How Retailers Can Drive Profitable Growth Through Dynamic Pricing: Setting Strategy

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INTRODUCTION:

The secret is in customization of dynamic-pricing solutions must be tailored to a retailer's business context, objectives, and ways of working. When it comes to dynamic pricing, Amazon is still the retailer to beat. Other retailers continue to marvel at an attempt to emulate the e-commerce giant's ability to rapidly and frequently change prices on millions of items. Amazon continually burnishes its low-price reputation by undercutting competitors on top-selling, high-visibility products, while protecting margins by charging more for less price-sensitive items. Indeed, the success of Amazon and a handful of other leading online players have made clear that dynamic pricing is a critical capability for competing in e-commerce, Omni channel, and even brick-and-mortar retail to drive revenue and margin growth.

But as retailers have begun to invest in dynamic-pricing solutions whether off-the-shelf or custom-built by third-party providers they've often run into the "black box" problem: none of the end users actually understand the math or logic behind the algorithms. The tools somehow crunch data and spit out pricing recommendations, which are sometimes much higher or lower than current retail prices. The pricing staffs thus end up rejecting them entirely because they don't trust the recommendations.

Overcoming that trust barrier requires customizing every part of the solution, including the implementation. In our experience, a dynamic-pricing solution should be optimized for use by category managers and pricing managers. These end users should be involved in developing, refining, and rolling out the tool and be able to override the pricing recommendations. Only when this happens can businesses expect to capture significant and sustained impact typically, sales growth of 2 to 5 percent and increases of 5 to 10 percent in margins, along with higher levels of customer satisfaction through improved price perception on the most competitive items.

FIVE MODULES OF DYNAMIC PRICING:

Dynamic pricing plays a crucial role in boosting both consumer price perception and retailer profitability. Many retailers sell about one-fifth of their assortment at very low prices to shape their price image and remain competitive. These key value items (KVIs) are usually top sellers, traffic generators, or highly-searched SKUs whose prices consumers tend to remember. Key-value categories can account for up to 80 percent of an average retailer's revenue but only half of its profit. The retailer therefore needs to make up margins in the rest of the assortment the "long tail" items. However, identifying KVIs isn't as easy as it sounds, and setting and validating prices for long-tail items is difficult precisely because of the sparse historical data on such items.

Dynamic-pricing solutions help retailers overcome both of these challenges. Generally speaking, a robust dynamic-pricing solution should consist of five modules, all working in parallel to generate price recommendations for every SKU in the assortment (Exhibit 1).

- The long-tail module helps a retailer set the introductory price for new or long-tail items through intelligent product matching—that is, the module determines which data-rich products are comparable to new items (which have no history) or long-tail items (which, as mentioned, have limited historical data).
- The elasticity module uses time-series methods and big data analytics to calculate how a product's price affects demand, accounting for a wide variety of factors including seasonality, cannibalization, and competitive moves.
- The KVI module estimates how much each product affects consumer price perception, using actual market data rather than consumer surveys. This enables the module to automatically detect changes as to which items consumers perceive as KVIs.
- The competitive-response module recommends price adjustments based on competitor prices updated in real time.
- The Omni channel module coordinates prices among the retailer's offline and online channels.

While a best-in-class solution includes all five modules, retailers can often begin with only the KVI and competitive-response modules. These help retailers nimbly respond to competitive moves on key items. Retailers can then add the rest of the modules over time.

Developing a world-class dynamic-pricing solution starts with a thorough understanding of the retailer's business context and objectives, and then translating those into mathematical "recipes" that can be executed repeatedly. Careful selection of the inputs, as well as the sophistication of the underlying analytics, will largely determine the accuracy of each module's calculations. The tool needs to be flexible and adaptable enough for businesses to customize the inputs and features based on their particular objectives and existing capabilities, which greatly increases confidence in the outputs. And of course, whether category managers and pricing managers will ultimately use the solution in their daily work depends partly on how intuitive the interface is and how easily it integrates into the retailer's existing systems and work flows.

To build a case for dynamic pricing, a retailer could first quantify the potential of introducing dynamic pricing into the organization for instance, by systematically comparing the retailer's price levels to those of its chief competitors, assessing how frequently competitors change their prices,

and studying how competitors react to the retailer's own price changes. The findings from such an exercise will almost certainly spur the retailer to take action on dynamic pricing.

