McKinsey&Company

Perspectives on retail and consumer goods

Number 5, Winter 2016/17

Perspectives on retail and consumer goods is written by experts and practitioners in McKinsey & Company's Retail and Consumer Packaged Goods practices, along with other McKinsey colleagues.

To send comments or request copies, email us: Consumer_Perspectives@McKinsey.com

Senior Content Manager
Tobias Wachinger

Project and Content Manager
Anja Weissgerber

Editor
Monica Toriello

Contributing Editor
Eileen Hannigan

Art Direction and Design
Hil Albuquerque

Editorial Production
Runa Arora, Elizabeth Brown, Heather Byer, Roger Draper, Torea Frey, Heather Hanselman, Gwyn Herbein, Katya Petriwsky, John C. Sanchez, Dana Sand, Sneha Vats, Belinda Yu

Managing Editors
Michael T. Borruso, Venetia Simcock

Cover Illustration
Keiko Morimoto

McKinsey Practice Publications

Editor in Chief
Lucia Rahilly

Executive Editors
Michael T. Borruso, Allan Gold, Bill Javetski, Mark Staples

Table of contents

Foreword

After a year of enormous challenges and opportunities, 2016 now comes to an end. Around the world, the level of uncertainty is rising even further as a result of political upheaval in a number of countries, the continuing refugee crisis, the actions of terrorist groups, and volatile situations in Western Asia and Eastern Europe. Without question, managing business became more difficult for many retail and packaged-goods executives this year. Growth in emerging markets has slowed considerably. And broadly speaking, developed markets offer only fragmented pockets of growth, as we discuss in the first article of this edition of *Perspectives on retail and consumer goods*.

We have seen some consumer companies (and even entire segments in some industries, such as midmarket fashion) struggling, but we have also seen many impressive success stories as companies take full advantage of major trends that have been transforming the consumer sector. Some companies are radically consolidating categories and becoming global champions. Others are inventing new business models that build on digital opportunities. Still others are getting even closer to consumers by generating deep consumer insights through advanced analytics. What all of these companies have in common is the drive for excellence, a passion for the consumer, and an openness to new technologies and opportunities. We thought it would be of tremendous value to you to learn about their best-practice approaches—what has worked and what has not. We present some of our latest insights in the articles that follow.

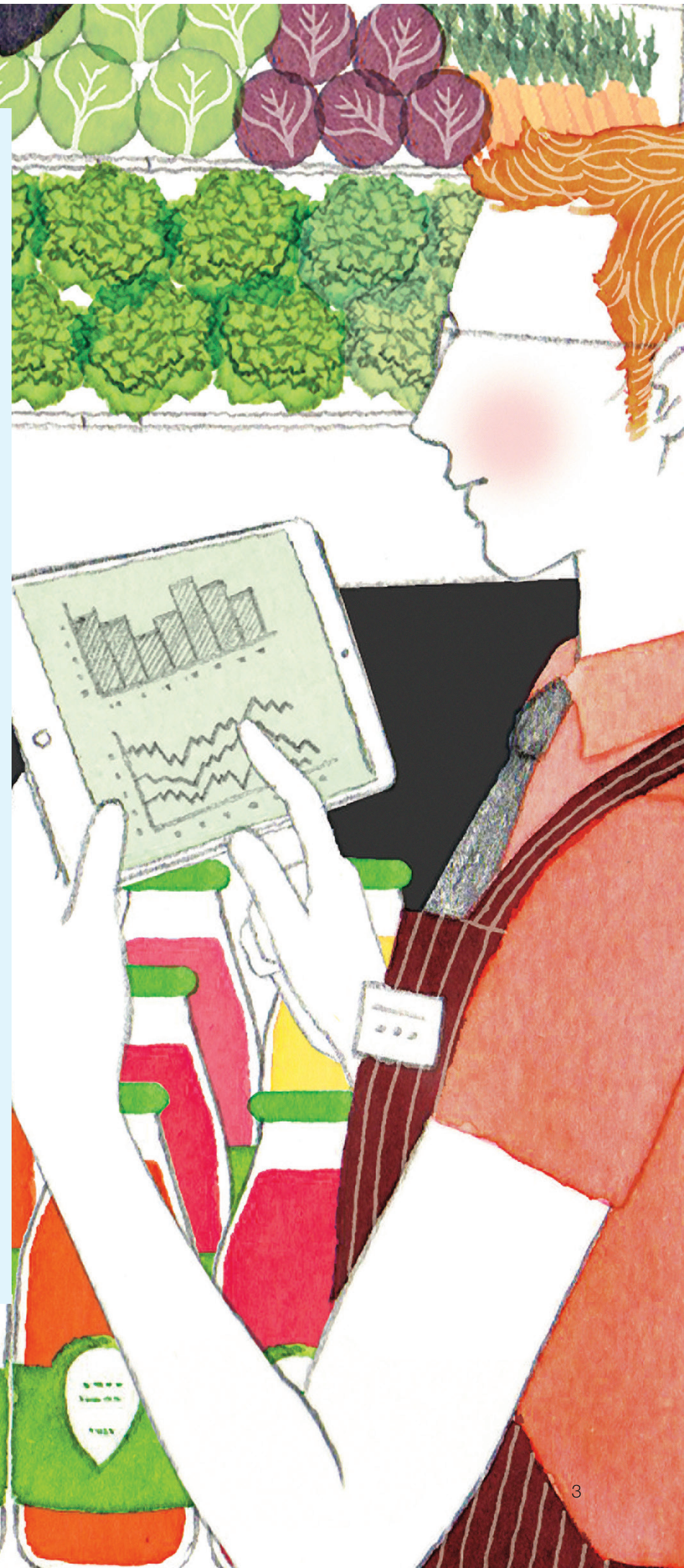
One pervasive theme in this edition of our journal is the impact of big data and advanced analytics on retail and consumer goods. Indeed, these capabilities are game changers in the industry. Retailers and manufacturers alike are harnessing the power of big data and advanced analytics across a range of functional areas including sales, pricing, supply-chain planning, and manufacturing.

