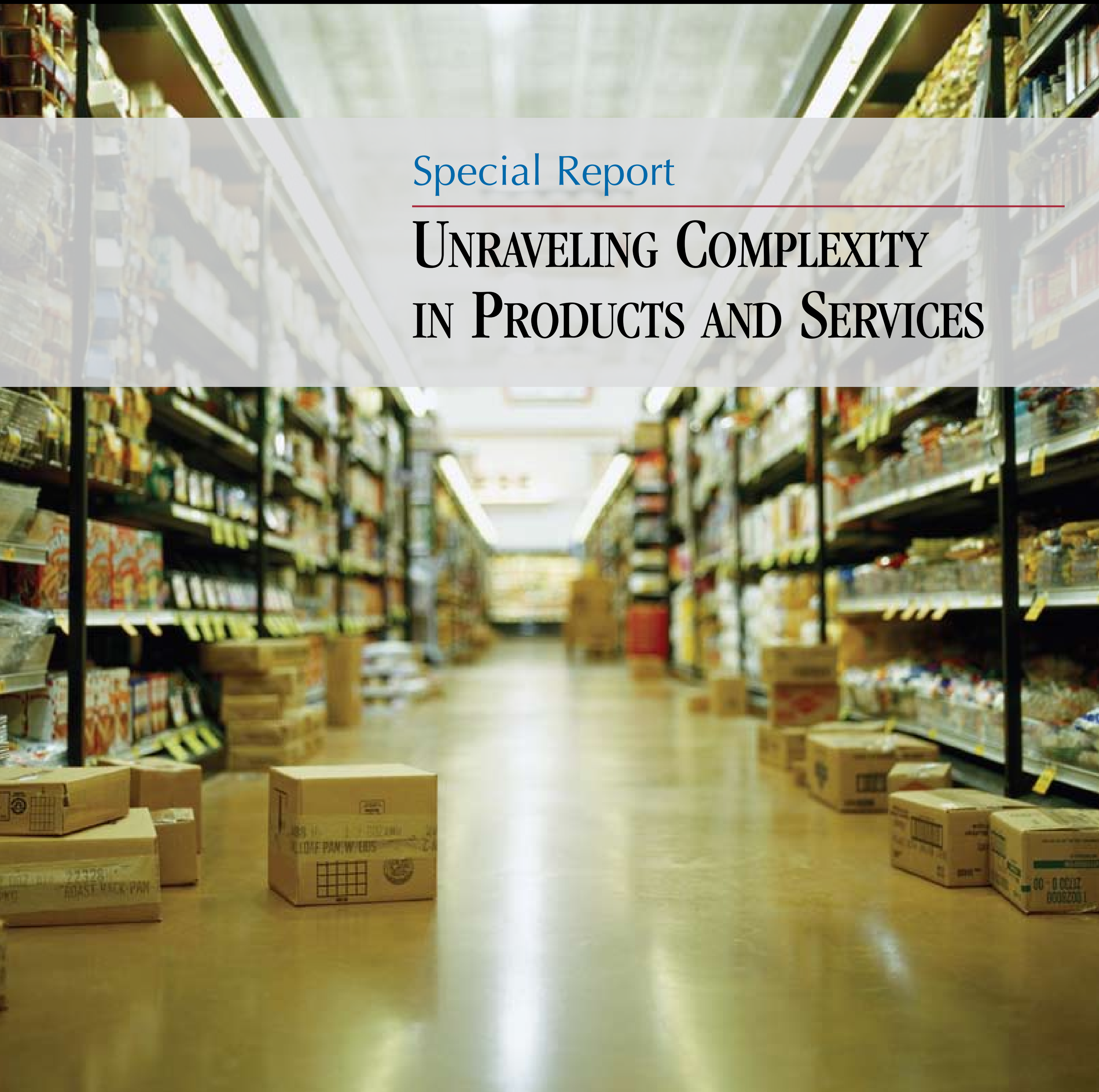
Wharton
University of Pennsylvania

George Group | Knowledge@Wharton

The first in a series of special reports



Special Report

# Unraveling Complexity in Products and Services

WWW.GEORGEGROUP.COM • http://knowledge.wharton.upenn.edu

# Contents

# Complexity in Products and Services: Good or Bad, Depending on How You Manage It

Imagine dropping by your neighborhood Baskin-Robbins for ice cream with your kids in tow. After 15 minutes of frantic finger pointing, negotiating, and weighing options, you decide on the Espresso 'N Cream Lowfat Ice Cream, Pink Bubblegum, Wild 'N Reckless and Very Berry Strawberry. Hopefully, you'll feel the visit —and the drawn-out decision process — was worth it. Clearly, it was also worthwhile for Baskin-Robbins and its 1,000-plus flavors of ice cream, sherbet, sorbets and ices, because you paid a premium over plain vanilla for your impulses.