The next logical step would be to conduct a pilot in a handful of categories for concept design and testing. Done right, the pilot and the subsequent rollout of dynamic pricing across all product categories will yield meaningful improvements in revenue, profit, and customer price perception.

Customizing the modules: Three case examples

The following examples illustrate how retailers can tailor dynamic-pricing modules to their particular business needs and objectives. In each case, the retailer collected massive amounts of granular data, used advanced analytics, and made sure that category managers and pricing managers participated in developing and testing the solution.

A US RETAILER'S LONG-TAIL MODULE:

A US-based general retailer with more than two million SKUs in its assortment had two high-priority business objectives that required frequent trade-offs: to maximize absolute revenues and to increase productivity. The objective functions of the algorithms in each of its modules therefore had to be adjusted accordingly a level of customization that wouldn't have been feasible with an off-the-shelf solution.

To build its long-tail module, the retailer assembled a rich set of data, including daily sales data for its 100,000 top-selling SKUs, competitor prices (gathered via web scraping) for those SKUs, data on customer browsing and purchasing behaviour, product attributes and descriptions, and online metrics such as impressions and search rankings. With algorithm-design experts and analysts working alongside category managers, the team codified a set of product-association rules specific to the retailer; using factor analysis to assign "attribute similarity scores" that indicated which products its customers find comparable. The retailer set simple ground rules for its product groupings for example, a grouping should have minimum sales of 20 units a week, or all products in a grouping should be in the same life-cycle stage. The algorithms also helped the retailer understand which of its product prices should move in concert so as to avoid cannibalization effects. In just eight weeks, the team built working prototypes of both the long-tail module and a competitive-response module. Both were designed and tested with pricing managers to integrate simply into the retailer's regular pricing processes and cadence. The impact: up to 3 percent increases in both revenue and margins in the pilot categories.

AN ASIAN ONLINE RETAILER'S ELASTICITY MODULE:

A leading Asian e-commerce player aspired to develop an item-level pricing strategy that could optimize for both profit and gross merchandise value (GMV). To that end, the company knew it needed to be able not only to change prices frequently, but also to take many more factors into consideration when setting or changing prices.

As part of a broader dynamic-pricing effort, the company built an elasticity module. At its core was a multifactor algorithm that drew on data from approximately ten terabytes of the retailer's transaction records. Data for each product included the price of the product, the price of a viable substitute product, promotions, inventory levels, seasonality, and estimates of competitors' sales volumes creating a custom module unique to the retailer's available data and pricing strategy. The module then generated pricing recommendations, taking into account both of the retailer's business objectives.

Recommendations were displayed on an easy-to-read dashboard that category managers helped design and test. Category managers, who on any given day would be weighing other important trade-offs with regard to, say, a product's growth potential or expected additional inventory, could then accept or reject the pricing recommendations. The retailer felt strongly that category managers should have the final word on pricing decisions.

After only a few months of using the module, the company saw a 10 percent rise in gross margin and a 3 percent improvement in GMV in the pilot categories.

A EUROPEAN NON-FOOD RETAILER'S KVI MODULE:

Looking to stand out from competitors, a leading European non-food retailer sought to identify and prioritize the KVIs in its assortment. It built a tailored KVI module that could statistically score each item's importance to consumer price perception on a scale of 0 to 100. The module generated this "KVI index" by analysing granular internal and external data, including shipping costs, return rates, search volume, number of competitors carrying the product, and competitor pricing. It also identified which other retailers were the true competitors for that specific item. Importantly, the module was flexible enough that category managers could adjust the weighting of each parameter. The module defined the price range, or the upper and lower price bounds, for each item (Exhibit 2). Each product's exact price position within the range would then be based on its score in the KVI index. But a KVI index to help set the base price was only the first step. Via the competitor-matching module, the retailer also programmed into its dynamic-pricing solution a set of business rules that would trigger pricing changes. For instance, if inventory levels for a certain SKU were high or if a competitor reduced the price of that SKU, the solution might recommend a price drop for the SKU. These rules would all feed into the solution's recommended price, which the category manager could either accept or reject based on additional indicators and considerations. At the end of a three-month pilot, the retailer saw a 4.7 percent improvement in earnings before income and taxes in the pilot categories and identified a 3 percent improvement potential in overall return on sales. And it had a trusted solution that category managers could incorporate into their work flows.