Let me also highlight that my colleagues had the pleasure of interviewing Roelof Joosten, the CEO of Royal FrieslandCampina, one of the largest dairy companies in the world. He has some fascinating things to say about nutrition, sustainability, and digital marketing.

As always, I hope you find the articles in this journal useful, interesting, and full of fresh insights and intriguing ideas for your business. I wish you all a wonderful holiday season and all the best in the coming year.

Jörn Küpper
Senior partner, Cologne

This edition of Perspectives on retail and consumer goods *is available for download on McKinsey.com. The articles are also available on the McKinsey Insights app. We welcome your thoughts and reactions; email us at Consumer_Perspectives@McKinsey.com.*



© Keiko Morimoto

Western Europe's consumer-goods industry in 2030

To succeed in the next 15 years, manufacturers will need to stretch their operating models in new directions.

Benedikt Krings, Jörn Küpper, Markus Schmid, and Alexander Thiel

Come 2030, what will the consumer-packaged-goods (CPG) landscape in Western Europe look like? Several trends are already clear and show no signs of reversing: for example, purchases in more and more product categories are migrating from offline to online channels, activist investors are slashing costs and ushering in a new wave of consolidation, and governments are imposing stricter regulations on CPG manufacturers. In light of these and other large-scale forces, CPG companies must reinvent themselves if they are to survive and thrive.

But which specific trends will matter most, and what can companies do in anticipation of those trends? In this article, we outline the ten trends that we believe will most affect the consumer-goods sector in Western Europe in the coming 15 years. We also highlight new operating models that hold promise as future growth engines for CPG companies.

Ten trends

Drawing on our extensive analyses of both proprietary and publicly available industry data, interviews with dozens of consumer-goods executives and thought leaders, and years of experience working with leading CPG companies, we identified more than 40 emerging or current trends that will be relevant to CPG companies between now and 2030. We then selected ten based on our assessment of two criteria: the level of certainty as to how the trend will play out and the trend's potential impact on the CPG industry. The trends are a mix of consumer-related changes, shifts in industry dynamics, and external forces (Exhibit 1).

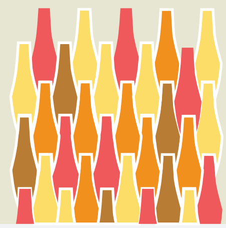
Changes in consumer behavior

As consumer needs and shopping habits become increasingly polarized, manufacturers will need to make

Exhibit 1 **Ten trends will transform the European consumer-goods market by 2030.**

Consumer behavior
- Stagnating mass market
- Fragmented niches of growth
- Hybrid shopping and the rise of discounters
- E-grocery and the fight for digital placements

Industry dynamics
- Vertical integration
- Competition in the digital arena
- Cost leadership and consolidation



External influences
- Tighter regulation
- Fragile global supply chains
- New living and working norms

decisions about which consumer segments to serve; whether to make branded goods, private-label products, or both; and which retail channels to prioritize.

Stagnating mass market. By 2030, one in four Western Europeans will have reached retirement age. Across the continent, the average disposable income will fall, and with it the buying power of a considerable fraction of the population. Consumers therefore won't be willing to pay higher prices. Manufacturers that generate most of their revenue from the mass market will no longer be able to pass on price increases to consumers without seeing a subsequent drop in sales volumes. For such companies, value creation will be achievable only through major cost reductions.

Fragmented niches of growth. As the mass market shrinks, a range of small yet lucrative consumer segments will blossom. For example, more and more consumers will gravitate toward healthy food, environmentally friendly products, personalization, and convenience. Already, nearly a third of European consumers say they're willing to pay more for products with added health and wellness benefits. The disadvantage of niche markets and microsegments, of course, is that they often require some level of customization. Companies that want to serve microsegments effectively will need to be innovative and agile, as the traditional production, marketing, and distribution processes of CPG companies are too slow and cost-intensive to allow profitable growth in niche markets.

Cross-channel shopping and the continued rise of discounters. The consumer who shops at only one type of store is becoming a rarity. Across Europe, consumers are making purchases from multiple retail banners, formats, and channels. Furthermore, shoppers not only in Germany but also now in France, Italy, Spain, and the United Kingdom are migrating toward discounters and away from local retailers. Discounter sales are growing at approximately 5 percent per year Europe-wide even as many other retail formats are stagnating. This trend, although a threat to branded manufacturers, can also be an opportunity for companies that decide to venture into private-label manufacturing.