Others are equally interested in scrutinizing those flavors, to see which of them ring up not just revenue, but also profits. In mid-December, U.S. private equity firms Thomas H. Lee Partners, The Carlyle Group and Bain Capital bought Dunkin Brands (which owns Baskin-Robbins and Dunkin Donuts) for $2.4 billion from wine and spirits major Pernod Ricard, four months after Pernod Ricard paid $14.2 billion for Dunkin Brands' former owner, Allied Domecq, of Randolph, Mass. Pernod Ricard owns top liquor brands such as Chivas Regal, Malibu, Stolichnaya and Glenlivet, and didn't want donuts and ice cream to distract it from its focus on spirits.

The company's decision might be wise: As businesses rapidly increase their portfolios of products and services — either in response to consumer demand or through mergers and acquisitions — they run the risk of adding too much complexity, which can eat away at scarce resources and ultimately harm returns. While Pernod Ricard divested itself of needless complexity, hundreds of other companies are grappling with their portfolios of businesses, products, services and delivery channels to see which of them need to stay, be restructured, or be dropped. Knowledge@Wharton and George Group Consulting, an operations and strategy consultancy, examined this issue in an online survey of Knowledge@Wharton readers completed last fall. The survey covered 424 executives drawn from more than 30 industry groups including financial services, business services, information technology, foods, industrial manufacturing and healthcare. Nearly 30% of the respondents were from companies with annual revenues of between $1 billion and $10 billion, and close to 25% were from those with revenues between $200 million and $1 billion.

> A key finding of the survey was that, for a majority of the respondents, a small portion of products and/or services account for all the operating profit at their companies.

Roughly half of the respondents indicated that portfolio complexity had a "negative or a somewhat negative impact" on cost competitiveness and lead time at their companies. In addition, between a quarter and a third of all those surveyed said complexity similarly hurt their product quality, sales effectiveness, customer service and satisfaction. A key finding of the survey was that, for a majority of the respondents — 64% — a small portion of products and/or services account for all the operating profit at their companies. But even among those who claim complexity boosted profits at their companies, a fairly large number — 38% — said the drivers were still a small portion of their products or services.

## A Drag on Profits and Growth

Those numbers reveal that managers have their work cut out for them when it comes to dealing effectively with complexity in their organizations. Half the respondents from companies where complexity hurt profits agreed that they could release "considerable levels of fixed costs" if they pruned their portfolios substantially. One respondent from a financial services company wrote, "The boutique that tries to do more than it can handle in terms of complexity will fail, as will the giant that offers all things to all comers, but at the cost of one-offs and operational inefficiency."

Complexity can be understood and tamed, says Stephen Wilson, director at George Group's Conquering Complexity Practice. "More and more companies are trying to see how proliferation affects them. Very few realize the full impact of this as a lever to improving profitability and growth, because there hasn't been a way of quantifying the relationship between complexity and profitability, process efficiency and growth."

> "Very few realize the full impact of [proliferation]…because there hasn't been a way of quantifying the relationship between complexity and profitability, process efficiency and growth," says George Group's Stephen Wilson.

Wilson is co-author along with George Group chairman and CEO Michael George of a book titled, *Conquering Complexity in Your Business* (McGraw-Hill, 2004), which draws extensively from real-world cases of companies that have successfully gotten their arms around complexity. George and Wilson say in their book that portfolio and process complexity is often a larger drag on profits and growth than any other single factor in a business. "Every business has too much or too little of something… too many service offerings that can be reasonably sustained, too few product lines to be competitive, or too many different ways of doing the same kind of work." They say companies that have conquered complexity either have a "very low level" of complexity in the marketplace, or targeted customers who are willing to pay an adequate premium for higher complexity delivered at a low cost. The authors cite the strategies at Southwest Airlines, Capital One, Dell Computer, Toyota and Wal-Mart as examples of successfully conquering complexity.

Corporate awareness of what can be gained by dealing effectively with complexity has picked up only in the past three or four years, Wilson notes. The boom years of the 1990s encouraged many companies to proliferate unfettered into new business lines, and add new customers and markets with expanded product lines and the attendant processes. Growth occurred both organically and through acquisitions, with the added challenges of overlaps and clashes in products and services, processes, organizational cultures and customer franchises. But the economic slowdown that followed after 2001 is compelling many companies to recognize that all the complexity they had built could also be a silent killer.

"Complexity accumulates over time," notes Eric Clemons, Wharton professor of operations and information management. "The problem is that clutter is not free. It interferes with operational efficiency, with production efficiency, with a clear image, and with distribution. It can strangle a company."

## The Good and the Bad

The first hurdle in dealing with complexity is tackling corporate inertia, as the Knowledge@Wharton-George Group survey highlights. About 85% of the respondents indicated the number of offerings at their companies has grown by at least 10% over the last five years. Of these, almost half reported a more than 50% growth in offerings. The motivations are clear: Proliferation is a must to participate in their industry segments, according to 55% of those surveyed. "Our industry is driven by 'what's new,' so we are constantly creating new products," wrote an executive at a consumer goods company. An executive at a financial services company noted: "Each customer's 'I want' differs considerably and forces the bank to proliferate its offerings (services, channels and products) more and more."

"To not proliferate is not the right answer, because it goes against market realities," Wilson says. "What is required, then, is to understand how to manage complexity, manage the impact of it on your costs and profitability, and then tell the good from the bad."