BUILDING DYNAMIC-PRICING CAPABILITIES:

In each of these examples, the retailer custom-built the algorithms and invested time and effort to ensure that the tool was adopted by end users. A test-and-learn approach, beginning with a pilot in a few categories, will help produce a solution that builds trust and yields market-proven, statistically sound results. Just as important, the testing process can pinpoint how best to embed the solution into end users' existing work flows.

Each of the three retailers invested in detailed documentation and thorough training to strengthen the organization's skill base and capabilities in dynamic pricing. One of the retailers even established a certification program for dynamic pricing, creating a pipeline of employees who would be qualified to manage and continually improve the pricing process. In light of the explosive growth of e-commerce, dynamic pricing is fast becoming a must-have capability to drive growth while sustaining margins. By understanding how to move quickly and customize solutions, retailers can build this capability into a significant competitive advantage.

PRICING STRATEGY:

Pricing has long been and will continue to be a core capability for retailers. Executives and merchants alike recognize it as one of the key value levers, and, accordingly, retailers have worked to refine their pricing strategy, tactics, and tools over the past several decades in hopes of optimizing their approach. Despite recent advances in analytics, decision-support tools, and methodologies, retailers are finding that the traditional approaches are not keeping pace. Indeed, the new digital era stemming from big data, mobile commerce, and the explosion of Omni channel retailing has meaningfully changed the environment and requires an overhaul of retailers' pricing strategy and capabilities. On pricing in retail focuses on key value categories (KVCs) and key value items (KVIs) and the relevance and evolution of these concepts as a core part of price strategy in today's digital retail environment. The views are based on following three points;

- the traditional role of KVCs and KVIs in retail price strategy
- how today's digital retail environment is changing the game
- key implications for creating a winning price strategy

THE TRADITIONAL ROLE OF KVCS AND KVIS IN RETAIL PRICING STRATEGY:

To understand the role of KVCs and KVIs in strategy, let's first define what price strategy means. Simply put, we believe price strategy can be articulated as purposeful pricing by channel and customer to maximize value perception and business results (for example, traffic, basket, sales, and margin) and to increase customer engagement and loyalty.

This statement of strategy can lend itself to an everyday-low-price or high/low approach, or a hybrid of the two. The price strategy must answer the following questions: What is the target price position versus reference competitors by category, channel, and geography? What is the optimal mix of price and promotion by category and channel? Which customers and trip missions matter most? How do the most attractive customers shop? What drives value perception?

A common element across these three questions is the role that categories and items play in the overall strategy. The first step is to identify the retailer's KVCs these are the categories that drive value perception the most and have a higher mix of KVIs. Then KVIs the items that drive value perception the most are identified. To optimize value perception, a retailer will price KVCs and KVIs most sharply relative to the relevant competition. Economists, academics, and retailers have long known that that shoppers recall prices only for a small number of items. While these recollections are typically for those products that shoppers purchase most frequently, they tend to be directional rather than precise. As such, retailers have been able to effectively shape shoppers' value perceptions by pricing competitively on the items that matter most.

HOW RETAILERS USE KVCS AND KVIS IN THEIR PRICE STRATEGY:

Tactically, retailers use their KVC and KVI lists to help govern item-price decisions against reference-competitor price indexes these lists are foundational elements to the effective price index that the retailer is targeting. These price decisions could be to match exactly or to price slightly higher or lower, depending on the competitive and customer dynamics of the geography or price zone in question, as well as the specific category objective and product segment of the item in question. Beyond pricing, KVIs are often treated differently than non-KVIs across other merchandising levers, including in-store space allocation, safety-stock position, and promotional and marketing activity. While competitive price indexes are often the main factor in pricing KVIs,

retailers typically balance other considerations, including margin goals, price elasticity, range architecture, and market-share targets.

HOW RETAILERS SET KVC AND KVI LISTS:

How do retailers determine which categories and items become part of their KVC and KVI lists? In the approach employed by many retailers, these lists are created with these three types of inputs:

- **Transaction and basket data.** Retailers can analyse and rank order category and item-level performance, including sales (by dollar or volume) and number and size of baskets including item, elasticity, and market share.

- **Shopper price-perception data.** Through primary research, retailers can identify the categories and items that most drive value perception.