E-grocery and the fight for digital placement. Online grocery, which has experienced slow but steady growth in most European markets, is becoming an increasingly important source of revenue for both retailers and CPG manufacturers. According to some forecasts, it could capture up to 15 percent of the grocery market in selected European countries by 2030. And because online grocery shoppers tend to buy the same items every week rather than browse for new products, securing a place on consumers' digital shopping lists will become a top priority for CPG brands. Whereas manufacturers have historically fought over endcaps or displays at the front of a grocery-store aisle, in the future, the important battleground will be in the digital space: a prominent presence on retailers' websites and mobile apps, high placement in search-engine results, and the like.

Industry dynamics

It's not just consumer behaviors that are changing; the CPG industry itself is undergoing massive shifts as well. Three industry-wide trends will transform the consumer-goods landscape by 2030: vertical integration, digitization, and the aggressive pursuit of cost leadership by large companies.

Vertical integration and new business models. Particularly in online retail, vertical integration will become a new paradigm. E-commerce pioneers like Amazon are already expanding their own-brand business into more categories. At the same time, specialized start-ups are selling products such as razor blades or functional foods directly to consumers, often on a subscription or membership basis. By bypassing distributors, these start-ups are able to offer low prices and sell even small volumes profitably. In response to these new and disruptive business models, several larger manufacturers have begun to sell directly to consumers as well—but they must tread carefully, lest they alienate their retail partners. These trends could fundamentally change dynamics in well-established categories. They could also spur an expansion of manufacturer-owned distribution channels and the development of innovative products related to the Internet of Things (Oral-B's connected toothbrush is one example).

Digitization of operations. The most cutting-edge companies will set new digital and technological standards in consumer interactions and process optimization, among other fields. Their digital superiority will enable them to reach consumers even in the smallest segments, tap growth markets faster, and apply a long-term price premium with attractive margins. Early examples of fully digitized factories have seen cost savings of up to 30 percent—and these factories have the capability to manufacture individualized products.

Cost leadership and consolidation. Activist investors are spurring modernization efforts among CPG companies. In the future, activist investors, hedge funds, and private-equity firms will even more rigorously pursue cost leadership in the companies that they've invested in. With improved efficiency and lower costs, some of these companies will choose to introduce aggressive pricing in order to gain market share. Cost leaders will also be able to make acquisitions, further strengthening their market dominance.

External influences

CPG manufacturers, of course, will also have to grapple with a number of strong forces outside the industry. Among the most powerful will be increased government intervention, supply-chain disruptions, and new norms in labor and employment. Each of these external forces could exert considerable financial pressure on CPG companies, thus heightening the need for business-model reinvention.

Tighter regulation. Government bodies, both at a European level and at the country level, are introducing new measures to strengthen consumer protection and ensure sustainability. Rising social and environmental standards, new laws, and tougher sanctions will make business harder for companies but will also offer opportunities for those that stay ahead of the regulatory curve by launching groundbreaking initiatives, especially in production and supply-chain management.

Fragile global supply chains. Far more difficult to anticipate are the effects of natural catastrophes and political unrest on the globally interconnected CPG industry. Disruptions in the supply chain pose a constant threat. Potential solutions include early-warning systems at critical points of the supply chain, as well as alternative routes on standby in case of infrastructure blockades. As mentioned, vertical integration—for instance, chocolate manufacturers running their own cocoa plantations—could be an effective way to protect against raw-material shortages.

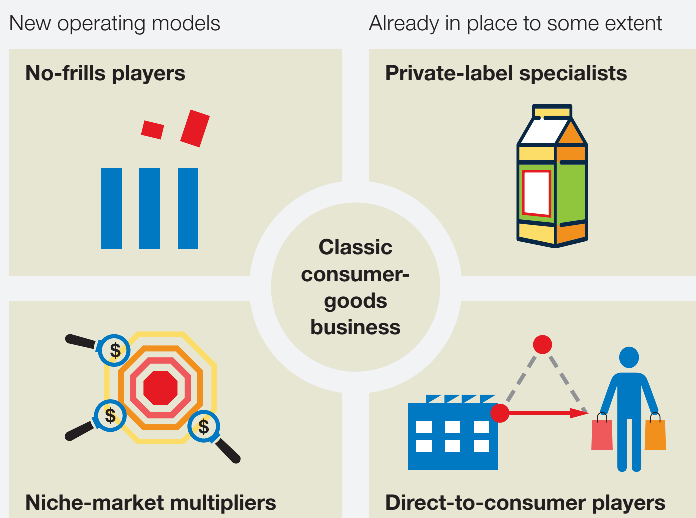
New labor and employment norms. In Western Europe, 40-hour work weeks, long-term company affiliation, and largely homogeneous workforces are already becoming outdated models. We believe the future impact of this evolution of the working environment in Western Europe is still vastly underestimated. Already, it has compelled a few companies to introduce work-from-home options and make other big changes to their organizational structures. Survey data suggest that the employees of tomorrow (Generation Y and younger) will be less loyal and will demand more personal freedoms and flexible working arrangements, but in return they will stay in the workforce longer and retire later in life. Companies that can attract the best talent under the new conditions and introduce flexible HR systems will establish a real advantage in the coming years.

