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*Winning with
complexity*

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**Operations
capabilities that
drive profitable
growth**



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Executive summary



Leading companies are struggling to master the increasing levels of complexity that are inherent in growth. New product innovations, geographic expansion, and proliferating distribution channels bring complications that can squeeze profit margins even as they generate new revenues. Avoiding or eliminating complexity isn't an option for most companies that want to grow. And traditional margin management methods won't protect profits against the costs of the new complexity.

Winning with complexity requires building sets of operations capabilities tailored to each product, market, and channel. Companies that build these capability sets can turn complexity into a competitive advantage, capturing more growth opportunities and reaping higher returns on rising sales.

The complexity challenge

Many companies are finding that profits don't keep pace as sales grow. Costs often rise even faster than revenues, crimping margins and reducing the return on growth. A recent Strategy& survey of 300 leading publicly traded companies found that more than half saw gross margins decline between 2007 and 2012, despite rising revenue.

One reason: complexity. Operations become increasingly complex as companies launch new products, enter new markets, and pursue new customers. In a survey of 300 executives by the Economist Intelligence Unit ("The Complexity Challenge: How Businesses Are Bearing Up," 2011), nearly 90 percent of respondents said complexity was raising their overall costs.

This common complaint reflects the inescapable reality that growth breeds complexity. It's not a choice — with few exceptions, most growing companies become more complex. Every new product, market, or channel brings costly new requirements in areas such as product design, customer service expectations, and even production and distribution assets. Managing these variables without losing control of costs is a central challenge for every growing business.

Companies that know how to manage costs as complexity increases will reap the full profit potential of their revenue growth. They can even turn complexity into a competitive advantage. Those that allow complexity to snarl their operations will lose market share and see costs consume a growing share of new revenues.

You can't master complexity with business processes, asset configurations, and organizational structures built for simpler times. Too many companies are still configured for simplicity, scale, efficiency, and stable planning at a time when markets demand more product variety, shopping occasions, channel choices, and price options. In nearly every industry, companies clinging to standardized products are losing market share to rivals that craft customized offerings for diverse customer groups.

With few exceptions, most growing companies become more complex.

Successful companies are developing the new capabilities needed to win with complexity, and become what we call ready for growth. They're segmenting and aligning their various operating models from end to end, based on market-back analysis of different customer needs. They've integrated strong foundational operating capabilities to create distinctive, self-reinforcing capability sets that drive differentiation and responsiveness where necessary, while preserving standardization and efficiency elsewhere.

Building a set of capabilities for the complexities facing your business will require changes throughout your organization and beyond. But if you learn to manage complexity, you'll have a platform for sustainable, profitable growth.

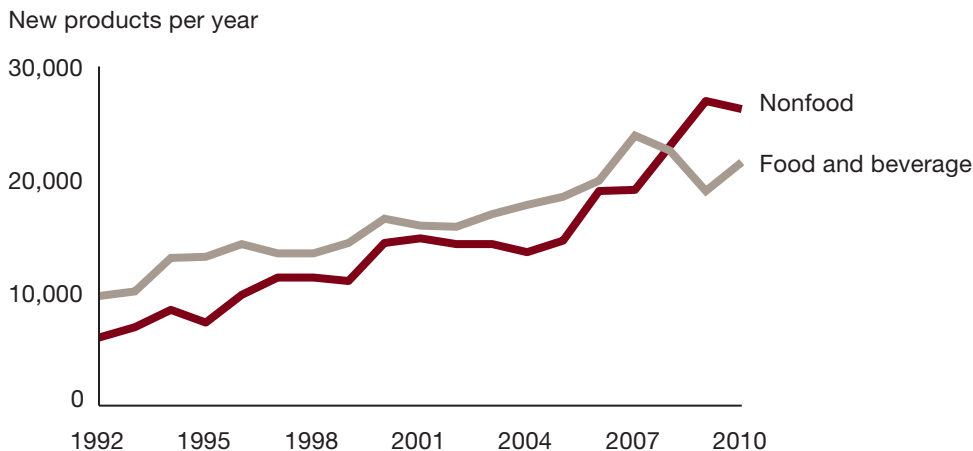
Complexity is everywhere

Companies in many industries face numerous opportunities and risks as markets, distribution channels, and customer demographics evolve. Executives surveyed by the Economist Intelligence Unit cited many causes of growing complexity, from demand for increasingly customized products to global expansion, mergers and acquisitions, and new regulation.

