Restoring Cost Transparency

Applying cost regression analysis to the consumer packaged goods industry

Consumer packaged goods companies are facing a paradox: an abundance of increasingly individualized products is driving top line growth, while the complexity of such products is obscuring cost transparency. Adding a new product size, formulation or line extension adds cost—but exactly how much? Traditional sourcing practices cannot provide meaningful cost or price comparisons across the ever-growing proliferation of unique product specifications. However, using Cost Regression Analysis can help restore transparency and provide valuable insights into the real costs of new products and features.

Cost Regression Analysis allows consumer packaged goods companies to stay competitive despite spiraling brand extensions and product proliferation.

Over the past decade and a half, consumer packaged goods (CPG) companies have been on a differentiation binge, tailoring well known brands to meet ever-changing consumer needs, lifestyles and moods. Consider, for example, Old Spice aftershave: Introduced in 1938 in an iconic, buoy-shaped white bottle and unchanged for decades, Old Spice became synonymous with aftershave to three generations of American men. But since acquiring the brand in 1990, Procter & Gamble has brought more than 65 Old Spice-branded products to market, including nine varieties of deodorant (each in seven scents), three body washes and a body spray, in addition to its traditional aftershave, now dubbed "Old Spice Classic."

With an abundance of different products in different sizes and in different packaging—but all bearing the same name—P&G has revitalized Old Spice, making it one of the most successful men's brands in the U.S. market today. However, in doing so, the company has introduced an unprecedented level of raw materials and packaging complexity into its procurement and manufacturing processes—and made managing upstream costs significantly more difficult.

Mass Differentiation. Oh, the Challenges.

This mass differentiation within a brand is the result of a number of forces: more high-tech capture and analysis of consumer trend and purchase data; better product development; more flexible manufacturing methods; and continued sophistication in a marketer's ability to extend, support and sell a brand. The result is a phenomenal array of consumer choices and product offerings—and a trend that continues unabated.

The upside of mass differentiation—top-line growth—is often counterbalanced by the operational challenges of managing escalating costs

amid increasing complexity. Almost every consumer goods company today is struggling with this issue. While some degree of complexity creep is inevitable, our goal was to find a way to mitigate the impact.

With this in mind, A.T. Kearney explored the use of Cost Regression Analysis, or CRA, to restore cost transparency and provide valuable insights into actual specification-driven costs. Typically applied in technology-driven industries, CRA is based on the principle of linear multivariate regression, a statistical method to quantify simultaneously the impact of multiple independent variables, such as specifications, on a single dependent variable—cost.

What Constitutes "Fair Price"?

We can illustrate how CRA works with a fairly simple example from the real estate market. Every home on the market is different, from the number of bedrooms, to the number of baths, acreage, age, square footage, interior elements and, of course, price.

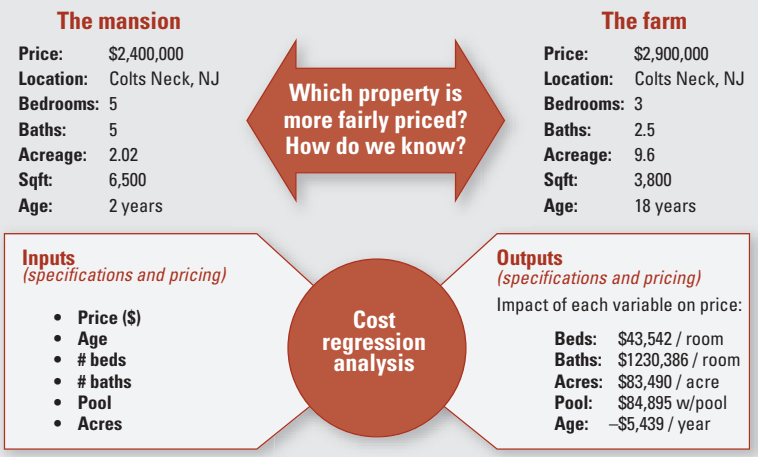
How does a buyer tell which property is more fairly priced—and if either is fairly priced relative to the market? How does a buyer with a preference for acreage know how much an extra acre is worth? Or whether acreage is driving the price of a property higher in a preferred location? Can the buyer optimize his preference for acreage, without spending more than necessary? Without more information to evaluate competing prices, buyers are usually at the mercy of sellers.

