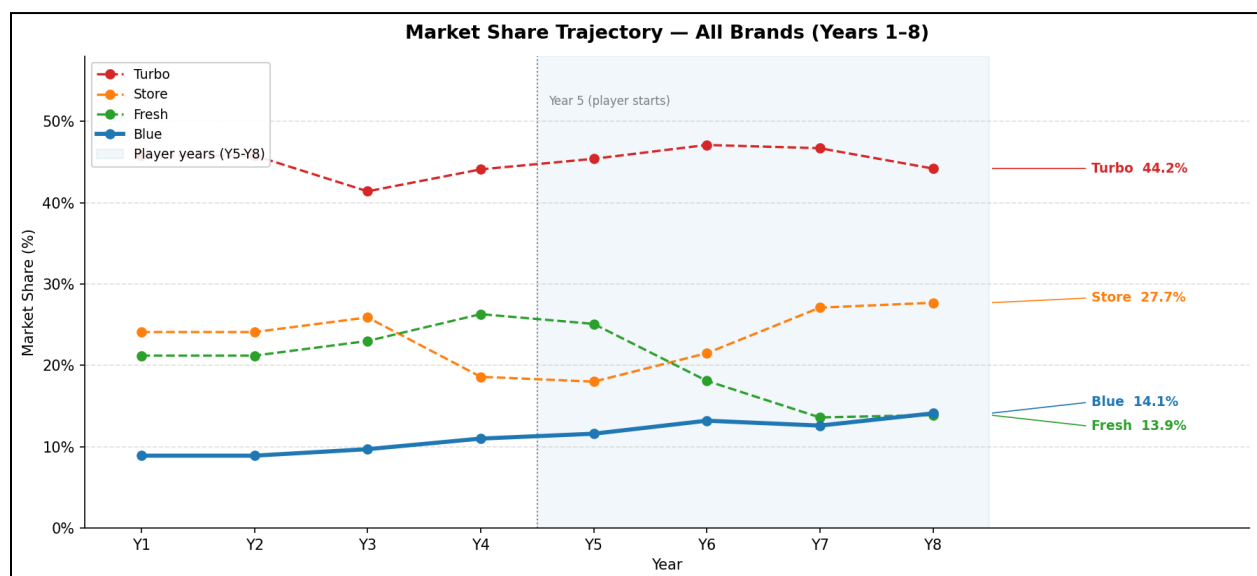


Figure 1: Market share trajectory for all four brands, Years 1-8. Shaded region indicates player-controlled years.

Year 5: Foundation Year

Production was set at 32.5M units, a modest buffer above Year 4 demand of 32.2M. Demand surged to 47.4M units, driven by the odour elimination repositioning and channel reallocation, resulting in a stockout of 14.9M units and \$104M in foregone revenue. Notably, the 47.4M figure itself understates true underlying demand: consumers who wanted Blue but could not find it on shelves are not captured in demand data, meaning the repositioning had generated even stronger consumer pull than the numbers reflect. Market share still grew to 11.6%, pointing to the scale of latent demand. The Southeast region was the primary driver, growing 116% from 10.1M to 21.8M units. Operating profit fell to \$24.4M, partly because the Pods formulation added 15% to variable costs, raising the per-unit cost from \$2.10 to \$2.42, at exactly the moment revenue was constrained by the supply shortfall.

Year 6: Recovery and Peak Profit

Production was raised to 44.0M units in response to the Year 5 demand signal. Formulation switched to Liquid (+7% variable cost), lowering the per-unit variable cost from \$2.42 to \$2.00, which was itself a more defensible choice given that cumulative profits were still being rebuilt. Demand came in at 39.2M, leaving 4.8M units in inventory. Two factors suppressed demand relative to Year 5. Net negative social media sentiment had reached 45.9% in Year 5, driven by consumers who wanted Blue but could not find it, and this fed back into lower purchase intent in Year 6. Additionally, part of the Year 5 surge reflected pent-up demand rather than a permanently higher baseline, meaning the repositioning had genuine structural effect but not as large as the Year 5 spike implied. Despite the overproduction, revenue rose to \$274.7M and operating profit more than doubled to \$61.5M, the highest single-year result in the

simulation. Market share reached 13.2%, a 1.6 percentage point gain. The inventory overrun was a mirror image of the Year 5 stockout: both errors came from anchoring production to recent actuals rather than to a forward model of demand.