Operating models of tomorrow

What new operating models will enable manufacturers to grow in Western Europe? Given market saturation, few companies are likely to succeed with just one model. The challenge is to develop the right mix for a given company's specific situation. Our analysis suggests that four business models—each serving as a supplement to the preexisting core business—have particularly good prospects for success (Exhibit 2).

Exhibit 2 **Four operating models will open up opportunities for future growth.**

Growth models alongside core business



No-frills players. In mass production, the high level of standardization involved in no-frills manufacturing allows for maximum efficiency. Companies that streamline their portfolio and decisively trim administration, production, marketing, and sales costs to increase profitability will be well positioned for aggressive growth. Under this operating model, the ambition should be to achieve long-term cost leadership in the respective category and gain significant market share. Such scale-oriented players have the potential to become true "category killers"—dominating categories nationally, regionally, or even globally by displacing or acquiring competitors.

Niche-market multipliers. At the other end of the market, in premium and bespoke products, manufacturers will employ agile systems and superior technologies to shorten product-development times, establish direct relationships with consumers, and make value chains more scalable and flexible. In so doing, they'll be able to profitably serve a high number of niche markets with lower volumes.

Private-label specialists. Some successful companies will view private-label manufacturing no longer as an add-on business but as an equally valuable source of revenue alongside branded production. After all, the greater economies of scale tend to have a positive impact on returns. Furthermore, as holistic providers of a product group, these manufacturers can become leaders in their category, which can then help them secure better positioning and placements of their branded products in retail.

Direct-to-consumer players. As mentioned, some manufacturers have begun to set up their own online and offline distribution channels, giving them immediate control of their consumer-facing presence. The most successful companies pursuing this model will establish separate organizational divisions for direct commerce, to avoid conflict with their classic retail customers and to give the new sales channels plenty of room and the necessary resources to grow quickly.

A few companies may already have flexible and decentralized structures that could enable them to operate three, or even all four, of these operating models under one roof by 2030. Others will choose to focus on only one or two. But one thing is certain: in the saturated markets of Western Europe, supplementing a company's core business with one or more of these models won't be optional. ■

Benedikt Krings is a consultant in McKinsey's Munich office, where **Markus Schmid** is a partner; **Jörn Küpper** is a senior partner in the Cologne office; and **Alexander Thiel** is an associate partner in the Zurich office.

The sales practices of Europe's leading consumer-goods companies

Our survey of more than 100 sales executives reveals best practices in customer and channel management.

Simon Land, Stefan Rickert, and René Schmutzler

Most consumer-packaged-goods (CPG) manufacturers in Europe today have to maintain a tricky balance. On the one hand, they must continue to nurture long-standing but constantly evolving relationships with major retailers, which account for the bulk of their current business. On the other hand, they need to pursue new (or newly important) channels such as convenience stores and e-commerce, which have completely different characteristics and requirements but offer the most promising growth opportunities in an otherwise stagnant market.

In this increasingly complex retail landscape, a handful of CPG companies have achieved above-average growth while also outperforming peers on other financial metrics. What do these companies do particularly well? As part of our multiyear global survey, conducted in partnership with Nielsen, we asked more than 100 sales executives across Europe about their customer- and channel-management practices.[1] Survey respondents represented 43 country organizations in 18 CPG companies. By analyzing survey responses and Nielsen data, we identified a set of "winners"—CPG companies that posted higher sales and higher growth in earnings before interest, taxes, depreciation, and amortization than competitors—and found that winners excel in part by keeping a sharp focus on retailer collaboration, revenue-growth management, and omnichannel initiatives.[2]

Build collaborative relationships with key accounts

Winning CPG companies grew sales at a rate of six percentage points above the category, even as they trimmed their selling costs more aggressively than their peers. This is particularly remarkable at a time when most CPG product categories are experiencing flat or falling prices and little to no growth in Europe.

The survey results show that winners invest in the highest-growth channels—in particular, discounters and convenience-store chains, as well as e-commerce—and collaborate with important customers in these channels. For instance, winning CPG companies work closely with key retailers to gain a deep understanding of shoppers, improve outlet coverage, and create customer-specific assortments and marketing programs. Winners are twice as likely to collaborate with retailers on assortment optimization; half of the winners (compared with only 8 percent of others) create tailored pack sizes. Winners are three times more likely to develop a joint space strategy and to refine planograms with retailers.