By entering the specifications and pricing information for all preferred properties into a CRA model, the buyer will have more than his "gut feel" to rely on. The CRA model considers the impact of multiple variables simultaneously, and calculates the impact of each bedroom, bathroom, additional acre and any other specification. The resulting output measures and quantifies the contribution of each variable to the house's cost. As shown in the nearby figure, CRA informs the buyer that across all the properties on the market an extra acre of land adds on average $83,490 to a property's price.

The buyer now understands the average "market impact" of each additional acre—and that of every other specification—on the price for every property whose data was entered into the model.

FIGURE: Determining "fair price" in the housing market

Illustrative



Source: A.T. Kearney analysis

By knowing all the specifications of each item in a category and the price paid, spend managers can create a "should" price analysis. They can evaluate prices across an entire category, redefine supplier relationships based on measurable price performance and manage price creep on future items.

The beauty of CRA is that it is easily applied using existing information and data to allow virtually any consumer packaged goods company to stay competitive despite spiraling brand extensions and product proliferation.

How CRA Works

CRA is most useful in addressing direct spend categories such as packaging, where different products with multiple variables drive price. Should a cardboard box that's twice as large as another cost twice as much? What impact on cost can be attributed to a long list of specifications such as board weight, fluting, folding, die cutting, or minimum order quantity? How do you know that what your suppliers are selling today is price-competitive with what they were selling yesterday? Without CRA, these questions are surprisingly difficult to answer—even for a seemingly simple cardboard box.

CRA allows "apples-to-apples" price comparisons across items with totally different specifications in the same category. Doing so across a statistically relevant sample of items allows buyers to identify which specifications are the category's key price drivers, and determine the average effect of individual specifications on the item's price. This information provides a window into how competitively priced an item is, relative to its peers.

We can illustrate this with an example of a large global CPG company that buys more than 10,000 vari-

ations of primary paper packaging, from fullboard cartons to labels annually. The firm had no cost transparency; it could not quantify what made one type of container cost more than another. The problem was further amplified by sustained commodity price inflation and increased pressure to manage supply costs.

Using CRA, the firm was able to make valid price comparisons across items with different specifications across hundreds—and even thousands—of items simultaneously. The analysis identified a one-time savings potential of more than 15 percent across the category, addressed on a supplier by supplier basis; CRA has since been embedded in the firm's supplier-management program to continually manage costs and reduce complexity.

Are Your Vendors Price-Competitive?

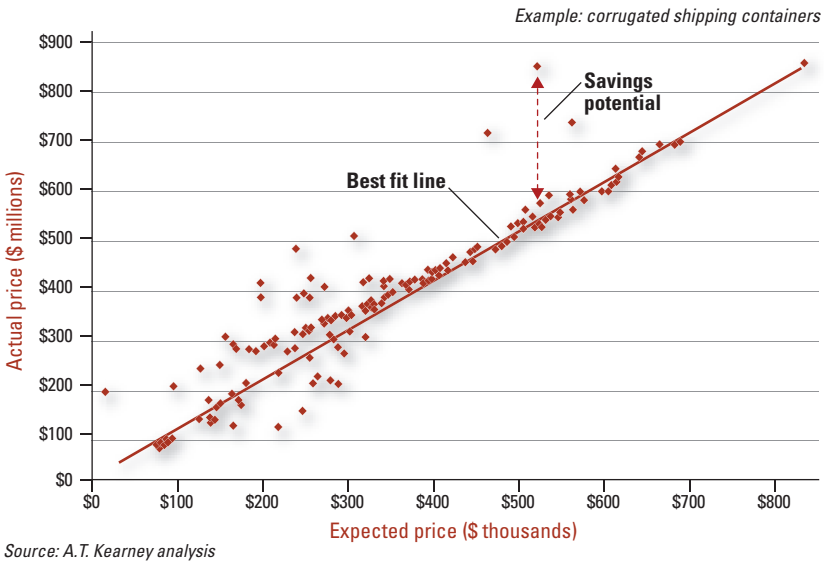
A particularly powerful application of CRA is its ability to ascertain the competitiveness of vendors' prices. The methodology can determine the average "expected" price of an item with the same specifications as another item. The expected price can be compared to the actual price to determine how competitively an item is priced.

This comparison is illustrated in the scatterplot shown in figure 1, with the expected price of corrugated shippers on the X-axis versus the actual price on the Y-axis. On this plot each item is represented by a dot and a "best fit" line. Items above the best fit line have a higher actual price relative to their expected price and may be over priced relative to their peers. The opposite is true for items below the line. The greater the distance a point is from the best fit line, the greater the discrepancy.