Not everybody is sure how much of that proliferation is good or bad. In fact, 40% of those surveyed feel proliferation gives their companies a competitive advantage. One respondent from an automobile manufacturer wrote, "The age of product in showrooms significantly impacts market share. Therefore we must continuously launch more and more product offerings at an increasing rate." Another executive from an industrial manufacturer said new products help his company enter upscale markets that offer premium pricing, while another executive from a baked-goods company indicated that introducing new products is the only way to survive in his industry.

But proliferation could have unintended consequences, too. Besides hurting a company's cost competitiveness and its lead time, respondents also reported that complexity has "a negative or somewhat negative" impact on capital efficiency (45%), profitability (35%) product quality (32%), sales effectiveness (29%) and customer service and satisfaction (24%). They also feel it distracts management: About 65% of the respondents said management attention is a casualty, while 58% narrow down the impact to the quality and timeliness of management decisions. An executive from a food service industrial manufacturer said increased complexity has "diluted market knowledge" and made decision making "slower and less effective."

## Capturing the Up-side

To be sure, complexity, like cholesterol, can be both good and bad, and sorting that out is the first challenge. The customer is where the process begins, and also the final arbiter of how much is too much. "Complexity management isn't the same as cost management," says Clemons. "It's about giving every customer exactly what he wants without your cost structure killing you."

More than half the survey respondents from companies with a positive profit from complexity indicated that they have "a formal process for deeply understanding customer needs." One respondent from an industrial manufacturer noted that "complexity is our friend" and that the company would differentiate itself in the marketplace by going after the complexity that "others have trouble with." An executive from an electronics company wrote that the biggest challenge is a "lack of in-depth market analysis and reliance on anecdotal 'evidence' in product planning."

Companies that have successfully reined in complexity are also likely to have formal portfolio management processes for adding or deleting offerings. One executive from a telecommunications company noted that new technologies and products are rapidly creating obsolescence, which calls for a brutal survival policy. "We have to . . . apply a strict policy of 'do not resuscitate' to [failing] products in order to have a natural selection in place," the executive said.

As Wilson and Clemons note, companies that conquer complexity are also less likely to make changes to gain an incremental sale regardless of the downstream impact. In fact, they are more likely to ensure that the incremental value of a change offsets the incremental costs of complexity before every new product or service offering. Chances are they will also have robust cost accounting systems that capture the full costs of complexity and employ probability metrics to forecast the economic value added from new offerings.

What differentiates the early winners in this game from the rest is a culture of continuous improvement and process efficiency, the survey finds. About 64% of those who have emerged from complexity in good shape said they have deployed process improvement strategies such as Six Sigma, Lean Management or Total Quality Management. Also, making the most of resources is vital: 74% reported that their product or service plans "greatly leverage common underlying platforms and components."

So are corporations at the threshold of a complexity offensive? Clemons believes customer demands will sooner or later force companies to fall in line, if they want to survive, and complexity will remain a pressing concern. "The customer is not yet king but is increasingly becoming one," he says. "Customers are going to get exactly what they want." ✳

# From Retailers to Manufacturers, Complexity in Products Begs the Question: How Much Is Too Much?

Try this for variety: In a recent advertising mailer, Kroger supermarket boasted having 300 varieties of beer and 1,800 varieties of wine. Kroger of Cincinnati, Ohio, is one of the largest U.S. grocery retailers with 2004 sales of $56.4 billion. What is the impact of all that variety on Kroger's costs? Moreover, with 1,800 varieties of wine, what will be the customer response — confusion or delight?

"Using product proliferation as a strategy very frequently does not create value, and often destroys value even as it produces revenue," says Matt Reilly, senior vice president of client services at George Group, an operations and strategy consultancy. He says he wonders how much profit will be generated with this model, even if revenue climbs.

> Product manufacturers tend to leave the door open for complexity when they indulge in brand extensions.

Other experts from George Group and Wharton agree that increasing product complexity in both retail and manufacturing is a very slippery slope: As a means of meeting evolving consumer demands or capturing new market share, expanded product portfolios can backfire because of the strain they place on already scarce resources, and because true profitability is masked. And, as companies expand their offerings, complexity can seep into internal processes, producing inefficiencies that can lead to customer dissatisfaction down the road.

"As corporations develop new marketing strategies to remain competitive, and as they develop new targeting strategies, complexity management becomes absolutely key," says Eric Clemons, Wharton professor of operations and information management. "Budweiser may have once made four or five beers, but will eventually end up making 400 or 500 beers. One website I visited doesn't have a complete listing, but it has about 350 different power bar brands. My point is: the retailer who used to sell power bars now has five pages of power bar listings, and has to manage that complexity." Clemons says complexity management will challenge retailers as they weigh options between product underage (inability to meet demand) and overage (inventory not sold or sold at a discount, or spoilage), logistics, warehouses, and so forth.