Here's a look at the complexity challenges in a few major industries:

- *Consumer packaged goods (CPG)*. Diverse global consumer demographics and customer demand for more choices have spurred an explosion of new products, brand extensions, and packaging variations (see Exhibit 1). According to *Forbes*, the number of individual items carried by the typical American grocery store has

Exhibit 1
New CPG product introductions in the U.S.



Source: USDA Datamonitor
(www.ers.usda.gov/topics/food-markets-prices/processing-marketing/new-products.aspx#.UgKehm2O51E)

tripled to 50,000 in the past 30 years. At the same time, grocery retailers are raising the bar on service levels and pressing for shorter delivery lead times. And growing retail channels such as club stores, dollar stores, discounters, and online merchants have their own specific needs that can drive up cost-to-serve. CPG companies that can meet these requirements stand to gain market share, but the costs will be higher unless they build new capabilities.

- *Automotive.* Automakers accustomed to managing multiple product lines, models, and option packages face a new wave of complexity as evolving powertrain technologies, advanced materials, and digital electronics transform the automobile. The pace of obsolescence is accelerating, with recent innovations such as factory-loaded dashboard navigation systems already giving way to touch screens that relay data from a driver's smartphone. To keep up, manufacturers need new ways of managing design processes and faster product cycles.
- *Other industries.* Oil and gas companies, already dealing with the complications of drilling in hostile environments such as the Arctic, now face fundamental operating and economic challenges arising from new hydraulic fracturing techniques. Multinational chemicals and materials companies, meanwhile, are developing new and specialty products for established markets as they simultaneously pursue new customers in high-growth developing markets that require standard products, lower costs, or shorter lead times.

The cost of complexity

Measuring the exact cost of complexity is difficult, but it clearly hurts profitability unless managed effectively. That's evident in the inverse relationship between revenue growth and profitability at many companies. Although about 90 percent of companies reviewed by Strategy& in four different industries posted revenue increases between 2007 and 2012, fewer than half saw operating margins expand. Operating margins declined an average of 0.4 percentage points as revenue rose 9 percent on average, defying expectations that growth would boost returns through economies of scale.

In most cases, overhead wasn't the culprit. Only the industrials sector saw selling, general, and administrative (SG&A) expenses rise as a percentage of sales. On average, SG&A declined 0.2 percentage points, as companies cut unnecessary spending and outsourced a range of back-office functions. The two industries that cut SG&A deepest, CPG and automotive, were also the two that managed to eke out operating margin increases. But cutting SG&A won't drive profits for very long. Eventually you run out of excess overhead to eliminate and corporate functions to outsource.

On the other hand, cost of goods sold (COGS) is rising everywhere. COGS rose 0.7 points as a percentage of sales at the companies reviewed. All industries saw increases, ranging from 0.4 points in chemicals and industrials to 1.3 points in consumer products (*see Exhibit 2, next page*).

Rising commodity costs often contribute to COGS increases. But executives surveyed in the Economist Intelligence Unit report blamed complexity for reducing earnings before interest, taxes, depreciation, and amortization by 7 to 10 percent. And some companies do a better job of managing inflationary pressures than others in the same industry. A few winning CPG companies are expanding operating margins despite growing complexity (*see Exhibit 3, next page*).

Since COGS is often the largest expense line for companies with product supply chains, profit growth depends largely on COGS performance. To control COGS, you need new capabilities to manage the complexity that comes with growth.

Cost of goods sold is rising everywhere. All industries saw increases.