The analysis opens up a compelling argument in price discussions with suppliers, focusing negotiations on price reductions around items lying substantially above the best fit line. Alternatively, the aggregate price performance of a supplier's entire portfolio can be compared to the rest of the category to indicate overall supplier performance. With transparency into the competitiveness of a supplier's prices, a company can request justification for higher than expected item prices. This approach, applied recently at a manufacturer of construction equipment, served as a baseline in renegotiations with existing suppliers and resulted in 20 to 30 percent savings with the same suppliers.

How do suppliers respond to this cost transparency? The reaction is not purely confrontational. When both parties—buyer and supplier—accept the CRA model, it can provide an open and transparent basis for setting target prices on future items or components and spur collaborative behavior in reducing overall price. By clearly communicating the required level of performance, both parties know where they stand, and can work together to find innovative ways to reduce prices.

FIGURE 1: Cost regression analysis compares expected versus actual price



Source: A.T. Kearney analysis

CRA Works Best with Complex, Distinct, Multiple Values

As a methodology, CRA can be used in almost all situations to explain the relationship between an item's price and its underlying drivers. It is particularly well suited to specific areas of cost that fit the following four criteria:

1. Items or systems that demonstrate a complexity in specifications, physical properties, or sub-components. (CRA's value tends to diminish as specification items or materials become too similar.)
2. Categories whose specifications exhibit a high level of contrast from one item to the next.
3. Categories with hundreds or thousands of unique items (CRA can be applied across a minimum of several dozen unique items and variants).
4. Items whose specifications are discreet, measurable and readily quantifiable (for example, paper packaging)

and are less applicable to less easily defined properties such as marketing or PR agencies.

We have used CRA to evaluate categories as diverse as transportation and logistics and in product development to understand the incremental costs of additional product or packaging features. Figure 2 highlights a small subset of categories assessed using CRA. Also, tearing down competitor product samples and entering their specifications into in-house CRA price models provides a convenient way for supply chain strategists to estimate competitor cost structures.

The Supply Chain Potential

The advantages of increased price transparency are obvious, especially to procurement and supply chain professionals. Understanding price drivers is valuable in comparing bids and prices for new individual items or SKUs across suppliers, and allows for a more stringent evaluation of the competitiveness of a current supplier's portfolio in preparation for renegotiations or annual reviews. Such information is useful in assessing potential procurement synergies and cost reduction opportunities resulting from an acquisition or merger, and can help control "price creep" by allowing should-price estimates of future items.

CRA can be used outside the commercial arena as well. In one case, the methodology was applied to the manufacturing process. Replacing price with time, the company determined the key contributors to excessive cycle time in the assembly process. Pricing on future-spend items is also a good candidate. By accounting for the key price driving specifications, the CRA best fit line establishes a standard baseline of performance, regardless of the item's specifications. Entering the specifications of proposed or future parts into the model provides immediate feedback on the expected price of the new item and whether incoming bids are competitive. By managing to the best fit line, the buyer is able to avoid the effects of price creep over the duration of the contract.

Because the CRA methodology is used for price transparency across technically different elements, a complete CRA model can indicate the level of technical complexity in the entire category. The number of different variations or the number of different variables used in defining cost allows managers to look internally to ask why so many variants are needed and if a given category is over-specified.

FIGURE 2: Typical categories and price drivers

Category	Specifications that drive price *(not exhaustive)*
Injection moldings	Resin type, mass, run quantity, number of sub-components
Aerosol cans	Material, size, construction (two versus three pieces), printing
Labels	Type, substrate material, size, print type, number of colors, run size, and order quantity
Folding cartons and cards	Board type and weight, print type, size, number of colors, finishes, folding style, run size, order quantity
Corrugated boxes	ECT/BCT, fluting, size, number of colors, pre-print, run size, order quantity
Barrier films	Film composition, film thickness, number of colors
OEM devices	Varies by item, but might include size, material and performance parameters
Point-of-purchase displays	Display type size, print type, number of colors

Source: A.T. Kearney

Staying Competitive

As technology improves and customer needs become increasingly fragmented, the forces that drive mass differentiation will continue to grow and decrease the effectiveness of traditional spend management tools. As a scalable statistical method, CRA is an ideal way to manage spend in the face of rapidly growing SKU complexity.

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