Pot of gold
Turning product complexity into profits
Every new product variation drives up complexity and costs. With good complexity management, companies can enhance the customer and consumer experience while improving operational and financial performance. As the economy recovers, this approach can free up funds and the manufacturing capacity needed for profitable growth.

New products are the lifeblood of a dynamic marketplace, allowing companies to address the proliferation of consumer needs while boosting revenues and profits. Yet the introduction of every new product comes with serious tradeoffs—hidden layers of complexity that accumulate over time, damaging product portfolio cost structures and supply chain efficiencies. Too many new variations in products and packaging can create confusion for consumers and ultimately damage the company’s brand, market position, and channel relationships.

Cognizant leading companies know how to manage product complexity to strategic advantage. They know what types of complexity make sense for their business, how much it costs to maintain complexity, and what real value complexity delivers to the bottom line. These companies continuously manage complexity across the portfolio, the product life cycle, and the organization. This approach allows them to invest in new products that tap the most promising growth opportunities without incurring unnecessary costs.

Not surprisingly, there is a clear correlation between strategic complexity management and operational and financial performance. From our work with clients, we’ve seen companies with strong complexity management capability increase revenues by up to 5 percent, reduce cost of goods sold (COGS) and operational costs by as much as 10 percent, and decrease development costs by up to 20 percent. According to our recent benchmarking study, companies with a strong strategic complexity management capability experience significantly higher earnings before interest & taxes (EBIT) performance than their competitors.
Understanding the fundamentals

Product complexity comes in many different shapes and sizes. There’s good complexity and bad complexity, complexity on different levels of the portfolio, and even complexity in different parts of the life cycle. Successful management takes each of these factors into account.

The good and the bad. On the most basic level, there are two types of complexity. Good complexity creates value for consumers, customers, channels, and the company. By enabling products that the marketplace prefers, good complexity has a positive impact on buying decisions and helps increase the company’s revenue and margins. Bad complexity, by contrast, brings little value and leads to reduced revenue, excessive costs, and lower margins.

Simply put, companies need to manage good complexity while eliminating bad complexity. They should identify where good complexity exists in the portfolio and where adding more complexity would create value, while controlling any additional costs that may be incurred. At the same time, firms need to “search and destroy” any sources of bad complexity to reduce unnecessary costs and their impact on the bottom line.

The whole product portfolio. Companies attempting to manage complexity costs often focus on the lowest level of the portfolio, rationalizing individual SKUs that perform below expectations. Rationalization is a critical tool, especially when used in environments where variety provides real value; in such instances, companies should conduct regular strategic reviews of their stock keeping units (SKUs) in order to realize the best results.

Although rationalization is important, it does not address complexity residing at the higher levels of the product portfolio: the variants, products, and platforms. This complexity exists in several forms—including manufacturing inefficiencies, longer lead times, and greater capital expenditures. These are often the areas where complexity costs are the highest, and where management efforts can have the greatest impact.
The entire life cycle. Some companies experience challenges managing product complexity because they lack an accurate picture of the complexity-related costs that are incurred over a product’s life cycle—including the costs associated with inventory holding and handling, more manufacturing changeovers, and freight and expediting. Although many companies commit a large portion of complexity-driven costs early in product development, they do not begin trying to manage those costs until after the product has been introduced to the market.

This holds true for a range of industries. Take, for example, electronics and automotive manufacturers. Typically, they incur more than 70 percent of their complexity-related costs prior to a product’s launch because of the enormous engineering and infrastructure investments required. In the medical device industry, manufacturers lock themselves into years of costly mandated service and support commitments with each new product they decide to add to their portfolios. For consumer products companies, a significant portion of manufacturing and distribution costs are determined by packaging design decisions made long before products appear on store shelves. In these and other industries, management of complexity costs needs to occur in the pre-launch phases, when those costs are committed.

Acquiring the tools and capabilities

The marketplace will always demand new products—with new technologies, designs, and materials—and those products will invariably add complexity. For many companies, the answer is simply to manage the “how many”—the number of products and SKUs offered in the marketplace. Although this approach is valuable, it is insufficient. In our experience, companies should also manage the “how”—specifically, by increasing the leverage of platforms; limiting the variety of designs, modules, and components; and deploying a wide range of metrics. This approach affords far greater gains without compromising the end products offered to consumers.
**Leveraging platforms.** In our view, platforms are the most useful weapon against complexity because they can greatly improve operating efficiencies without necessitating a reduction in product variety. It is critical to design platforms with a view to increasing their leverage and, equally important, to eliminate any platforms that underperform. Our benchmarks, in fact, indicate that companies able to increase the efficiency of their product platforms have a significant profitability advantage (Figure 1).

**Figure 1: The financial benefits of greater platform efficiency**

Average percent EBIT advantage earned by top 50% of benchmark companies for revenue per product platform, compared to bottom 50% of benchmark companies

These benchmarks are illustrated by two recent industry examples. Cosmetics giant Avon undertook a major initiative to reduce complexity in its product portfolio. By developing standardized packaging platforms that could be used for multiple products, the company reduced design and development costs and shrank development timelines. Moreover, it helped increase procurement leverage with suppliers and reduced changeover requirements, significantly lowering unit and production costs. The results of this initiative were impressive: a gross margin improvement of two percentage points.