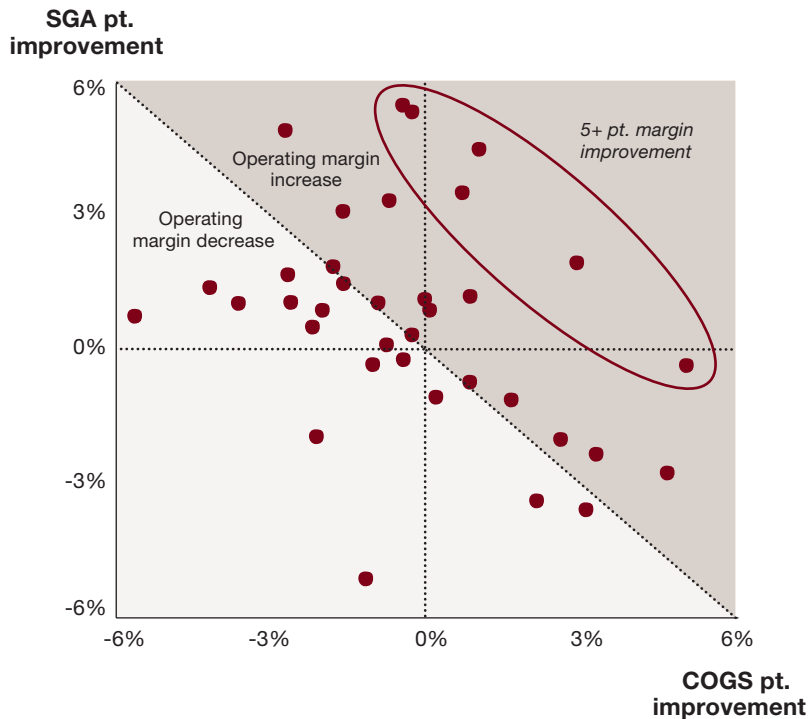
Exhibit 2
P&L performance by industry

	Average performance by industry (2007–12)				Percentage of companies posting increases		
	Revenue (CAGR)	COGS change	SGA change	Operating margin change	Revenue	COGS	SGA
Consumer products	13.3%	1.3%	-1.9%	0.7%	95%	56%	43%
Chemicals	6.8%	0.4%	-0.1%	-0.2%	93%	51%	44%
Industrials	8.5%	0.4%	1.1%	-1.4%	83%	50%	65%
Automotive	7.3%	0.6%	-0.7%	0.1%	87%	47%	36%
Average	9.2%	0.7%	-0.2%	-0.4%	89%	51%	51%

Note: Selection of 332 companies including the top 25–30 revenue companies by industry subsector in the following industries and subsectors: automotive: OEMs, auto parts; CPG: food manufacturers, beverages, household products; chemicals: specialty, basic/diversified; industrials: aerospace and defense, machinery, electrical equipment, transportation equipment, manufactured goods.

Source: Strategy& analysis

Exhibit 3
CPG industry performance for U.S. companies and U.S.-based multinationals, 2007–12



Note: Financial data adjusted for acquisition and divestiture activity where adjustment/restatement available. Different time periods shown for Hillshire (2008–12), Kraft (2009–12), and Nestlé (2010–12).

Source: Capital IQ; company filings; Strategy& analysis

Winning capabilities for a complex world

Successful companies are building capability sets that are custom-tailored to their strategies, customers, and business requirements. Each one is different, but they share some basic characteristics.

Capabilities for winning with complexity aren't based on traditional siloed corporate structures. They're cross-functional, spanning both internal functions and outside partners. They align key operational elements such as organizational roles, information flows, decision rights, metrics, and motivators. And they facilitate segmentation of operations based on the needs of different product lines, customer groups, and other market imperatives.

Companies with the right capabilities act in different, even contradictory ways in the various areas of their businesses, even when they're coherent. They're agile enough to deliver exceptional products and services for customers in high-priced premium markets, while simultaneously operating with ruthless efficiency in commoditized markets where margins are slim and price competition intense.

In complex operating environments, five foundational operating capabilities are essential to driving growth, asset productivity, and cost savings:

- *Innovation and development excellence.* Complexity requires comprehensive, integrated management of business lines and product portfolios through techniques such as open-source innovation, modular design and platforming, design-to-value, rapid prototyping, and mass customization. Rigorous structured processes based on market intelligence, value drivers, and production/supply economics help companies make the right choices about new products and other portfolio strategies.