## Complexity from Brand Extensions

Product manufacturers tend to leave the door open for complexity when they indulge in brand extensions. Stephen Wilson, director in George Group's Conquering Complexity practice, says in many situations, brand extensions could end up bringing a higher per-unit cost "than the single most popular item in the line." But brand extensions are popular because of their low entry barriers. "Brand extensions very often become a replacement for breakthrough innovations because you know they are a relatively safe bet," says Wilson. "You know they will generate some sales, even if they may well cannibalize some of your core products." But what is often ignored, especially in the consumer goods industries, is the army of support required from elsewhere in the organization in the form of marketing, manufacturing, distribution and the supply chain.

Size and breadth of a product portfolio can also leave a company strategically vulnerable, as illustrated in a George Group case study regarding an industrial manufacturer. "Because they were market leaders and had a broad spectrum of products, they left themselves open to niche competitors to come in and cherry pick," says Scott Epstein, a senior consultant at George Group. "Shorter lead times and on-time delivery had become important as product quality had become less of a differentiator in the marketplace." He says niche players had better systems and processes to respond to those changes in the market.

Epstein and his team advised their client to take a second look at internal processes to expedite decision making. "We asked them to make sure they weren't really spending a lot of time on administrative processes that weren't visible to the customer and didn't add value," he says. "In other words, we told them: 'Don't hold things up, don't hold up the pipeline.'"

Epstein says it is important to be responsive to customers, "but you want to make sure also that you are receiving value in return." The problem boils down to really understanding the "true cost of saying yes" to customers, not just from a variable cost perspective, but understanding the fixed cost component as well.

## Keeping an Eye on Processes

Oftentimes, it's the unsatisfied customer who turns management attention to complexity, particularly in terms of company processes. Hundley Elliotte, a principal in George Group's Conquering Complexity practice, describes a case involving a global telecom equipment company that knocked on George Group's doors with a problem: Its customers were sending feedback that they weren't being served well.

Elliotte and his team started with a status check. The company had a strong brand in the telecom equipment business, and wasn't exactly losing customers. But it had some aggravated customers who had indicated that they were indeed considering switching suppliers. In fact, some large customers had gone as far as approving alternative suppliers, but hadn't pulled the trigger yet. A crisis seemed just one more false move away.

"The problems — not getting back to customers with information about delays or poor service — were symptoms," says Elliotte. "The key was to trace those back to the root cause." What his team found was an organization with "very inefficient and disconnected processes." The good part was the company was willing to acknowledge the problem without losing time.

The situation was grim: About 60% of all orders had some type of error — they were either recorded incorrectly or miscommunicated to operations, or not produced according to customer specifications. As a result, customer service was deluged with complaints and the product development process was clogged with numerous "engineering change orders" to rectify quality errors.

Elliotte's team identified specific drivers of complexity and variations such as organizational hand-offs, non-value added steps and a poor understanding of customer requirements. It also started improvement efforts to strengthen communications, product development and innovation. At a broader level, efforts were made to increase awareness about the impact of complexity on fixed costs, asset utilization, inventories and account receivables. "A slower process might result in increased days of outstanding receivables, and when your accounting systems aren't designed to give a true profitability view of your products or services, you could very easily underestimate the true cost of a product if you have complexity," Elliotte says.

> It is important to be responsive to customers, "but you want to make sure also that you are receiving value in return," notes George Group's Scott Epstein.

## Pricing for Value

In a case involving a global commodity and specialty chemicals company, Reilly's team had to get creative in understanding customer requirements, which is essential when tackling complexity in a customized solutions environment. "Asking customers what they would pay is always a bad idea," he says. "So you have to do that through some indirect questioning around competitors' pricing and features, and how much they value these features: 'What if [a product] had certain features, and they were priced at X — would that still be attractive?'" The results were startling: Customers said they would have paid a premium of 7% to 12% for the product.

That, says Reilly, is a classic case of a company pricing its products lower than what it could have actually captured. "They didn't understand what the real customer need was in a commodity-minded business," he says of the company in question. "They were pricing to keep the plant full, and didn't have a value-pricing mindset." He says the bottom line is that when companies with a highly revenueoriented approach try to price their products — particularly when they have a lot of fixed assets — they tend to price them based on volume targets, not on value targets or margin targets. Reilly finds that particularly true in cases when a company is expanding its portfolio by launching a new product to gain market share. "When you enter into a relationship hunched over, it's very difficult to stand up later," he says. "I find so many companies go out to the market with a low price, and it's virtually impossible to raise it later, especially in the mature, asset-intensive industries."

> Combinatorial assembly is among the proven techniques in complexity management, says Wharton's Eric Clemons.

## Complexity Brought on by M&As

Organizations that are masters in acquisitions and successfully integrating them are all too wary of the dangers of complexity. Wilson points to GE, which he says has a "very good, repeatable process" for integrating the companies it acquires. He notes that in its 2004 annual report, GE highlighted complexity and innovation as two of the three major initiatives for the following year. "They are looking for more organic growth, because the field for acquisitions has dried up somewhat," says Wilson.

While acquisitions may make companies prone to complexity, there's a positive side in the timing. "There is a window of opportunity when you acquire a company to really make the changes you want," says Wilson. But he also finds that in many cases as companies acquire other companies, brands and capital assets, they don't act quickly enough to consolidate. His advice to companies before they finalize mergers and acquisitions: As part of the due diligence before an acquisition, understand the impact of integrating new products in the portfolio. Getting a grip on the complexity drivers could force management to acknowledge that 5% to 15% of their portfolio actually drives all the value creation. If they take that advice all the way to streamlining their plant capacities, they free up a lot of trapped assets, says Wilson.