Year 7: Formulation Switch and Competitive Pressure

Formulation reverted to Pods to align with the long-run demand trend, which showed Pods adding approximately 1.4M units of market demand per year. Production at 39.0M closely matched demand of 37.7M, with the 1.3M-unit surplus joining the 4.8M carried from Year 6. The supply situation was balanced. However, the combination of the Pods cost premium and competitor pricing moves made this the most financially squeezed year of the simulation. Store cut to \$4.50, a price level at which Blue's lower-income target segment in the Southeast and West had little reason to choose Blue at \$7.00. Store's overall demand grew from 64.0M to 81.1M units, a gain of 17M in a single year that came largely from the price-sensitive households Blue had been targeting. Turbo also dropped from \$9.00 to \$8.50, compressing the space for Blue to move upmarket. The Pods formulation raised variable costs to \$91.1M, or \$2.34 per unit, reducing operating profit to \$40.1M. Market share slipped to 12.6%. The formulation decision was defensible based on long-run demand data, but switching to Pods in a year of intensifying price competition from below added margin pressure that Liquid at \$2.00 per unit would have avoided.

Year 8: Final Year Outcomes

Price was reduced to \$6.50, moving Blue fully into the \$5-\$7 bracket, which held 100.6M units of market demand. Targeting was broadened to all regions, all ethnicities, and households of size 3 and above, reflecting a deliberate final-year push to maximise

addressable demand. Media allocation shifted to weight Print at 35% and reduce Digital Ads to 30%. Print was the highest-consumed media channel across all years at 90.5M units, and it indexed toward older consumers where competitors were known to under-invest; the reallocation was an attempt to capture incremental reach in the final year beyond the Digital-heavy base already established across Years 5-7. Production was set at 36.0M, but with 6.0M units carried from Year 7, effective supply was 42.0M. Demand rebounded sharply to 46.3M, creating a second stockout of 4.3M units and \$28M in foregone revenue. Market share recovered to 14.1%, the highest in the simulation. Cumulative profit reached \$242.0M and cumulative revenue \$1,819.4M. Had production been set at 44-45M new units, the full demand could have been met, adding an estimated \$10-12M in additional profit.

Figure 13 shows the year-by-year profit contribution and cumulative build-up.

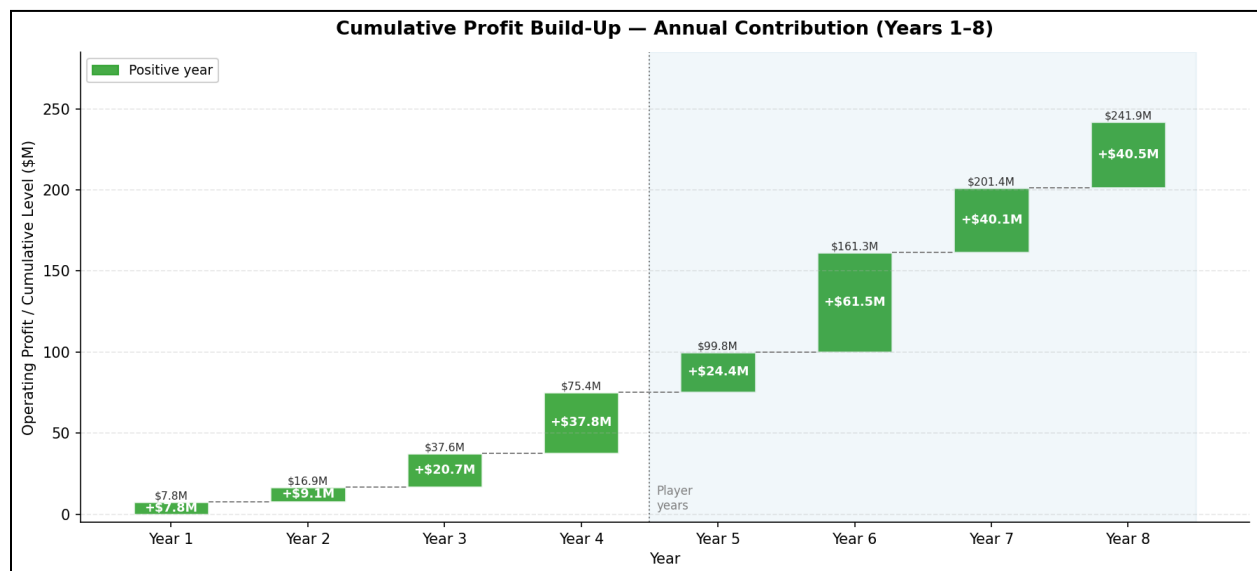


Figure 13: Waterfall chart showing annual profit contributions and cumulative total across Years 1-8.