- **Merchant judgment.** Experienced merchants can then review and add strategic items with high degree of competitive intensity (that is, where competitors' space allocation or marketing spending is high).

Through these lenses, retailers can establish four types of KVIs. These types are balanced to reinforce a retailer's value proposition and support the overall pricing strategy:

- **Value-perception drivers.** Memorable items that typically shape traffic over longer time frames (for example, bananas and milk for grocers; socks and basic T-shirts for apparel retailers).

- **Assortment-perception drivers.** Items that highlight a retailer's merchandise authority—that is, distinctive product selection that gives customers a point of view on what they should buy. For example, remote-control toy cars may be critical to a specialty electronics retailer; similarly, a distinctive prepared-foods and meal-replacement selection are critical to higher-end and organic grocers.

- **Traffic drivers.** High-velocity items that inspire incremental shopping trips (for example, beer and diapers).

- **Basket drivers.** Low-velocity items that inspire incremental purchases in a shopping trip (for example, 16-ounce pasta sauce, which drives pasta, vegetables, and meat).

Rather than remaining content with a static corporate KVC and KVI list, best-practice retailers have been refreshing their lists at least annually and flexing their KVC and KVI lists by price zone or geography.

HOW THE NEW DIGITAL RETAIL ERA HAS CHANGED THE GAME:

Several trends in the way consumers are shopping are reshaping retail, and pricing in particular, including these:

- **Cross-channel customer decision journeys.** Sixty percent of customers are making toy and baby purchases online, accounting for 15 percent of spend; Amazon is getting top scores on key buying factors versus multichannel players. Customers are often starting online even for in store purchases; for example, 50 to 70 percent of shoppers are checking prices on their mobile phones, depending on the category.

- **Price transparency.** Customers no longer need to rely on memory to compare prices across retailers, as price-comparison shopping engines instantly display competitors' pricing in a single view. More sophisticated price-comparison engines track prices over time or even forecast future price changes. Retailers are also integrating price matching into the mobile-app price-comparison experience.

- **Dynamic pricing.** Online pure plays, including Amazon, are increasingly sophisticated in managing price, reacting to competitor prices in as little as one hour. Top-selling items are often repriced 3 or 4 times per day and can be repriced up to 12 times daily. Sophisticated multichannel leaders are following suit, changing the prices on 10 to 20 percent of their online assortment daily.
- **Personalization.** Consumers are increasingly expecting personalized deals, and some retailers are able to deliver these based on past shopping history. This is not limited to online players only for example; Safeway has done this with its Just for U app, which users can download to their mobile phones to receive tailored deals and coupons. In some cases, these personalized offers are linked directly to consumers' loyalty cards or user accounts and applied automatically.
- **Big data.** Real-time data updates (from sources such as mobile search and product reviews) generate terabytes of data, and global data generation is projected to grow at a rate of 40 percent annually. Armed with this data, retailers are hiring new talent, buying or building sophisticated tools to harness the data, and going after potential new margin increases of up to 60 percent, according to the McKinsey Global Institute.

IMPLICATIONS FOR CREATING A PRICING STRATEGY:

The dynamics of the new digital retail era may tempt retailers to treat every item as a KVI and price it low to keep up with competitors and empowered customers. We have seen this approach result in an unprofitable "race to the bottom" as each competitor notches down its price to stay below the competition. Conversely, a dynamic, segmented approach to item-level pricing will allow retailers to optimize across multiple objectives (for example, margin, price perception, and market share) and across customer journeys (such as impulse purchase and big-ticket researched purchase). This approach should be grounded in a price strategy that identifies those categories that matter most strategically to the retailer.

A MORE DYNAMIC PRICING STRATEGY:

We see retailers applying several analytical approaches to setting pricing strategy and price decisions for KVIs and other items: sophisticated econometrics, heuristic scoring, and rapid test-and-learn experiments. In the rapid-test-and learn approach, retailers develop questions and hypotheses and use real-time online feedback to create outputs and make decisions. These "price experiments" are generally faster, lower risk, and effective.