On the process side, Saikat Chaudhuri, Wharton professor of management, says the "mistake that everybody makes [in integrating merged companies] is they try to find one model rather than having a contingent set of processes to think about." He says while one school of thought claims to have a model for integrating companies effectively, the other says "it's an art" and that no standard process can be built. "I stand in between," says Chaudhuri.

He points to some underlying principles for avoiding process complexity as a fall out of mergers. "The trick to success in integration is to align the integration strategy with the type of challenge and the objectives you have at hand," he says. He notes that there are three dimensions of integration — one is the organizational integration, or the structure; the second is processes; and the third is joint projects and knowledge sharing. Higher levels of integration on the organizational or structural side allow for greater coordination and economies of scale and scope, he says. At the same time, lower levels of integration are useful for preserving the routines of functioning — the processes — and also for preserving flexibility.

## How Complexity Can Work

Delivering customized solutions doesn't necessarily add to complexity, says Clemons. "It really depends on your product design," he says, citing Dell's success in managing myriad combinations of computers, peripherals and software. He says Dell manages product complexity essentially with "combinatorial assembly" — a mixing and matching of existing options to meet customer preferences, such as screen size, disk size, memory, etc. "Dell has hundreds of thousands of ways it can respond to your request, but no individual request is any more complicated or any less complicated than the others."

Combinatorial assembly, says Clemons, is among the proven techniques in complexity management, as is "versioning," or repackaging existing products for different contexts. "A lot of the software that goes into Photoshop Elements is the same that goes into Photoshop," he says. "A lot of what goes into a discount coach seat is the same as a regular coach seat but with some restrictions placed on you." Another production strategy, he says, is "veneering," which leverages existing resources to create different products, such as a brewery that makes British and Belgian ales. "At the front end you use different grain and different yeast, and at the back end you use a different label, but you use the same tanks, the same bottling line, the same labeling line," he says.

Higher complexity can work wonders, if it offers a compelling value proposition to customers. A telling case of how that played out between Ford Motors and General Motors in the early 1900s is documented in detail in the book *Conquering Complexity in Your Business* (McGraw-Hill, 2004), co-authored by Wilson and George Group chairman and CEO Michael George. Henry Ford's Model T car — available in "any color you want so long as it is black" — is noted by the authors as the first milestone in complexity reduction in corporate America. Ford's ability to convert iron ore into an automobile in just 33 hours made him the world's richest man. Ford also had a commanding 65% share of the low-cost car market by 1921. Between 1908 and 1916, the company's revenue had surged from $4.7 million to $207 million.

Meanwhile, Ford's rival General Motors and its president Alfred Sloan struggled with an assortment of 20 different car companies acquired in earlier years, and was on the brink of bankruptcy. Sloan noticed a market niche for utility transportation, which at the time was occupied by used Model T cars. He employed a strategy of both cutting and adding complexity, to great effect. George and Wilson recount how Sloan eliminated 15 of GM's 20 brands, and introduced the "model year" concept. By 1925, Ford's Model T sales began crumbling with the GM offensive, and three years later, the Model T was withdrawn.

The book's authors say the Ford-GM clash points up three important rules of complexity. One, eliminate complexity that customers will not pay for. Two, exploit the complexity customers will pay for. And three, minimize the costs of complexity you offer.

Decades later, Ford had to relearn its complexity lessons at the hands of Toyota, which along with other Japanese car makers had begun making inroads into the U.S. car market in the 1960s. Toyota's chief weapon in delivering customers value at low cost was a complexity reduction strategy which eliminated waste in internal products and processes — those were the early days of standardization. Yet, its culture of "deep functional expertise and excellence in design" allowed it to handle complexity, say George and Wilson in their book. Toyota currently builds its car and truck brands on just 13 platforms, while Ford uses 18 platforms. (Ford plans to prune that to 12 platforms by 2010.) They point out that of the roughly 200,000 cars it puts out each month on U.S. roads, about 40,000 variants are produced at or near the lowest cost in the world. (In 2005, Toyota's U.S. sales were 2.24 million cars, out of 8.25 million worldwide, versus GM's tally of less than 9 million. In 2006, it plans to overtake GM to become the world's largest automaker.)

Complexity management is all the more vital these days, says Clemons, because of the costs of carrying inventory. But he would look at other places beyond the balance sheet for red flags, which he calls a "crude tool that tells me I have a problem but doesn't tell me where to look." He says the complexity warnings will show up in time to introduce new products, overage, underage and the inability to respond to changing market conditions.