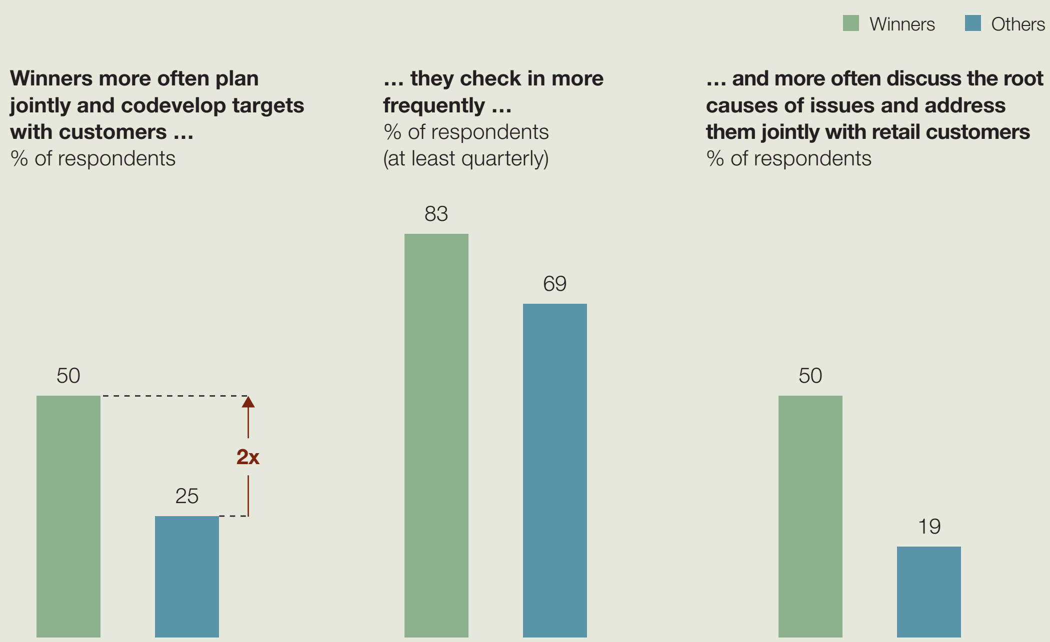
Furthermore, as retailers have invested more in big data and analytics, winning CPG manufacturers have done the same. They're thus able to enter into mutually beneficial data-sharing agreements with retailers and are better equipped to address longer-term strategic issues and codevelop targets with retailers (Exhibit 1). Two-thirds of the winners (but less than half of others) report having the analytical capabilities to make the most of their data.

Use advanced tools and analytics to excel in revenue-growth management

Revenue-growth management has become an important building block in winning companies' sales approaches. Winners are more likely to use a broad mix of revenue-management tactics, such as raising list prices, changing promotion intensity, or adjusting trade funding. By using sophisticated pricing tools and advanced analytics, they can make faster, better decisions than competitors. Indeed, close to 90 percent of the winners maintained price increases over the past two years, and most of them did so without having to adjust their trade spending.

Winners also increased net sales faster than trade investments; some even managed to increase net sales while reducing trade investments. Many winners attribute their success in this area to their performance-based approach: specifically, they enter into performance-based agreements with retailers based on predefined activities (such as assortment expansion or new-product listings) and outcomes (such as volume or share growth). Most winners don't simply roll trade-investment levels forward from one year to the next. Instead, they develop a clear and detailed understanding of their trade investments, allowing them to better manage funds across customers and channels. Winners achieve this transparency by investing in advanced

Exhibit 1 **Winners are more likely to collaborate with customers on strategic issues.**



Source: 2016 European Customer and Channel Management Survey

IT tools and solutions for trade-investment management and optimization (Exhibit 2), and by having people on staff dedicated exclusively to revenue-growth management.

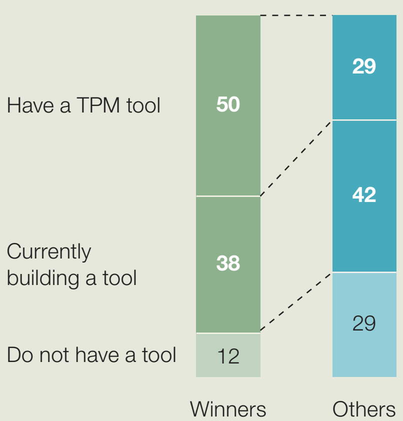
Make bold omnichannel investments

Omnichannel and online retail are at different maturity levels across the major European markets, with the United Kingdom and France the most developed. In the UK market, online food sales account for 4.0 percent of total food sales; in France, the number is 1.5 percent; and in Germany, a mere 0.5 percent.

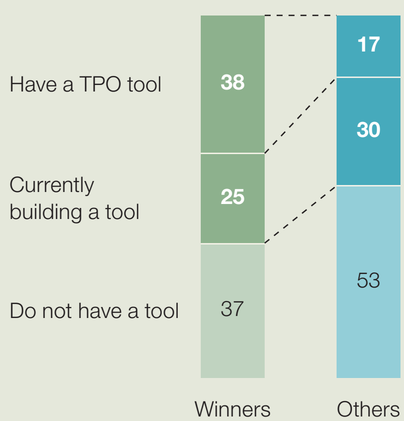
E-commerce's share may seem negligible at present, but it is poised to make big gains in the coming years. Winners have invested ahead of the curve, and as a result the online channel generates a higher share of their total sales (four percentage points more than nonwinning companies). Their online-sales growth rate is 19 percentage points above the category. This healthy growth is largely the result of having a clear online strategy with a long-term horizon, bolstered by strong top-management support (Exhibit 3). Winners tend to focus their sales efforts more on multichannel retailers than on pure-play online companies.