3. Critical Reflection: What Worked and What Did Not

Production Planning: The Newsvendor Problem

The dominant failure across the player years was production quantity management. Figure 3 shows this plainly: stockouts in Years 5 and 8 cost a combined \$132M in foregone revenue, while Years 6 and 7 overcorrected into excess inventory. The underlying pattern was reactive rather than prescriptive forecasting: each production decision was anchored to the previous year's demand rather than modelling the demand implications of the current year's strategic changes. When formulation, price, and targeting all changed simultaneously, the demand distribution shifted and production should have been reset from scratch. It was not.

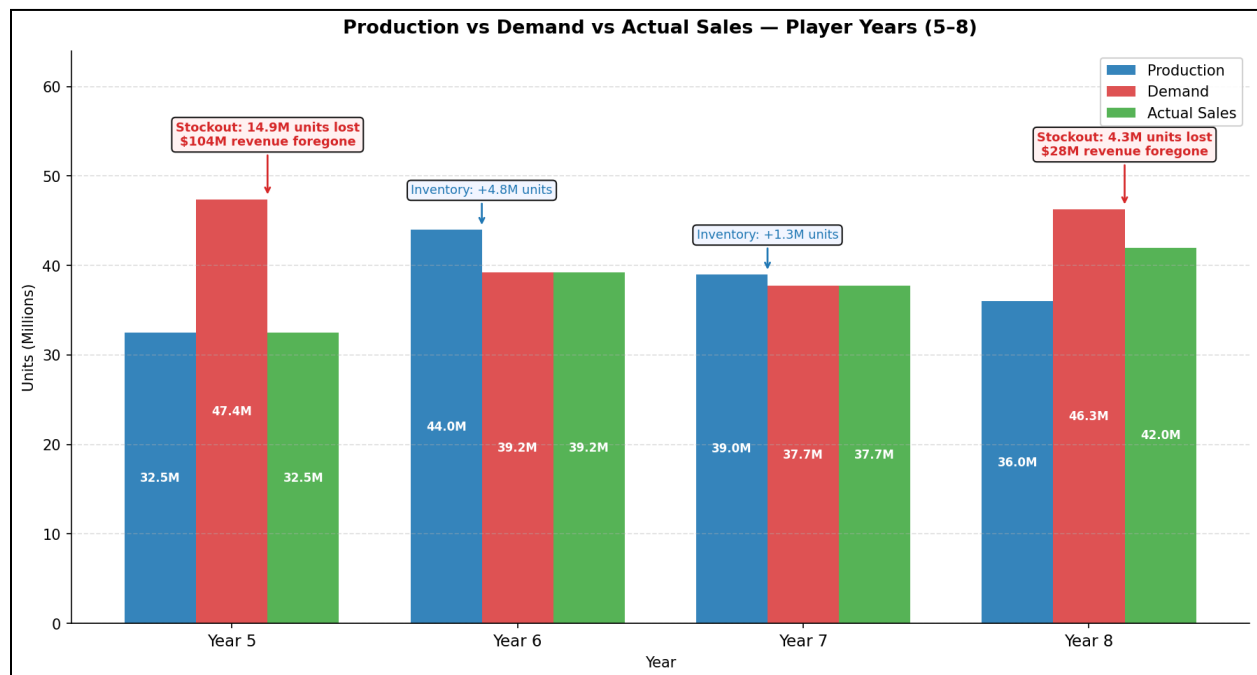


Figure 3: Production, demand and actual sales for Years 5-8. Stockout volumes and revenue foregone are annotated.