Clemons says he isn't sure most companies clearly understand that "excess inventory is lethal." To be sure, many corporations deal with complexity as they work towards efficient production, shared product platforms, shared product architecture and versioning of software. "But until you understand that you have mastered complexity, you may not be able or willing to take some of the bolder steps in terms of product development or product portfolio expansions," says Clemons. ✳


## Taming Complexity in Services: Stay Close to Your Customer (But Not Too Close)

When companies are looking to streamline services to drive more profit and growth, it's the bells and whistles — those inessential add-ons that can potentially attract and retain choice-hungry consumers — that are often the first elements to go. But Eric Clemons, Wharton professor operations and information management, is not so sure they are expendable in all cases. On a recent Delta Airlines flight to Panama, Clemons was upgraded to first class. Once seated, he was surprised to discover the flight attendants in the first-class cabin didn't speak Spanish. So it fell upon Clemons — and his rudimentary "Mexican-restaurant" Spanish skills — to translate his fellow passengers' requests for dinner or to explain for the flight attendant that the airline didn't have pillows or blankets in first class on an international flight. "What do you think is going to happen? Of course they are in bankruptcy," says Clemons. The problem, he says, is not the bells and whistles themselves — it's the way the company is going about solving the problem of complexity in its service offerings. "Solving complexity doesn't mean [eliminating] bells and whistles — it means giving the customer a reason to buy your product."

> According to George Group's Stephen Wilson, proliferation comes in assorted disguises, but the most common is information.

Understanding complexity in an organization, especially for those in a service business, can become an exasperating experience. While companies increasingly respond to the need to streamline to drive profit and growth, they position themselves to deliver complexity wherever they find it is justifiable. According to experts at Wharton and George Group Consulting, an operations and strategy consultancy, service companies such as banks or airlines are closer to their customers than their counterparts in the manufacturing industry, which can be beneficial, but they may be too close for comfort. In fact, they could actually be smothering both themselves and their customers with dispensable or outdated offerings, made worse by overburdened internal processes that ultimately hurt the essential elements of survival — customer service and satisfaction.

### Recognizing Complexity

Complexity is not easy to recognize, and typically doesn't raise red flags in financial statements. Very few organizations successfully capture the costs of complexity in their standard accounting systems, says Stephen Wilson, director in George Group's Conquering Complexity Practice. Complexity may rear its head in customer dissatisfaction and defection, or higher inventory costs or increased manpower needs, but those problems aren't always traced back to proliferation. Wilson says many organizations lack a good perspective of their processes, allowing complexity to creep in from the sidelines.

"It's a bit like pollution," says Wilson. "It builds up over time, it's hard to see, but it definitely affects the overall health of the business. It's a systemic issue created by multiple people so no one person is really accountable." Incentives within companies to push revenue growth also drive complexity, Wilson says. "Organizations that are very revenue-focused often introduce new products or services without fully understanding the economic impact."

Proliferation comes in assorted disguises, but the most common is information, says Wilson. In other words, industries that have information as their key vehicle — such as travel services — tend to allow complexity to build up unnoticed. "Complexity in that sense has a relatively low cost," observes Wilson. "It could be the same with financial services too, although with the caveat that often there is a bigger impact on downstream administrative operations."

Wilson picks the financial services industry as a prime example of complexity that has gone unchecked. A decade ago, financial services companies had a relatively small portfolio of offerings, based largely "around manufacturing-type, assembly-line processes." But more and more customization and proliferation of services has taken place over the past 10 years. Wilson recalls a client from that industry telling him there were 5 million ways of configuring his company's services. "It puts the processes that deliver these services under huge stress and strain," says Wilson.

Wilson says the financial services industry is particularly vulnerable to complexity because "unlike in manufacturing, you can't see the warehouses." Companies typically hire more people to deal with some of the common unintended consequences of complexity, such as increased inefficiency and customer complaints, he notes. "This improves service in the short term but never gets at the heart of the issue."

## New Services at the Press of a Button

Complexity also creeps into banks and other financial services companies because new offerings can be added at the press of an IT button. "The impact of complexity inside an IT world is near zero," says Wilson, "but the impact can be very high downstream on administrative services and customer service."

IT departments at companies that have grown through mergers and acquisitions face other problems as well, compounding the complexity. "It has been a very acquisitive time in banking," says Wilson. "Many of these home-grown IT systems tend to be cobbled together with more home grown systems, and you have a very big IT mess."

"In financial services, there is a widely held perception that complexity is free," says Matt Reilly, senior vice president, client services, at George Group. "In many service businesses, IT is king, and people feel if you spend more on IT, it's scalable." But, he points out, people elsewhere in the organization still have to go out and execute on those new offerings.

In the 1990s, large financial institutions used technology effectively to automate their assembly-line processes, but with short-lived success. Andrei Perumal, engagement director at George Group, says the era before the 1990s was "one of paper checks, one kind of checking account, and everyone got their services from their branch." He says an assembly line worked great so long as banks had one product and one distribution line. But as they introduced a myriad of new offerings in the 1990s, the old processes began to strain. "So banks started implementing exception handling and complex patch works of different solutions and systems," he says.

Perumal led a group that mapped processes at a prominent bank prior to joining George Group. In order to deal with the numerous variations in its loan products, such as various methods for calculating interest, the bank had created an overwhelming number of "workaround loops." "It's okay if it's one variation," he says. He found that over time, however, that there were more and more corrections and exceptions for such cases. "It gets to the point that exception handling becomes the norm," he says. "And then it gets to the point where it's not even clear what the original process was."