Capabilities for winning are cross-functional, spanning both internal functions and outside partners.

Results can be impressive. A Strategy& consumer products client that built these capabilities saw profits grow 40 percent through both volume and price improvements, while penetration of growing channels increased.

- *Advantaged supply network.* Companies entering new markets, developing new products, and managing evolving inputs and costs must balance manufacturing scale and utilization economies with logistics expenses and plant complexity. Advantaged supply networks create a physical footprint that optimizes sourcing, manufacturing, and delivery by putting factories and distribution centers in the right places to meet customer lead-time requirements, while taking full advantage of scale and regional cost differences. They also tailor the manufacturing and process technologies of each plant to the products it makes. Finally, they provide end-to-end visibility and control across entire business systems, allowing companies to respond quickly and smoothly as markets change.

Advantaged supply networks can generate big savings. One industrial company reduced costs by 12 to 14 percent after restructuring its footprint around manufacturing centers of excellence.

- *Differentiated supply chains.* Firms competing in different markets, product categories, and channels need a tailored supply chain flow for each. Differentiated supply chains segment products, production assets, and supply chain policies, establishing a distinct path for each product from sourcing through production and delivery.

A global beverage manufacturer that created separate supply chains for mass-produced brands and niche products saw COGS decline 17 to 20 percent.

- *Strategic supply management.* Complexity requires closer, more strategic management of suppliers and a deeper understanding of input cost drivers and economic leverage points throughout the supply chain. Companies should forge strong relationships with a core group of key suppliers — managing this extended enterprise like their own — while dealing with others on a more transactional basis. In every case, it's essential to balance cost savings against other important factors such as product quality, innovation, reliability, and speed.

A CPG company that learned its suppliers' costs, capabilities, and financial circumstances saved 18 percent on a product line expansion by offering the vendors a range of fair-return prices that reduced costs while ensuring stable supplies.

- *Enterprise-wide operations excellence.* Operations excellence techniques help companies develop the flexibility to manage complexity — by enabling flexible manufacturing lines and reducing changeover costs, for example. The payoff from driving continuous performance improvement and overall equipment effectiveness with techniques such as lean and total quality management increases with complexity. For example, an aerospace manufacturer reduced the cost of a popular aircraft model by 30 percent after ramping up its lean program to cut production time from 27 days to 12.

Integrated capability sets: The true differentiator

To manage complexity, every company needs enough muscle to clear the bar in each of the five foundational capabilities. But to win, you must create an integrated subset of critical capabilities sculpted around the particular forms of complexity your company faces. Winning companies identify the key foundational capabilities essential to exceptional performance in their business and in their strategy, and build them up into a distinctive, self-reinforcing capability set that drives profitable growth, agility, and efficiency. Working together, these combined capabilities make the difference between managing complexity and thriving on it. And the way to play for each company is dependent on its needs, its customers' needs, its organizational structure, market conditions, and the capabilities it already has. Each company must choose its own combination and strategy.

Building the right set of capabilities requires intense focus and investment in a few capabilities where excellence will create meaningful competitive advantage. This right set drives end-to-end integration of the supply chain, pulling together functional silos around a common vision. And it generates synergies as it adds up to more than the sum of its parts.

There are no templates for integrated capability sets, but it's still useful to examine recent examples from Strategy& clients in three different industries that illustrate the power of integrated capability sets to drive superior performance.

- *CPG.* A diversified consumer products company was still battling complexity even after divesting several business units to focus on its core food business. COGS was growing, returns on innovation were lagging, and supply chain performance was deteriorating. Innovation would be the key to future growth, but the company

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wasn't set up for rapid-fire development, testing, and manufacturing of new products. It needed better customer insights, a manufacturing and distribution network optimized to churn out new products, and a lean management culture to control commodity costs and create a variable cost structure across the company.