This maps onto the Newsvendor Problem (Petruzzi and Dada, 1999), a foundational model for setting production quantity when demand is uncertain. The model's core

insight is that optimal production should be weighted toward the higher end of expected demand whenever the cost of a stockout exceeds the cost of unsold inventory. In Year 5, the cost of each unit of unmet demand was \$4.58 in foregone margin, against an overage cost of \$2.42 per unsold unit. The model therefore prescribed producing at a level that covered approximately the 65th percentile of the demand distribution, rather than anchoring to the most likely single outcome. Applied to a demand range centred around 38-40M units given the repositioning signals, the optimal quantity was closer to 42-45M, not 32.5M. The Year 8 error was structurally identical. After two years of softer demand, production was set at 36.0M despite a simultaneous price cut to \$6.50 and a broadening of demographic and regional targeting. Both are demand-stimulating changes that should have shifted the expected demand distribution meaningfully upward. Applying the same critical fractile logic to a revised demand estimate of 42-44M would have prescribed producing 44-46M new units net of carried inventory, rather than 36.0M. The \$28M in foregone revenue that resulted was the same anchoring error repeated in the final year.

What Worked

Odour elimination as the core positioning attribute was correct throughout. It was the dominant consumer attribute in every year, reaching 148.8M units of demand in Year 8, and aligning Blue's identity with it created a defensible position relative to Fresh (scent) and Turbo (performance). The Year 5 demand surge, while operationally mishandled, confirmed the repositioning was working at a consumer level. Channel allocation was also broadly correct: holding Convenience at 40% throughout aligned with it being the

highest-demand trade channel across all eight years, and the 25% allocation to Mass directly contested Turbo's primary distribution stronghold.

Holding price at \$7.00 for Years 5-7 was analytically well-grounded. Store's cuts from \$6.00 to \$5.25 to \$4.50 over the period showed the futility of chasing on price: any attempt to match Store would have required dropping to a level where the Pods cost structure made the margin non-viable. Staying at \$7.00 kept Blue in the 97.3M-unit \$5-\$7 bracket without surrendering to Store's race to the bottom.

A useful lens for understanding both what worked and what failed is Keller's Customer-Based Brand Equity (CBBE) model (*Keller, 2013*). The model holds that brand equity accumulates from the bottom of a pyramid upward: salience, then performance, then judgements and feelings, then resonance. Three years of consistent odour elimination positioning built the performance layer of Blue's equity as consumers who encountered the brand knew what it stood for. The Year 5 stockout, however, damaged the salience layer: consumers who wanted Blue but could not find it were forced to trial competitors, and the negative reviews that followed suppressed Year 6 demand below what the repositioning alone would have generated. The CBBE framework also explains that maintaining odour elimination consistently across all four years was the right call analytically because brand equity at the performance level only accumulates when the brand promise is delivered consistently over time.

What Should Have Been Done Differently

Table 1 summarises the three principal non-production failures and their counterfactual corrections. Each reflects the same underlying problem identified in the Newsvendor

analysis: decisions anchored to prior-year inputs rather than rebuilt from the current strategic context.

Year	Decision Made	Better Alternative	Expected Impact
Y5-Y7	Pods (Y5), Liquid (Y6), Pods (Y7) — oscillating formulation	Liquid (Y5-Y6), Pods (Y7-Y8) — consistent cost trajectory	Save ~\$13.5M in Y5 variable costs; coherent product story
Y7	Income targeting held at under \$40k despite Store cutting to \$4.50	Shift to \$40k-\$59k bracket as Store absorbed lower-income segment	Retain mid-income consumers less sensitive to Store's price gap
Y5-Y8	Production set as buffer above prior-year actuals	Rebuild demand estimate from current strategy, not prior-year outcome	Avoid \$132M in foregone revenue across Years 5 and 8

Table 1: Counterfactual analysis — key non-production failures and alternative decisions.

Both the formulation and targeting failures share a common root with the production errors: each decision was made sequentially rather than interdependently. Production was set before the demand implications of the formulation and pricing decisions had been fully worked through. Formulation was chosen based on long-run demand data without modelling the cost interaction with concurrent pricing and targeting changes. Targeting stayed fixed because it was not explicitly reviewed when the competitive landscape shifted. In each case, the individual decision appeared reasonable in isolation. The failure was at the system level: there was no process that required all decision variables to be stress-tested together before submission. A more rigorous approach would have treated the annual decision set as a single integrated optimisation problem rather than a sequence of independent choices, explicitly asking how each decision changed the assumptions underlying the others before any one was finalised.