> Complexity also creeps into banks and other financial services companies because new offerings can be added at the press of an IT button.

Perumal says the solution starts with reducing the number of inputs, be they businesses, product and service variety or channels to serve customers. The next step is to improve the processes to handle those inputs so they can better support legitimate variations. Reducing the number of channels is often not an option, he says — a bank, for instance, will not suddenly decide to discontinue online banking. Pulling products or exiting businesses are also challenges, especially in banking. "What drives value to the customer is harder to discern in a service business such as banking" says Perumal. Therefore, the path with the least friction is towards building more robust processes.

In going about strengthening processes, Perumal says it is crucial to understand the customer correctly. "Oftentimes what the customers say they want is not what they are willing to pay for." But not all companies are equipped to get to that point. "If you have been divorced from your customer for years, you are not going to have an intimate understanding of your customer by doing a survey," he says. "You understand your customer with a day-to-day, across-the-organization culture of valuing and focusing on what the customer wants." Once a company gets a clear idea of what its customers want and will pay for, the solutions that emerge revolve more around reducing inputs into processes rather than making the processes more flexible, says Perumal.

In the world of financial services, the insurance industry has "inherent complexity," says Wilson, especially because of the different regulatory requirements in different states and countries. Even as the markets may be distinct from each other, companies don't always view them that way from a process standpoint. "These companies have grown over time, and their uniform processes are not designed to handle the very different demands of all the new categories in their portfolio," says Wilson.

## Second-guessing Consumers

What exactly happens when a service company tweaks its service offerings, such as increasing or lowering its prices? Raghuram Iyengar, Wharton professor of marketing, examined that problem in an extensive study covering the wireless phone industry. In a 2005 working paper titled, "A Demand Analysis for Wireless Services under Nonlinear Pricing Schemes," Iyengar used data for one large national wireless services carrier covering 17 months between 2001 and 2003, and provided by the Teradata Center at Duke University. The study covered four pricing schemes — plans with free minutes of 200, 300, 400 and 500, where additional minutes are charged at 40 cents each. Such a tiered tariff structure is nonlinear, Iyengar explains, because the consumer pays a different rate for each additional unit that is more than the up-front fixed access fee that comes packaged with free minutes.

Iyengar found that customer response to price changes (by staying on or defecting to rivals) varied according to their usage patterns, in ways that common sense may not fathom. For starters, it is useful to understand the service provider's stakes in the game. Wireless phone companies measure a customer's value by what they call the "lifetime value," or the charges customers pay during the length of time they stay with their service provider.

The key question for a wireless phone company looking to get bigger "lifetime" bucks from its customers is: Do I change the access fee or the per-minute rate after the free minutes are exhausted? Iyengar discovered that a higher access fee hurts light users the most, while a higher marginal rate hurts heavy users. In his model, customer retention suffers by 0.7% for every 1% increase in the access fee in the lowest-price plan. So, if customers on the entry-level $15 plan are asked to pay $18 for the same package, that 20% increase results in a 14% churn, or defection. A company with say, 10,000 customers at that lowest-priced plan, would see 1,400 defections if it were to increase access fees by 20%.

But a change in the access fee for the highest-priced plan did not exhibit a similar result. Iyengar found the defection rate to be 0.03% for every 1% increase at the top end. In other words, if an $80 plan increases by $10, that 12.5% increase would cause a customer churn of only 0.375%. Here, a company with 10,000 customers at that high-end plan stands to lose only 37.5 customers.

Many companies fall short in efforts to correctly understand customers as they try to rein in complexity, especially if it means pulling products and services or vacating unprofitable market segments. "Fearing a customer backlash, they will not do anything," says Wilson. Adds Reilly, "The problem is, a lot of companies feel beholden to the customer, and are afraid of their customer a lot of times." Some companies do overcome those fears and withdraw unprofitable offerings, however. "Companies that really take the time to say: 'I bet we can influence our customers to migrate to a standard offering' are actually reasonably successful," he says.

Further, Reilly adds, customers are often much more receptive to a simpler offering than company managements believe, so long as the execution of delivery and service is better. He adds, tongue-in-cheek, "There are very few customers who would say: 'I really like fact that you have this complex offering and I really enjoy the poor execution and the stock-outs and also enjoy the last-minute notice on no-shipment.'"

As with most such challenges, the impetus must come from the top. As Reilly takes on complexity-challenged clients, the question uppermost in his mind is: Is there a leadership team here that is willing to accept that being simpler and more focused is better for the consumer and actually drives growth? He talks of one such client he worked with in the financial services industry, whose CEO had publicly committed to fixing internal complexities. The company had been facing problems ranging from customer defection to revenue leakage, much of which could be traced to poor service.

Reilly saw divergent responses within the financial services company to the task at hand. While the sales and marketing departments embraced the idea immediately — they were the first to feel the pain of customer defection — there was "tremendous resistance" from some other parts of the company. At any rate, Reilly and his team started by checking the company's existing data on customer satisfaction, and filled in gaps with interviews of brokers, distributors and select customers. The solutions they suggested are still in the implementation stage, but results to date include a 50% reduction in customer attrition. "Service companies are generally closer to the customer, so they have a bigger opportunity to fix their complexity problems faster," he says.

