Designing products for value

Learn how leading companies combine insights about customers, competitors, and costs to develop more innovative and cost-effective products.

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A rising tide of prosperity in developing economies is reshaping the nature of competition among global product makers, offering both the promise of new markets and the perils of having to face nimble, innovative, and highly ambitious rivals. In fact, the speed of newcomers (unencumbered by legacy issues) makes still more problematic an insidious challenge large manufacturers everywhere face when they try to innovate: insular thinking and functional disconnectedness that, if unchecked, can gum up product-development processes, drive up costs, and distract companies from paying attention to competitors—and, ultimately, customers.

Recognizing the challenges of the new environment, a few product makers in industries as varied as appliances, automotive, consumer packaged goods, high tech, and medical devices are taking a different approach. By encouraging more focused collaboration among multiple functional groups (notably marketing and sales, operations, engineering/R&D, and procurement), these leaders are combining deep insights about customers, competitors, and supply bases to strip out costs and amplify what customers truly value. The results—including better products, happier customers, higher margins, and, ultimately, a stronger ability to innovate—should serve these organizations well in years to come.

In this article, we'll look at three such companies. Their experiences offer insights for any product maker hoping to improve its competitiveness.

Case 1: Appliance maker

The challenge

Senior executives at a large, low-cost manufacturer of appliances and white goods were concerned about the sluggish performance of the company's household fan business. It had long been among the top leading players in the company's home country—an emerging market—but was now losing domestic share in two important, and fiercely competitive, product categories.

The company's leaders suspected that a stagnant product portfolio was partly to blame; they had been focusing a considerable amount of attention on operations and had neglected to revisit fan designs for a couple of years. Meanwhile, an innovative upstart, also from an emerging market, had begun competing with the manufacturer, both at home and in developed markets. The threat served as a wake-up call: establishing a stronger platform for growth, the

executives realized, would require the company to step up its product-development capabilities while maintaining—or even improving upon—its low-cost edge.

Focus on the customer

The company started by conducting focus groups and ethnographic research aimed at identifying unmet needs among middle-income (and aspiring middle-income) families in emerging markets. As these approaches started generating concepts for new products, the company ran surveys that forced consumers to choose between various product features and price points and then used conjoint analysis to discern how much customers were willing to pay for various options.

Its results were intriguing. For example, the ethnographers observed that middle-class aspirants in urban areas hated how dirty the blades of typical ceiling fans became after prolonged use. Conjoint analysis showed that some of these consumers would pay a premium for models that were easier to clean.

Similarly, the work identified profitable niches for fans with built-in, rechargeable batteries (to be used in case of power outages), as well as portable models for families that wanted one fan to serve several purposes—say, venting cooking odors in the kitchen and personal use elsewhere in the house. The company began actively pursuing these and other designs, including concepts tailored for consumers in developed countries.

Study the competition

Next, the executives brought together a group of designers, purchasers, marketers, product engineers, and others to conduct a series of product teardowns involving the company's—and the competitor's—fans. By seeing how different models stacked up, the executives hoped to spark fresh thinking in the team that would improve the new designs and also to help determine whether competing products had unexpected cost or technological advantages.

The exercise helped the company to meet both its goals. Purchasers and product engineers, for instance, believed that it was already striking the right balance between quality and price in its materials and components. Yet the teardown showed that as compared with competitors, the company was "overbuilding" its products significantly and that identical—or even better—product performance was possible at a lower cost if the team was willing to rethink its design approaches.