4. Real-World Parallels: Procter and Gamble

The challenges encountered in managing Blue have close parallels in the experience of Procter and Gamble, the owner of Tide and the dominant player in the US laundry detergent market. P&G's approach to data-driven brand management illustrates both what is achievable with analytics and where the gaps between strategic intent and operational execution tend to appear.

P&G developed its Integrated Decision Support (IDS) system in the early 2000s under CEO A.G. Lafley as part of a broader effort to replace gut-feel decision-making with data-driven judgement across the brand portfolio (Lafley and Martin, 2013). IDS gave brand managers unified access to retail channel data, consumer research, social media sentiment, and demand forecasts (a direct functional equivalent of the K-W Vision platform) and its primary contribution was surfacing signals that fragmented data would have obscured, including early shifts in powder demand toward pods and geographic variation in formulation adoption.

P&G's handling of the Tide PODS launch in 2012 is the most direct real-world analogue to Blue's formulation decisions. The company tracked pod demand growth in international markets for several years before committing to a full US rollout, accepting a higher variable cost structure in exchange for a premium price point and a genuinely differentiated consumer proposition. Lafley and Martin (2013) describe this as P&G's core strategic discipline: identifying a consumer problem the brand can solve better than any competitor, then aligning product, formulation and channel decisions consistently around that insight. The logic is identical to Blue's Pods and odour elimination positioning: the formulation demand data showed a persistent and growing preference,

and aligning product decisions with that preference was analytically correct regardless of the short-run cost implications.

Where P&G most clearly exceeds what was demonstrated in this simulation is in supply chain analytics. The company has reported a 15% reduction in out-of-stock rates through AI-driven demand sensing and inventory management (Procter and Gamble, 2023). Rather than setting production at the start of a period against a static demand estimate, P&G updates forecasts continuously using point-of-sale data and social signals. Had a comparable approach been applied in Years 5 and 8, specifically recalibrating demand estimates after the formulation and pricing decisions were finalised rather than before them, the stockout pattern would very likely have been avoided. The Newsvendor model is a useful static approximation of a problem that P&G has learned to solve dynamically. The practical implication is that the production decision should have been treated as dependent on the strategic decisions made in that year, not set independently before them.

5. Implications for Data-Driven Brand Management

The simulation produces several lessons that extend beyond laundry detergent and speak to the broader challenge of analytical management in competitive markets.

The most fundamental is the gap between strategic analytics and operational analytics.

The positioning decisions in this simulation were materially improved by the data: which attribute to lead with, which channels to prioritise, how to price relative to competitors.

The pre-game analysis produced a strategy that was directionally correct, as evidenced

by market share growth from 11.0% to 14.1% and a doubling of operating profit between Years 4 and 6. The production decisions, by contrast, required translating strategy into a specific quantity under demand uncertainty. In real organisations, strategic marketing and supply chain analytics are typically managed by separate functions with separate tools, creating precisely the disconnect that cost Blue \$132M in foregone revenue.

A second lesson is the feedback loop between supply availability and brand perception. The Year 5 stockout cost \$104M in revenue directly, but also produced net negative sentiment of 45.9%, suppressing Year 6 demand below what the repositioning alone would have generated. This is consistent with what Wedel and Kannan (2016) identify as a primary failure mode in marketing analytics adoption: organisations with access to rich data still make decisions that conflict with the signals, often because operational and marketing functions are not integrated. Keller's CBBE model (2013) reinforces this at the brand level: supply availability is not a neutral operational input but a brand performance variable. Consumers who encounter an out-of-stock product do not wait, they trial competitors, and the brand knowledge that drives future purchase is built on consistency of both message and availability.

A third implication is about the limits of static strategy in a dynamic market. Blue's targeting, channel mix, and positioning were set at the start of Year 5 and updated only incrementally thereafter. When Store moved aggressively on price and Turbo eroded its premium, Blue's strategy did not adapt quickly enough. The data was available to detect both shifts as they were happening, but the decision framework did not include a mechanism for translating those signals into revised targeting or promotional allocation within the year. In practice, data-driven management requires not just good decisions at

the start of a planning period but a process for updating those decisions when the competitive context changes mid-cycle.

Taken together, the simulation demonstrates that analytics creates clarity on what to do but not automatically on how well to execute it. The categorical decisions, which attribute, which channel, which price bracket, became sharper with the data. The continuous decisions, how much to produce, when to switch formulations, how to respond to competitor price moves, remained difficult because they required modelling second-order effects that the data described but the decision process did not fully integrate. Closing that gap is the practical challenge of analytics-driven brand management.