## Determining What Can Go

The process of "designing out" complexity that customers are not willing to pay for is illustrated in the book *Conquering Complexity in Your Business* (McGraw-Hill, 2004), co-authored by Wilson and George Group chairman and CEO Michael George. The authors track the case of Southwest Airlines vs. American Airlines over the past decade. While Southwest operates only Boeing 737 aircraft, American Airlines supported 14 different aircraft types, which also meant 14 spare depots, 14 versions of mechanic and pilot training, 14 kinds of FAA certification, and 35 different service configurations tailored to Asian and European markets.

American Airlines CEO Gerard Arpey acknowledged early on that "the cost of complexity isn't offset by what you can charge," noting that "One of the reasons Southwest is so successful is because they promise something very simple and they deliver that very consistently." Arpey methodically went about reducing complexity across his company, reducing fleet types from 14 to 6, and focusing on profitability rather than revenue.

The share prices of Southwest and American Airlines bear testimony to how complexity played out. Southwest Airlines' share price has risen over the past 10 years from levels of $5 to its end-2005 levels of $16 (although it touched $25 in 2001). American Airlines' share, by contrast, has been on a rollercoaster — for seven years since 1996, its price more than doubled, only to go down in 2003 to under $2. It has since bounced back remarkably to about $22, clearly aided by Arpey's restructuring of his airline.

But Southwest clearly is not looking to appeal to all customers. "Southwest Airlines has a very simple product but they have a product that some won't touch," says Clemons. "There are ways of simplifying an industry by getting everything down to a standardized process for customers who don't care. And that's a pure cost play." Clemons, who didn't relish his experience on his Delta flight, adds, "If all airlines were like Southwest and all beers like Budweiser and all cakes like Hostess, the world would be a very uninteresting place."

## How Complexity Can Work

Clemons says in today's marketplace, "meaningful differentiation, targeting customers' desires, cravings, and longings, is rewarded." A 2005 paper he co-authored with Rick Spitler and Steve Barnett titled, "Finding the New Market Sweet Spots: Creating Strategy in the Era of the Informed, Fickle Consumer" makes a compelling case for companies to pursue "resonance marketing." The authors say an offering that has a "fit with consumer cravings and longings, plus differentiation from competition, plus customer informedness, leads to resonance." Their promise: "The customer will pay for unique offerings that produce resonance. You will flourish."

> Wharton's Eric Clemons argues that in today's marketplace, "meaningful differentiation, targeting customers' desires, cravings, and longings, is rewarded."

"Brand management in the age of resonance marketing is about constantly deciding which brands to continue unchanged, which to modify, and which to discontinue," the authors say. "It is the consumers' response to our product, not our strategic planning efforts to position the image of our offerings that will determine our brand management strategy."

One of the most striking examples of how increased complexity pays dividends is that of credit card issuer Capital One. More than 10 years ago, credit cards were offered at a single, 19.8% interest rate — no doubt an example of zero complexity. "Competitors acted like the market only needed one product to fit all risk profiles!" say George and Wilson in their book. They recount how Capital One saw an opportunity in that situation, and started offering interest rates based on the credit profiles of customers. So lower risk cardholders got lower rates, while high risk customers were either offered higher rates or denied credit.

Capital One didn't stop there; it invested in technology for its processes to deal with the added complexity, say George and Wilson. By the third ring of a customer phone call, the computer recognizes the customer's telephone number, identifies the most likely reason for calling, routes the call to the appropriate associate, and then populates the associate's computer screen with products and services that the caller may be interested in purchasing. The result of all that complexity: Capital One's business surged at a compounded annual growth rate of 40%, and it lured away the most profitable and low-risk customers from competitors. Five years later, its competitors were forced to fall in line, offering variable rates based on customer credit ratings.

Clemons argues that complexity can work in the airline industry where a carrier delivers exactly what the customer wants, and can extract a premium price for that offering. He talks of the recently launched niche airline Eos of Purchase, New York, which offers a service between Wall Street and London financial markets. (Eos chairman David Pottruck, chairman and CEO of Red Eagle Ventures of San Francisco, is a senior fellow in Wharton's Center for Leadership and Change Management.)

Eos's luxury service includes the works: Its Wall Street customers take overnight flights to get to their London trading floors by noon the next day, they can sleep en route on seats that fold out as beds, eat in the airline's exclusive lounges and if they want, stop over briefly at the Four Seasons for a shower. And of course, the airline staff will be happy to book you a restaurant table from the plane, its concierge will get you theater tickets, and if you happen to need a translator in Brussels, no problem. Eos charges $5,000 a flight, but of course, its customers don't mind. "Is it complicated? Sure," says Clemons. "Is it profitable? I think eventually it can be." ✳

Special Report

# Unraveling Complexity in Products and Services

For further information, please visit:

George Group

WWW.GEORGEGROUP.COM

Knowledge@Wharton

http://knowledge.wharton.upenn.edu