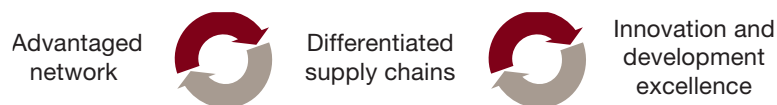
The company built up its capabilities in product and packaging innovation, while modifying its supply network to take advantage of differences in raw material and labor costs. At the same time, it created separate differentiated supply chains for new innovations and existing products. In this demand-driven supply network, customer analytics and insights fueled innovation, supported by a strategic manufacturing footprint and supply chains optimized for new product launches and high returns on invested capital (see *Exhibit 4*). Lean practices, meanwhile, fostered flexibility and responsiveness throughout the supply chain, helped mitigate commodity price inflation, funded innovation, and gave the company a more variable cost profile.

Profits have climbed nearly 50 percent as the share of revenues from innovation rose from 10 to 15 percent.

- *Chemicals.* A multinational chemicals company was struggling to meet widely varying customer expectations as it expanded into new markets and product lines. Buyers of commodity products wanted low prices, while specialty chemicals customers expected higher quality and service. Using a single supply chain designed for a nonexistent typical customer, the company often disappointed its real-life customers.

Exhibit 4

Demand-driven supply network capability set in consumer products



Source: Strategy& analysis

Executives decided to create a separate supply chain for each customer segment. These natural supply chains required four critical capabilities (*see Exhibit 5*). Innovation and development excellence capabilities segmented customer groups based on demand characteristics and market potential. Differentiated supply chain capabilities created separate product flows to meet the specific service and price needs of each segment. Finally, a realigned manufacturing and distribution network, along with optimized operations, enabled the company to hit service and cost sweet spots for each customer group.

The payoff was faster and bigger than expected. Customer service levels rose 20 points, back orders fell 80 percent, and inventories dropped 35 percent, contributing to a return 15 times the investment in the improvement program.

- *Manufacturing.* A diversified manufacturer of building products was weighed down by the complexities of a decentralized organization that spawned an uncompetitive cost structure. Sales and market share were falling as rivals capitalized on the company’s inefficiency.

Management attacked those inefficiencies by developing design-to-value capabilities to create common product platforms across the company, and differentiate only when it created customer value (*see Exhibit 6, next page*). Standardizing designs and consolidating production of similar components used by various business units generated scale economies, improving margins and making the company cost-competitive — without sacrificing the unique product features and customization that customers were willing to pay for.

Exhibit 5

Natural supply chain capability set for chemicals



Source: Strategy& analysis

Exhibit 6

Design-to-value capability set for manufacturing

Innovation and
development
excellence



Advantaged
network



Strategic supply
management

Source: Strategy& analysis

Three capabilities drove the transformation: Innovation and development excellence showed which product characteristics mattered most to customers, enabling the company to emphasize those features while eliminating others. This reduced costs and helped build common product platforms. An advantaged network capability, in turn, organized manufacturing and distribution assets around these common platforms, shifting production to facilities best positioned to optimize costs. Strategic supply management played a role, too, as the company capitalized on its detailed knowledge of supplier costs and capabilities. It handed off distribution management to a third-party logistics provider with the scale and expertise to drive value in that area, and consolidated freight hauling with a small group of carriers.

Mastering complexity has been good for the bottom line. Operating earnings and net operating cash flow both doubled in 2012 on a 3 percent increase in revenue.