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Appendix

Table A1: Blue Detergent Income Statement (Years 1-8, \$M)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Revenue (\$M)	178.2	179.7	196.7	225.3	227.5	274.7	264.2	273.1
Variable Costs (\$M)	53.5	53.9	59.0	67.6	78.5	88.2	91.1	101.5
Fixed Costs (\$M)	87.0	87.0	87.0	87.0	87.0	87.0	87.0	87.0
Other Costs (\$M)	30.0	29.7	30.0	32.9	37.6	38.0	45.9	44.1
Total Costs (\$M)	170.5	170.6	176.0	187.5	203.1	213.2	224.0	232.6
Operating Profit (\$M)	7.8	9.1	20.7	37.8	24.4	61.5	40.1	40.5
Cumulative Profit (\$M)	7.8	16.9	37.6	75.4	99.8	161.3	201.5	242.0

Note: Other Costs consists of trade channel and media promotional spend. Source: K-W Vision simulation data.

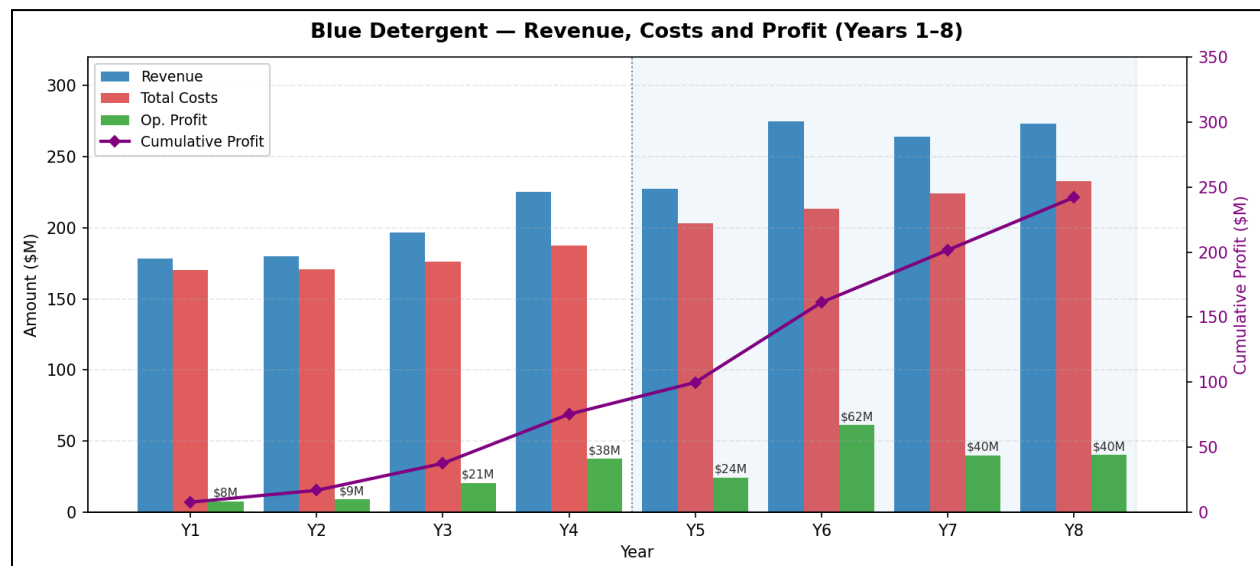


Figure 2: Blue revenue, total costs and operating profit by year. Shaded region indicates player-controlled years.

Table A2: Production, Demand and Sales Summary (Years 5-8)

	Year 5	Year 6	Year 7	Year 8
Production (M units)	32.5	44.0	39.0	36.0

	Year 5	Year 6	Year 7	Year 8
Demand (M units)	47.4	39.2	37.7	46.3
Actual Sales (M units)	32.5	39.2	37.7	42.0
Inventory Carried (M)	0	4.8	6.0	0
Lost Units (M)	14.9	0	0	4.3
Lost Revenue (\$M)	\$104	\$0	\$0	\$28
Channel Price	\$7.00	\$7.00	\$7.00	\$6.50

Note: Inventory Carried reflects units produced but unsold, carried forward to the following year.