Some of the resulting design changes were quite straightforward and even, in retrospect, obvious. Yet the team acknowledged that the new ideas didn't click until the teardown, when the evidence was spread out on the table for discussion. By modifying the cover of one type of household fan, for example, the team made it unnecessary to include an internal bracket assembly that had supported the original cover—a savings of 7 percent per unit. This change, like most cost-saving opportunities the team identified, was invisible to customers and didn't matter to them (for an example of one model, see diagram).
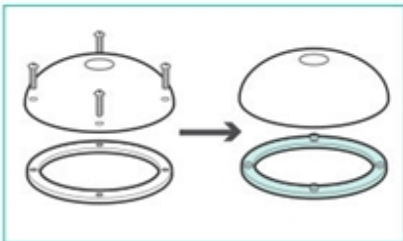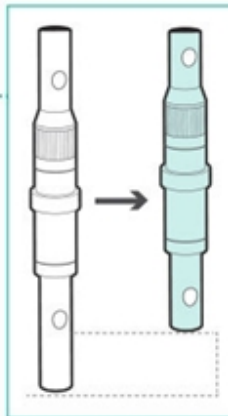
Selected design changes
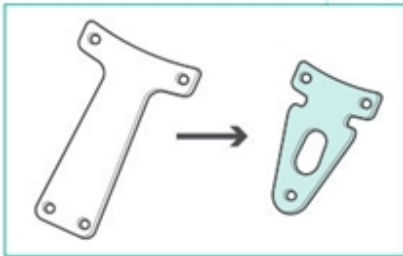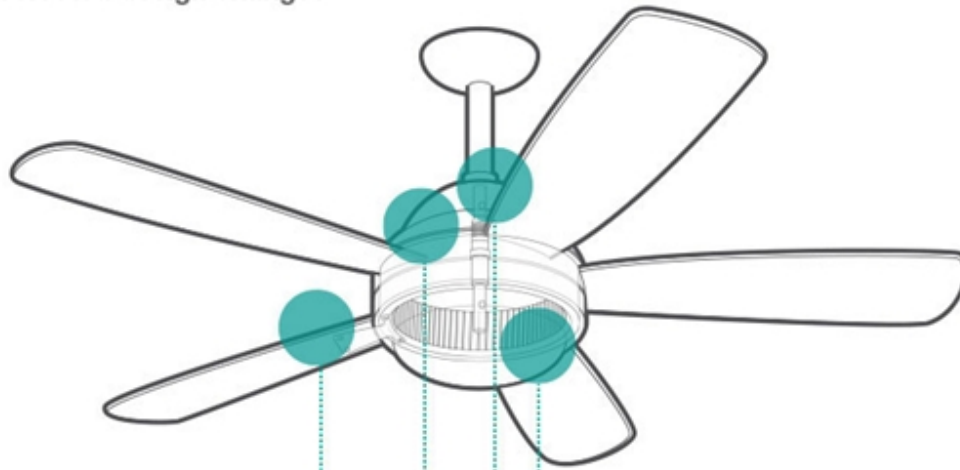
Blade
Using smaller shank lowers cost by 3.7%.
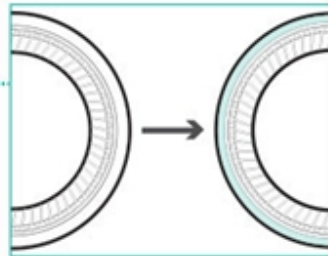
Motor
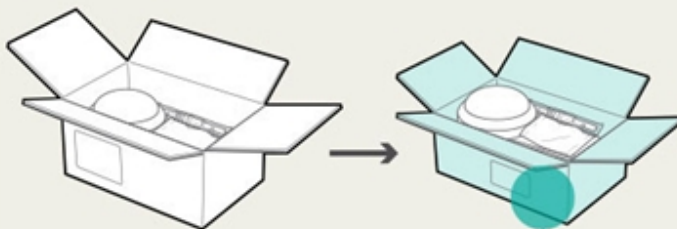Redesigning rotor using less aluminum lowers cost by 2.8%.

Cover
Replacing screws with snap-fit attachments lowers cost by 0.2%.
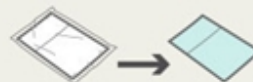
Motor
Shortening spindle lowers cost by 0.7%.

Packaging

Redesigning box to use less cardboard lowers cost by 3.0%.

Eliminating polybag for warranty/instructions lowers costs by 0.5%.

Smaller routing sticker lowers cost by 1.1%.

Many of the individual cost-saving opportunities the team identified were small. But the collective impact was huge—helping the company to reduce the total cost of manufacturing its fans by more than 10 percent, against a cost base that was already quite competitive. Meanwhile, consumers received the new designs well, and that contributed to a 50 percent jump in operating profit in the first year of their introduction and helped elevate the company to the number two spot in the market (up from number three) over that time span.

Case 2: Medical-capital-equipment maker

The challenge

A large manufacturer of medical devices and capital equipment was losing market share to an Asian-based entrant offering lower prices for a key product. The manufacturer's R&D team was perplexed. By its estimates, the competitor's costs to make the product should be about 20 to 25 percent *higher* than the company's costs for its own product. A head-to-head comparison of product characteristics clearly indicated that the attacker's was inferior on many dimensions, including quality. The consensus of the R&D group was to stay the course—the competitor, they grumbled, was selling below cost to grab market share and would eventually have to raise its prices.

Skeptical company leaders decided to investigate further. Many of the R&D team's key personnel were longtime company veterans who had been instrumental in the design and commercialization of its product from day one. While they were stellar R&D performers, some executives felt that the team didn't have enough facts to support its conclusion about the competitor and might even be too close to the situation for an objective view.

Focus on the customer

To get more information, the company's marketing experts analyzed the situation from a customer perspective. By conducting surveys and in-depth interviews with current and prospective customers, as well as channel partners and their sales staffs, the marketing team began assembling a clearer picture of how the product looked from the outside.