In the heuristic scoring approach, several factors are scored and weighted, typically across these four dimensions (Exhibit 3):

- consumer demand (for example, price elasticity, price perception, and basket-building power or attachment rates
- competition (for example, store or zone rules, price gap to competition, and market-share trend)
- economics (for example, target retail margin and cost pass-through rate)
- category dynamics (for example, inventory levels, markdown effectiveness, and out-of-stock impact)

Much as in a traditional KVI world, historical price elasticity remains a critical input for optimizing prices. It is, however, only one factor to reflect short-term shopper response, and we have found high value in combining this analysis with other measures and indicators of customer response that act as lead indicators of traffic change over time.

In addition to the above factors, a set of guardrails is typically defined in a heuristic model to preserve assortment architecture (for example, private-label to national-brand gaps, size and flavour or colour relationships) and pricing strategy. For example, retailers should include competitive guardrails to avoid pricing items too far above competitors. Even on "background" items, a price gap larger than 30 to 50 percent can turn off the customer for future trips.

The advantage of heuristic scoring is that is allows for an analytically sophisticated yet easily understandable and therefore implementable price-setting approach. And different factors and weightings can be used for different item segments (Exhibit 4).

KVCs and KVIs will remain an important pillar of pricing strategy, but to drive traffic and profit in the new retail era, retailers will need to revisit their current approach. Even more is at stake in today's dynamic digital retail environment, and those that do not adapt to today's reality and highly competitive marketplace will open themselves up to greater risk. Failure to effectively price can lead to rapid loss of customers and margin; however, retailers who build an effective pricing capability can expect lasting top-and bottom-line impact.

RETAIL PRICING LEADERS SHOULD BE TAKING THESE IMMEDIATE NEXT STEPS:

- Refine and dynamically manage KVC and KVI lists going forward, using new sources of insight and analytical capabilities.
- Establish dynamic price-gathering and price-optimization capabilities; these are a requirement for success in today's digital retail environment.
- Expand the competitive set and improve the sophistication with which competitive-pricing rules are defined and maintained.

Exhibit: 1

Dynamic-pricing solutions should include five modules.

How the modules might generate price recommendations over a product's life cycle

— Own price   ▢ Competitor price   – – – Price limits

Long-tail module	Elasticity module	KVI[1] module	Competitive-response module	Omnichannel module
helps set the introductory price through intelligent product matching	calculates how a product's price affects demand	estimates how much each product affects consumer price perception	recommends price adjustments based on competitor prices updated in real time	coordinates prices among the retailer's offline and online channels

Introductory price based on comparable articles

More demand plus lower elasticity triggers price increase

Classification as KVI lowers price under that of competitors

Price remains lower than that of competitors

Automatic coordination with in-store prices

Year 1   Year 2   Year 3   Year 4

[1]Key value item.

McKinsey&Company

Exhibit: 2

A retailer's KVI[1] module helps define a price range for every item in the assortment.

The manufacturer's **recommended retail price** defines the maximum price

Upper and lower bounds are, respectively, the average of at least 2 competitors' highest and lowest prices

Recommended retail price

$ ▼ $

Upper bound
▼

Base-price range

Lower bound
▲

The product's score (0–100) on the KVI index determines its base-price positioning

Low score means base price can be closer to **upper bound**

High score means base price needs to be closer to **lower bound**

[1]Key value item.

McKinsey&Company

56

Exhibit: 3

Heuristic pricing factors span multiple dimensions:

2

Consumer demand
- Expected price gap vs competitor based on value proposition
- Elasticity
- Customer-segment product preferences
- Offline and online search and sales ranks

Competition
- Competitor strategies and conduct
- Actual price gap vs key reference competitor(s)
- Market-share trends
- Competitor cost structure

1

3

Category dynamics
- Total category growth
- Current and projected supply and demand
- Category profit pools

Economics
- Actual vs targeted margin
- Role and intent

4

Source: McKinsey analysis

Exhibit: 4

Different item segments will have different weighting across metrics.

Force	What does it tell you?	Weighting for key value items	Weighting for background items	
Consumer demand	• Understands consumer demand and willingness to pay	40%	20%	Given the importance of driving consumer value perception, price setting for KVIs is done with greater emphasis on consumer and competitor forces
Competitive positioning	• Understands relative competitive positioning	20%	15%	
Internal economics	• Identifies economic pressure points and margin positioning	25%	45%	With less direct influence of value perception, background items can be priced with greater emphasis on improving margin (ie, the internal-economics force)
Category dynamics	• Understands category headwinds and tailwinds	15%	20%	
		100%	100%	

Source: McKinsey analysis