Exhibit 2 **Most winners are using or building trade-promotion tools.**

Nearly 9 in 10 winners have or are building a trade-promotion management (TPM) tool …
% of respondents

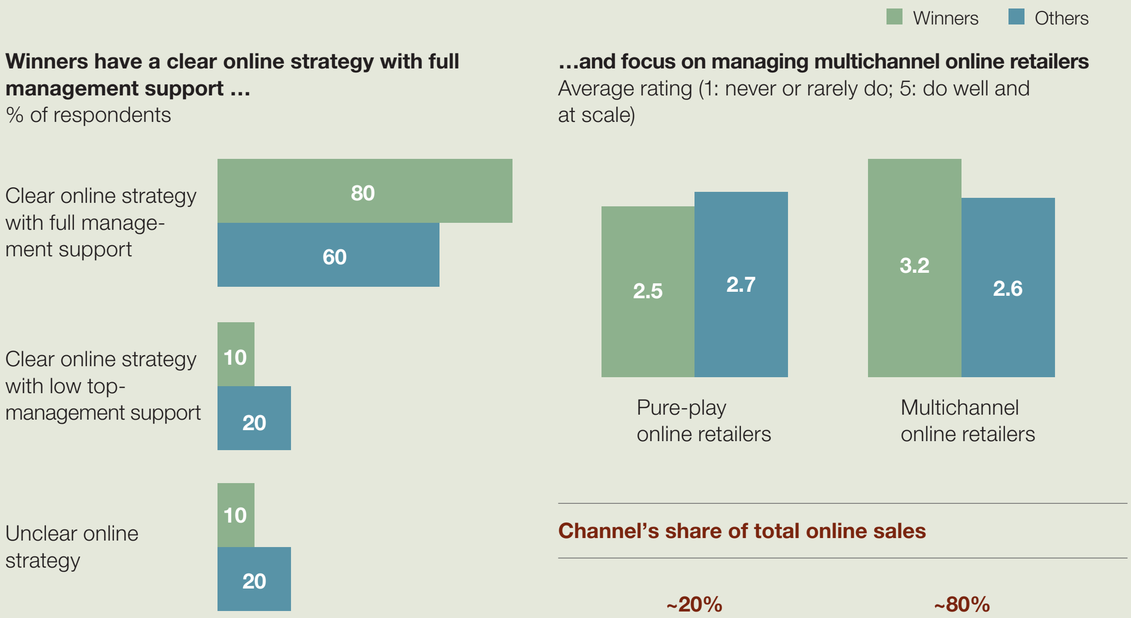


… while ~2/3 of winners also have or are building a trade-promotion optimization (TPO) tool
% of respondents



Source: 2016 European Customer and Channel Management Survey

Exhibit 3 **Winners have developed a clear omnichannel strategy.**



Source: 2016 European Customer and Channel Management Survey

By being early entrants into the e-commerce space, winning CPG companies have gained valuable insights into how to activate online shoppers, curate an online assortment, and manage channel conflict. For example, half of the winners—but only 20 percent of the others—develop assortments tailored for e-commerce. Winners use the online channel for both sales and marketing, with 75 percent of winners (and 20 percent of others) saying they've increased their online advertising and marketing spend.

■ ■ ■

CPG manufacturers can't afford to ignore best practices in customer and channel management. It may be daunting for a low-performing company to close the gap between its own practices and those of the winners; an overhaul of processes, systems, and mind-sets may be necessary. But in Europe's low-growth market, the greater risk is to simply continue doing business as usual. ■

[1] Since 1978, McKinsey has conducted the Customer and Channel Management Survey to understand the winning practices of consumer-packaged-goods companies. More than 200 companies around the world participated in the 2016 survey. The survey combines syndicated data from Nielsen with companies' self-reported financial data and practices.

[2] For highlights from the North America survey, see Kari Alldredge, Jen Henry, Julie Lowrie, and Antonio Rocha, "Winning in consumer packaged goods through data and analytics," August 2016, McKinsey.com. For Latin America, see Bruno Furtado, Felipe Ize, Antonio Rocha, and Miguel Suadi, "Lessons from Latin America's leading consumer-goods companies," June 2016, McKinsey.com.

The full report on which this article is based, "New frontiers in customer and channel management: Learning from the winners," is available on McKinsey.com.

Simon Land is a partner in McKinsey's Düsseldorf office, and **Stefan Rickert** is a partner in the Hamburg office, where **René Schmutzler** is a consultant.

The authors wish to thank Julie Lowrie and Shruti Shukla for their contributions to this article.

© Keiko Morimoto

How retailers can improve price perception—profitably

New methodologies, powered by big data and advanced analytics, can help retailers attract value-conscious consumers without sacrificing margins.

Oliver Heinrich, Alberto Mussa, and Stefano Zerbi

As retail executives know all too well, most pricing decisions require a trade-off between margin and price perception. To avoid a "race to the bottom"—the self-defeating exercise of trying to beat every competitor's price on every item—retailers must hone their ability to make smart pricing investments. Indeed, the savviest retailers identify key value categories (KVCs) and key value items (KVIs)—those product categories and SKUs whose prices consumers tend to notice and remember. If a retailer can do this accurately, it can price those specific products competitively while charging higher prices on other items.

