Big Data & Analytics
Lecture 3: Analytics Simulation

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Analytics in the Consumer Product Industry (2026 update)

CPG is still a data-intensive industry, but the data exhaust has expanded from barcode scans to an omnichannel consumer graph.

POS and loyalty baskets, barcode scans, shopper panels

E-commerce clicks, search, reviews, ratings

Retail media impressions linked to purchases, closed-loop measurement

Operational signals, inventory, OTIF, weather, events

Analytics supports decisions on targeting, pricing, promotions, assortment, and supply.

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Data-Driven Turnaround: The Kelsey-White "Vision" Case Study

THE PROBLEM:
"Blue" Detergent's Decline

THE SOLUTION:
Analytics-Driven Recovery

Brand Focus & Strategy Comparison

Brand	Primary Focus	Key Marketing Strategy
Turbo	Cleaning Power	High price, heavy digital/millennial advertising.
Fresh	Fresh Scent	Mid-tier price, focus on TV and younger demographics.
Blue	Traditional Clean	Struggling with aging demographics and outdated formulations.

Downward Market Drift

Decreasing Share and Profitability
Blue's market share is drifting downward as its core customer base continues to age.

Formulation Gaps

Slow Adoption of Modern Formulations
Blue has struggled with pod sales and modern liquid formulations compared to rivals.

Competitive Pressure

Turbo — Fresh

Outpaced by Market Leaders
Turbo leads with cleaning power, while Fresh targets youth with scent-focused marketing.

VISION ANALYTICS SYSTEM

Descriptive, Predictive, and Prescriptive

The Three Pillars of Analytics
The Vision system uses past data to forecast demand and prescribe strategic actions.

Strategic Variable Balancing

Optimizing Marketing and Product Mix
Success requires balancing price, product formulation, and media spending across various trade channels.

Data as a Competitive Edge

Relationships Over Raw Data
Understanding how variables interact is essential for turning data into effective market strategies.

Data Focus & Strategy Comper

NotebookLM

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Blue at Kelsey-White, what Vision represents today

Vision is a management cockpit, it turns market, financial and operational data into decisions.

Single version of truth across sales, margin, promo spend, and supply constraints

Drill-downs by SKU, channel, retailer, geography, and customer segments

Scenario planning, for example price cuts vs promo depth vs media mix

Decision governance, who can change what, and how outcomes are measured

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Blue's Competitors

Turbo

- Market leader and highest priced, focused on cleaning power
- Heavily advertised, with 35% on digital ads likely aimed at "millennials"
- Success as first to introduce pods and liquid formulations
- Greatest sales through large retailers (i.e. Walmart/Target), but also in small urban stores

Fresh

- Second in the market in share and price, focused on fresh, clean smell
- Stated aim at younger customers, but strong TV focus and during daytime broadcasts
- Strongest sales through mid-sized grocery chains and in powder formulation

Store brands

- Compete largely based on price, with lowest prices in the market

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SIMULATION RESULTS

Let's look at:

- Cumulative profit

- Revenue

- Market Share

K-W Vision: leading questions
Historical data, reports, and tools available

▪How much effort did you put into exploring the past data about Blue's performance? Was it time well spent? What did you learn from it?

▪What filters made you change your decisions about improving Blue's situation in the marketplace?

▪How did you forecast demand? Why is the forecast outcome a range? Would a specific number be better? What's the downside of producing too much? Too little?

▪Would you describe these analytics as descriptive, predictive, or prescriptive?

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K-W Vision: leading questions
Overall approach and use of analytics/tools

▪What was your overall strategy to turn around Blue's performance in the marketplace? What factors did you manipulate in your decisions as a result? What was the outcome?

▪How big of a role did each of the following play in decisions? Why? What were the implications of your decisions?

▪Product formulation

▪Product features and positioning

▪Media channel spending

▪Trade channel spending

▪Did anyone look at social sentiment? What did that tell you and how did it influence your decisions?

K-W Vision: leading questions

Discussion on specific decisions

▪Did anyone lower price dramatically to gain market share? How did it work?

▪Did anyone try to appeal to a particular geographical region? Which one? How successful were you with this strategy?

▪Did anyone try to go upmarket with Blue and try to compete with Turbo? How did that turn out?

▪Did you feel that you were able to get beyond the "what" in your analysis to the "why" and the "how?"

K-W Vision: leading questions

Real world application

- What lessons can you draw about the use of these types of analytics? How easy is it to use them? What factors might make them more valuable within an organization?

- How difficult do you think it would be to assemble and integrate all the data for a system like this?

- Can you see any downsides to this type of management? What might invalidate the data-driven lessons that you learned?

What's another example of a real world application of analytics for managing a company?

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Take aways (and the modern twist)

1. Data and analytics improve decision quality, but only when linked to actions and accountability.

Descriptive tells what happened, predictive estimates what might happen, prescriptive recommends what to do.

Closed-loop measurement is powerful, but causal inference matters, run incrementality tests when possible.

Measurement is changing due to privacy and signal loss, MMM and clean rooms are back in the toolbox.

Decision-making involves trade-offs across variables, constraints, and time, treat it like an optimization problem.

2026 data landscape for CPG analytics

Modern CPG analytics combines shopper data, media exposure, and operational constraints.

First-party data, loyalty, apps, e-commerce, is now the core targeting signal

Retail media is becoming a primary activation channel

Privacy-safe collaboration is increasingly done via data clean rooms

Standards are emerging for commerce and retail media measurement

Retail media networks: why every CPG team now cares

Retailers monetize attention and purchase data, and brands get closed-loop measurement.

US retail media ad spend, $58.79B in 2025, forecast $69.33B in 2026

Amazon advertising services, $56.22B in 2024, Q4 2024 was $17.3B

Walmart advertising business, $4.4B in FY2025, growing faster than sales

Implication, media planning becomes commerce planning

Measurement in the era of signal loss

As cookies fade and platforms fragment, measurement shifts from user tracking to systems thinking.

Marketing Mix Modeling is resurging for holistic, privacy-safe measurement

Incrementality experiments, geo tests, holdouts, validate what MMM predicts

Clean rooms enable secure linkage of exposure and transaction data

Measurement standards, funnel definitions, metrics, are being formalized

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Case example: PepsiCo + retailers for better forecasting

PepsiCo reported working with retailers to share purchase data to improve demand forecasting.

Goal, anticipate volume shifts, reduce stockouts and overstocks, align promo plans

Approach, combine retailer purchase data with AI to process large shopper datasets

Lesson for the simulation, better decisions often require cross-firm data sharing

From analytics to decisions: trade promotion optimization

A practical prescriptive layer is Trade Promotion Optimization, choose promo depth, timing, and channels under constraints.

Separate baseline demand from promotional uplift, then estimate price elasticity

Account for cannibalization, seasonality, distribution, and competitor moves

Optimize for profit, not just volume or share, then monitor post-event learning