Table A3: Blue Demand by Region (Years 4-8, Millions of Units)

Region	Year 4	Year 5	Year 6	Year 7	Year 8
West	11.3M	11.6M	9.6M	9.3M	11.8M
Southeast	10.1M	21.8M	18.2M	17.4M	21.0M
Central	7.8M	12.0M	10.0M	9.6M	11.6M
Northeast	2.9M	2.0M	1.5M	1.4M	1.9M
Total	32.1M	47.4M	39.3M	37.7M	46.3M

Note: Year 5 Southeast figure reflects the 116% demand uplift from the odour elimination repositioning.

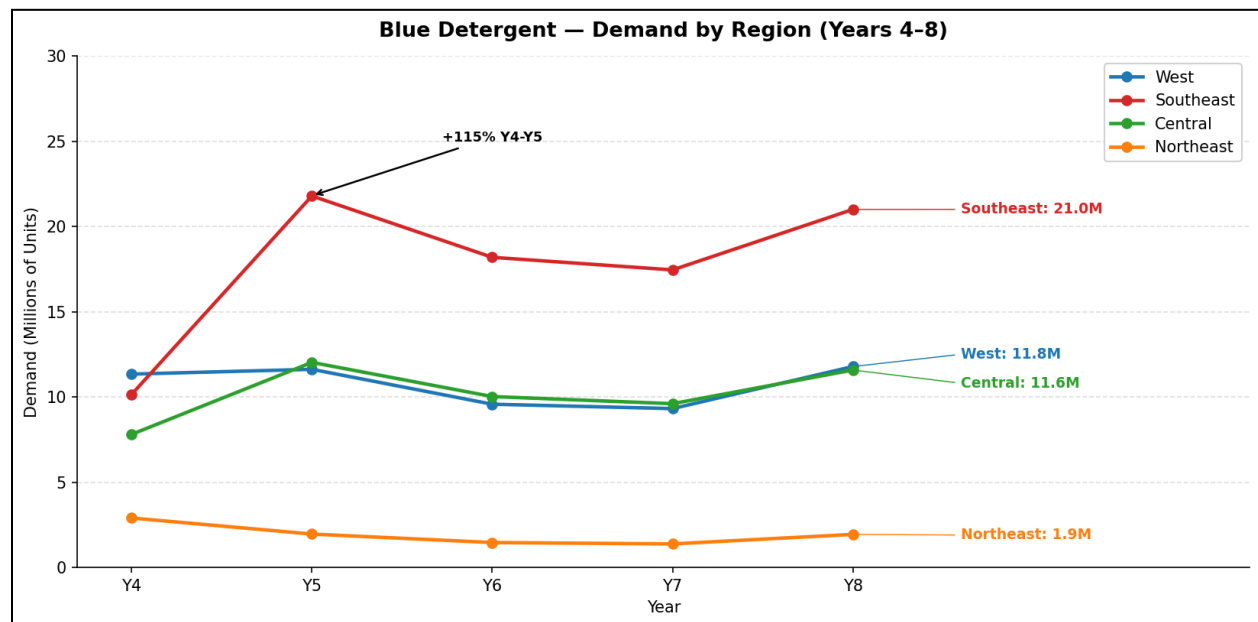


Figure 6: Blue demand by region Years 4-8, with Southeast Year 4-5 growth annotated.

Table A4: Full Decision History (Years 5-8)

Decision	Year 5	Year 6	Year 7	Year 8
Units to Produce	32.5M	44.0M	39.0M	36.0M
Channel Price	\$7.00	\$7.00	\$7.00	\$6.50
Formulation	Pods	Liquid	Pods	Pods
Product Feature	Odour Elim.	Odour Elim.	Odour Elim.	Odour Elim.
Trade: Convenience	40%	40%	40%	35%
Trade: Club	10%	15%	20%	25%
Trade: Grocery	25%	20%	15%	15%
Trade: Mass	25%	25%	25%	25%
Media: Digital Ads	40%	40%	40%	30%
Media: TV	30%	30%	25%	25%
Media: Print	20%	20%	25%	35%
Media: Radio	10%	10%	10%	10%
Target Region	SE, West	SE, W, Central	SE, W, Central	All regions
Target Age	35-54	35-54	35-54	35 and over
Target Income	Under \$40k	Under \$40k	\$20k-\$59k	\$20k-\$59k

Note: Trade and media percentages reflect allocation of the total promotional budget for that year.