Yet, despite the importance of KVC and KVI identification, many retailers still lack a systematic, fact-based process for doing it. Some retailers rely almost entirely on the commercial intuition of experienced category managers. To be fair, a number of retailers do use data to try to isolate KVCs and KVIs: for example, they might benchmark their assortment and prices against those of discounters, on the assumption that price-sensitive consumers use discounters as a baseline for comparison shopping. Some retailers apply a simple heuristic—they use a combination of weighted criteria such as purchase frequency and brand perception to select KVIs.

But in today's data-rich business environment, retailers can—and certainly should—go beyond these basic techniques. To accurately identify KVCs and KVIs, leading retailers tap into the treasure trove of transaction data, loyalty-card data, and online research available to them. They use sophisticated methodologies that require the ability to analyze billions of transactions and hundreds of gigabytes of data. Harnessing the power of advanced analytics to improve price perception can have significant impact: a margin boost of one to two percentage points, with steady or even increasing sales volume.

Which categories and items affect consumer price perception?

Broadly speaking, products can be classified into two groups: frequently bought items (purchased twice a month or more often) and infrequently bought items. Most grocery items fall into the former classification, but grocery retailers—particularly hypermarkets, which have higher shares of nonfood products—also carry infrequently bought items. By contrast, the assortment of home-improvement retailers consists mainly of infrequently bought items such as power tools and home appliances. Our recommended methodology for identifying KVIs and KVCs differs slightly for each of these two product groups.

Ideally, KVIs will account for 15 to 25 percent of sales in the category. Other products in the assortment are classified as either “foreground” or “background” items (exhibit).

Identifying KVCs and KVIs among frequently purchased products

For frequently bought items, retailers can select KVCs by calculating a normalized score for each category based on three criteria: frequency of purchase (weighted at 40 percent), customer reach (40 percent), and promotional share (20 percent). Then, to identify KVIs, retailers can take four sequential steps, each of which involves the use of big data and advanced analytical models and calculations.

- *First, identify SKUs that are a “good deal” or represent good value for money.* These SKUs are either cheap relative to the category or have a low per-unit price. A two-liter bottle of soda, for example, might qualify as a good deal whereas a half-liter bottle might not, since the two-liter bottle’s price per liter is much lower. These calculations should be done for every item for every week of data, to correct for any temporary price changes and promotions. (An item on sale might be a good deal that week, but not during other weeks when it is sold at full price.)

Exhibit

Key value items should account for at least 15 percent of category sales.

Price sensitivity

Example of a pyramid structure for assigning target price levels — High → Low

Item role	Share of sales	Definition
Key value item	15–25%	Items that are often included in baskets and drive price perception
Foreground	20–40%	Items that are infrequently bought, have a low share in baskets, and do not drive price perception
Background	35–65%	Long-tail items that are rarely bought and are relatively cheap

- *Next, identify customers who buy mostly good-value-for-money SKUs,* on the assumption that these are price-sensitive customers who are likely to remember the prices of the products they buy. The analysis can only be done with loyalty-card data. Retailers without loyalty-card data can identify price-sensitive baskets instead of customers, using transaction data.

- *Third, assess the relative importance of items purchased by price-sensitive customers.* This step requires the retailer to answer two questions about each item: What percentage of price-sensitive customers buy the item? And what percentage of all the customers who buy the item are price-sensitive customers? Those two metrics are then combined and averaged into a price-awareness score.

- *Finally, rank the SKUs,* according to price-awareness scores, within their categories. The top-ranked SKUs are KVIs.

A methodology for infrequently bought products

For retailers whose assortment consists primarily of infrequently bought items, we recommend a slightly different methodology that combines three sets of analytics, again using big data (see sidebar, "Case example: Nonfood retailer"). Each set of analytics helps the retailer determine which product categories meet the following criteria:

- *Frequently researched online and purchased fairly regularly* (perhaps once every two to three months). The assumption is that consumers tend to remember the prices of items in such categories. The data on online prepurchase research is typically sourced from web-analytics providers such as Google Analytics, whereas the data on actual purchases is from the retailer's own transactional data.

- *Expensive or purchased fairly regularly.* To perform this analysis for a category, the retailer needs to calculate average ticket price and frequency of purchase.

Case example: Nonfood retailer

A European nonfood retailer, seeking to optimize pricing and improve profitability, used our recommended methodology for infrequently bought products. Out of the 1,000-plus categories in the retailer's assortment, the algorithm identified about 200 key value categories (KVCs), which together accounted for more than 50 percent of the retailer's total sales.

After reviewing the results of the analysis, the commercial team deleted about 40 categories from the KVC list. Some were deleted because they don't play a strategic role for the retailer, for example. Category managers also added a handful of strategically important categories to the KVC list.

The team then identified key value items (KVIs) within these categories, establishing quotas to ensure that the final list of KVIs covered a broad and representative set of categories. The team also defined category "price lines" to give each store the flexibility to adjust prices depending on the competitive environment. For instance, in markets where competition isn't intense, stores could raise the prices on KVIs by a certain percentage; stores in markets with stiff competition would keep KVI prices low. Within a year, the retailer improved margins by two percentage points.

- *Often found in price-sensitive baskets.* By analyzing transaction or loyalty-card data, retailers can determine which products often appear in baskets alongside other price-sensitive items (that is, those that meet the first two criteria).