A large automotive company has similarly proven quite adept at maximizing the leverage of its platforms. The leading global vehicle manufacturer now offers, across its five brands, 60 different models based on a mere 16 platforms. This has translated into an impressive 350,000 vehicles sold per platform per year. Not content to rest on its laurels, the company plans to drop two platforms and add five models while it integrates and accelerates growth.
**Reusing designs, modules, and components.** According to our research, companies that persistently limit the variety of designs, modules, and components deployed in their products earn substantial profitability advantage, primarily through engineering and procurement savings and manufacturing-line efficiencies (Figure 2). A consumer goods client recently used this strategy to double its operating asset effectiveness and thereby avoid significant capital outlays. Conversely, we have seen companies with high levels of variability experience as much as 40 percent of operating efficiency losses, with capital expense rising accordingly.

**Figure 2: The financial benefits of greater design and component reuse**

Average percent EBIT advantage earned by top 50% of benchmark companies for design and component reuse when introducing new products, compared to bottom 50% of benchmark companies.

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**Measuring complexity’s costs and benefits.** Given that so many complexity-driven costs are invisible to the naked eye, it’s especially important to have robust ways to measure them. In our experience, many firms rely on traditional individual or departmental performance metrics, such as market share or unit cost, but these often fail to capture complexity-driven costs across the portfolio and product life cycle.
To account adequately for complexity costs and benefits, companies must also deploy a complete set of enterprise-level metrics, such as average unit cost across products and platform profitability over the life cycle. This requires integrating data from disparate groups and IT systems across the organization—including engineering, procurement, manufacturing, logistics, and pricing. By using such metrics in conjunction with traditional functional metrics, companies will be better able to capture many of the hidden costs. Moreover, they will be able to align and motivate different functions across the organization to manage complexity on an ongoing basis.

These different complexity management tools provide significant cost savings (Figure 3). Firms that leverage platforms more and reuse designs and components can reduce COGS and development and operational costs. Companies that reduce the required variety of service parts and repair procedures will see expenses around sales warranties shrink.

<table>
<thead>
<tr>
<th>Figure 3: Examples of cost savings from product complexity management</th>
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<tbody>
<tr>
<td>• Purchasing economies of scale</td>
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<tr>
<td>• Increased operational efficiency</td>
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<tr>
<td>• Reduced shipping and handling costs</td>
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<td>• Decreased inventory holding and handling costs</td>
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**Taking the first steps**

Although complexity management provides indisputable value, this value does not come for free. Acquiring this capability is a serious undertaking that requires the company to make major decisions regarding its product portfolio and design.

To start seeing returns quickly, it is advisable to treat complexity improvement as two distinct processes: triaging to reduce bad complexity in the near term while developing a management capability that will serve the company well over the long term. This approach allows firms to earn payback from complexity reduction efforts in as little as six to nine months, and accrue significant gains in one to three years.

**Triage existing complexity.** Reducing bad complexity requires a product complexity diagnostic. The first step is to quantify existing product complexity: the number of platforms, products, and SKUs being marketed and the number of features that modules, designs, and components have in common. The next step is to distinguish between good and bad complexity—which aspects of complexity add value to the business, and which aspects don’t. Developing an accurate picture of the costs and benefits of complexity is of paramount importance in this regard.

Once this diagnostic has been completed, the company should reduce bad complexity wherever it makes sense. This usually involves making changes that can be implemented easily and at relatively little expense (i.e., without involving IT systems, facilities, or infrastructure). Because the costs of the reduction efforts may be greater than the expected savings, it is critical to assess the tradeoffs in areas such as short-term revenue loss, development expense, inventory management, production efficiency improvements, and capital expenditures.

**Develop a strong complexity management capability.** While significant benefits can be gained in the short term from triaging complexity, the full potential of product complexity management cannot be realized until the appropriate strategic processes and metrics are in place to manage complexity over the long term. The operational requirements for doing so fall into three broad categories.

First, an enterprise should determine the appropriate target level of good complexity for its business, markets, and consumer base. This should reflect an understanding of the basis-of-competition of the enterprise; it should be aligned with and driven by the strategy and needs of the business, relative to market demands and the competitive landscape.

*Platforms are the most useful weapon against complexity because they can greatly improve operating efficiencies without necessitating a reduction in product variety*
Second, the costs and benefits of product complexity should be part of the product portfolio strategy conversation in the earliest days of road map development and at the highest levels of the enterprise. With these practices in place, a company can determine the path of platforms, products, SKUs, and components it needs to take to reach the target level of good complexity. It can also measure the results as the organization gets closer and closer to that target. Without these practices in place, the target level of good complexity will be elusive.

The third component of strong product complexity management involves the establishment of business analytics to quickly and easily measure the enterprise-level cost and benefit metrics that are so critical to effective complexity management. In our experience, companies that begin tracking complexity cost and benefit metrics reach two conclusions: they place immense value on the unique insights that these metrics can offer, but they also immediately begin searching for ways to make the measurement process faster and less manually intensive. This requires an investment to build analytics that bridge legacy IT systems and provide meaningful enterprise-level reports of complexity costs and benefits.

Managed effectively, product complexity can set the foundation for a differentiated portfolio and a positive customer experience. Leading companies know that strategic complexity management is also critical for improving operating efficiencies, reducing costs, and driving growth from within. In today’s economic environment, these benefits are not just welcome—they’re essential.
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