The picture wasn't pretty. While the manufacturer did enjoy a lead over the competitor in product quality, as the R&D team had insisted, the gap was smaller than expected. Moreover, the manufacturer slightly lagged behind its competitor on several other critical attributes that mattered more to customers, despite investments it had made to differentiate itself in these very ways (exhibit). The conclusion: the two products were about equal in customers' eyes—until the competitor's lower price tipped the balance in its favor.

Exhibit

Taking the customer's perspective can reveal which product attributes pay off.

Disguised example: product from a medical-capital-equipment manufacturer

● Manufacturer   ● Competitor

Product attributes	Importance to customers[1]	Customer perception of manufacturer vs competitor

Importance to customers: Low ← → High

Customer perception of manufacturer vs competitor: Less favorable ← → More favorable

- Price
- Quality attribute A
- Quality attribute B
- Performance attribute A
- Ease of use
- Software
- Graphical user interface
- Downtime
- Service quality
- Servicing time
- Training[2]
- Performance attribute B
- Power
- Size
- Throughput

[1] Derived from conjoint analysis.
[2] For example, in device operation.

Study the competition

To gain further insights and formulate a response, the company brought together a group of R&D product engineers, marketers, procurement people, and finance specialists to dismantle the competitor's product and compare its features and components with those of the company's offering.

To the group's surprise, the effort uncovered technological differences between the two products—differences suggesting that the competitor's product cost less, not more, to manufacture than the company's did. What's more, the nature of the differences suggested that the competitor had considerable room to lower its costs further in the future and thus to make its product even more attractive to customers.

Ultimately, the team determined that just three components in its product accounted for most of the cost differences it observed, and these components all involved aspects of the product's performance that weren't important to customers. This conclusion was sobering: the manufacturer's product was better on these dimensions, though in a way that drove up its costs, only marginally improved its performance, and ultimately didn't matter to customers.

In response, the company quickly moved to close the cost gap, generating ideas that bridged 80 percent of the cost disadvantage, without compromising features that users valued. The exercise also gave the company's marketers and sales personnel an important new (and more targeted) set of customer-prioritized attributes to use in differentiating their product.

Case 3: Medical-device manufacturer

The challenge

An acquisition created big expectations—and challenges—for the operations group of a medical-device maker. The company's leaders had set an aggressive cost reduction target of 15 percent after examining the various operational synergies possible from the deal. Hitting the target would require the company to, among other things, rationalize its product portfolio while modifying how it designed and sourced its products.

The merger had left two business units making, in some cases, essentially the same product. The natural place to start, the operations executives recognized, was therefore to redesign the product with the highest degree of overlap. By bringing the two R&D teams together to work on the effort, the executives hoped to generate new ideas that would help the company meet its cost reduction targets, improve the product, and strengthen the cohesiveness and culture of what was ultimately to become the new R&D unit.

Putting it all together

To ensure that the effort remained grounded in customers' needs, the new R&D team began by familiarizing itself with the results of a series of customer and dealer interviews the company's marketers had conducted in a parallel effort. Armed with that information, the team carried out a series of teardowns on three versions of this kind of product: two of its own overlapping variations and one version sold by a competitor.

In some instances, the customer feedback led to minor design changes or none at all. For instance, customers preferred one version of the company's control mechanism, so it was selected for the redesigned product with almost no changes. Similarly, interviews with dealers revealed an opportunity to improve customer satisfaction by making a simple ergonomically inspired addition.

In other instances, the consumer insights work had identified design, feature, or functionality changes that would not only cut the cost of manufacturing the new version of the company's product but also make customers more satisfied with it. For example, some customers, particularly older ones, didn't like the heft of either existing version of the company's product and asked for a lighter alternative that was easier to set up. Substituting lighter, and cheaper, carbon steel for stainless steel could meet this need and save about $15 a unit.

Similarly, some of the more advanced electronic functions of the company's products were seldom used and not valued highly, much to the surprise of the team. It identified substantial opportunities to save costs by eliminating these features and simplifying the electronics of the new design.

Of course, not all of the cost-saving design changes the team identified were as noticeable to customers. Many involved subtle tweaks and manufacturing changes inspired by the differences between the company's two versions of the product. For example, the team changed the specs of several parts to reduce the number of welds required and simplified the packaging to reduce waste and lower costs.

A new start

The teardown proved an important milestone in the effort to meet the company's goal of cutting costs by 15 percent, a target it ultimately realized—and exceeded. More important, the effort helped the company's R&D and procurement groups begin to work together in a new, more collaborative way. "Instead of us working in our 'silos' on a day-to-day basis," said one executive, he noticed "much more of a propensity for people to be attacking a problem in packs rather than alone."

By combining deep insights about customers, competitors, and costs, a few leading companies are finding the "sweet spot" in product development: lowering costs while designing better products that customers value more. Along the way, these companies are strengthening organizational capabilities that will help them thrive in an era of heightened global competition.

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