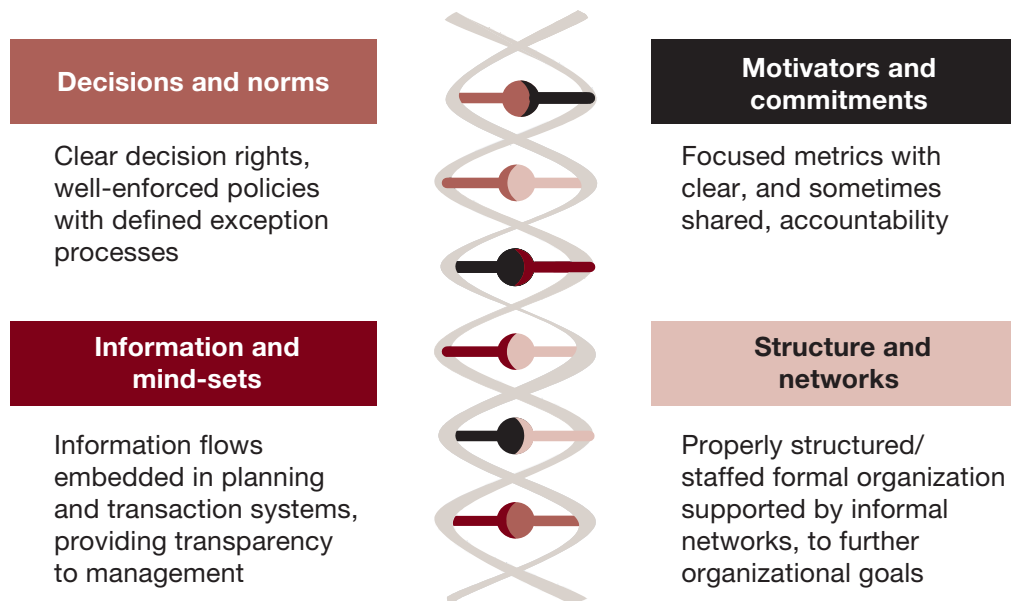
Each of these companies took a holistic, yet targeted approach, focusing on the capabilities most important to its strategic goals. They developed those capabilities in a coordinated way, ensuring that each would support and reinforce the others. But for each company, the focus of the effort and the capability set required to manage complexity were different.

The role of organization and culture in managing complexity

The cornerstone of a strong capability set is an operating model that's aligned to make the critical capabilities self-sustaining. To align the operating model, adjust the four dimensions of what we call organizational DNA (see Exhibit 7).

Complexity touches everyone in the organization, but in different ways. Winning with complexity requires greater levels of collaboration across functional silos, along with a cohesive operating model that aligns

Exhibit 7
The four dimensions of organizational DNA



Source: Strategy& analysis

everyone around common objectives. Structural change may be necessary to build a major new capability, but sometimes all that's needed is refinement of existing cross-functional roles.

Clear decision rights and norms for strong policy enforcement with well-defined exception processes will sustain end-to-end alignment of tailored policies. Information flows and mind-sets must emphasize transparency and give planners and decision makers the information they need. Motivators and commitments must focus on metrics that drive accountability on key performance dimensions, sometimes with differentiated performance objectives.

For example, a client building a natural supply chain capability set adjusted its operating model to align policies for supply planning, inventory, and order management with an evolving product line and differentiated commercial offers for specialty and commodity products. Cross-functional roles in sales and operations planning were enhanced to sustain policy alignment across order lead times, manufacturing scheduling cycles, and inventory targets. Performance metrics emphasized performance-to-policy and standardized delivery reliability levels. Even so, lead times and inventory policies varied widely across product and customer segments.

The company culture can also be a powerful source of energy for building capabilities and driving performance. Leverage informal networks and respected performers across the organization to communicate the change and new norms. At the same time, focus on the critical few behaviors that weaken the capabilities you need. Usually, those are behaviors that break rules or circumvent processes, undermining the robust controls needed to manage complex supply chains. For example, a client seeking to sustain differentiated lead-time and order quantity policies stopped rewarding heroics that trampled over policies in an effort to meet any and all customer requests. "No exceptions" became the new mantra.

Sometimes all that's needed is refinement of existing cross-functional roles.

Conclusion

In many cases, complexity and growth go together. Product innovation, geographic expansion, channel proliferation, and demographic change can overwhelm business systems built for simpler times, squeezing operating margins as sales rise, and robbing companies of the benefits of growth.

Winning with complexity means developing the capability set that enables your company to add complexity and flexibility where needed, while driving standardization and efficiency wherever possible. This requires strong foundational capabilities, stitched together in a self-reinforcing set and tailored to the way you create value and win in the market. The integrated power of these capabilities becomes a competitive advantage, enabling you to capitalize on the complexity that confounds others.

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