Triangulating the three sets of results yields a comprehensive list of KVCs. The retailer can then calculate a price-awareness score—based on frequency of purchase and share of category sales—for each item in the KVCs. The highest-scoring items are the KVIs.

Practical advice for implementation

In each case, the results of the analyses should be commercially validated—that is, category managers and the commercial team should review and approve the results. Typically, they would evaluate the KVC list using several lenses. For example, does the category play a strategic role for the retailer? Is the category a traffic driver or one that typically triggers additional purchases? (The purchase of a can of paint, for instance, is likely to trigger purchases of paintbrushes, a ladder, drop cloths, paint thinner, and so on.) Does the category have one or more highly visible brands? We've found that the most accurate KVC and KVI lists result from a blend of art and science: category managers' commercial knowledge and experience, combined with the rigor of big data analytics.

Implementing these methodologies doesn't require expensive new systems or an army of data analysts. We've found that many retailers need just one person with analytical skills to learn how to run the algorithms and codes. That person can then train the commercial team to interpret and use the results.

■ ■ ■

These methodologies have yielded impact across different types and sizes of retailers in both small and large markets. An Eastern European grocery chain, for instance, had been trying to beat all of its main competitors' prices on almost every item. Since shifting to a KVC- and KVI-focused pricing strategy, its margins have risen two percentage points. Similarly, a Western European specialty retailer used these methodologies to revamp its pricing architecture and achieved a margin increase of 1.5 percentage points. ■

Oliver Heinrich is a consultant in McKinsey's Munich office; **Alberto Mussa** is an associate partner in the Milan office, where **Stefano Zerbi** is a partner.

© Toko Ohmori

‘Either play or shut up’: An interview with FrieslandCampina’s CEO

Under the leadership of CEO Roelof Joosten, one of the world’s largest dairy companies has made bold investments in sustainability, innovation, and digital channels.

Dymfke Kuijpers and Marc van Rooijen

To thrive in today’s consumer-goods industry, companies must excel on a number of fronts. For instance, they need to be innovators and stay ahead of trends. They have to learn how to harness the power of digital channels. And they must ensure that their business practices are socially and environmentally responsible. As CEO of Royal FrieslandCampina, one of the world’s largest dairy companies, Roelof Joosten faces these issues daily and is proud of what his company has achieved in these areas.

FrieslandCampina, with annual revenues exceeding €11 billion, sells dairy products—mainly milk and other dairy-based beverages, cheese, desserts, and infant formula—in more than 100 countries. Based in Amersfoort, the Netherlands, it is owned by a cooperative of 19,000-plus dairy farmers in the Netherlands, Germany, and Belgium. Since Joosten became CEO in June 2015, he has championed several ambitious initiatives. He recently spoke with McKinsey senior partners Dymfke Kuijpers and Marc van Rooijen about some of them.

McKinsey: *You’ve now been in the CEO role for 16 months. Is there anything about the job that has surprised you?*

Roelof Joosten: Yes—I was surprised at how energized the organization became after we refreshed our strategy. Last year, we gathered our top 70 executives in Hong Kong for a series of strategy sessions. I felt it was important for the organization to become a purpose-driven company, so we updated our 2020 strategy and came up with our purpose statement: “Nourishing by nature.” That exercise released so much energy and enthusiasm within the organization. I hadn’t foreseen that. I got—

how do you call it?—goosebumps! That energy has enabled us to not only bring our purpose statement to life but also to keep it alive.

McKinsey: *Your strategy has three pillars, namely "better nutrition for the world, a good living for our farmers, now and for generations to come." What does each of those pillars mean, practically speaking?*

Roelof Joosten: All three of them are essential to FrieslandCampina. "Better nutrition for the world" meant, first of all, establishing a nutrition policy. Any company can say they are in the business of nutrition, but what do they mean by that? You have to be specific. That's what we did in 2015, by developing our global standards on nutrition. We now have a global set of nutritional criteria for our products.

Then we have to look at whether all our products are compliant with those standards. I'll give you an example. In the Netherlands, one of our most popular products is custard, and recently the executives in charge of that product were thinking about changing the recipe to make it more cost effective. Milk is obviously a costly component of custard, so the plan was to reduce the milk solids in our custard. Well, if you keep going in that direction—if you're always prioritizing costs—before you know it you've taken all the milk solids out of the custard, because it's possible to make custard without any milk solids in it, to be honest. But when we came up with our purpose statement and our business code of conduct, they said to me, "That's not the right thing to do." So they changed the recipe—and actually put more milk solids in it. The product is now better tasting and it's highly successful in the marketplace.

That's a simple but telling example of what our purpose statement is for. It gives the organization guidance, like a compass. That's actually what we call our business code of conduct: Compass. At the end of the day, you might not grow your market share, but you put 25 percent more milk solids in your custard. That's an accomplishment. That's "better nutrition for the world."

Next is "a good living for our farmers"—that one is straightforward. Farmers produce our food but are often poorly rewarded because of their position in the value chain. And we're not only talking about ensuring a good living for Dutch farmers. Through our Dairy Development Program, we also help governmental bodies in many countries in Asia, Africa, and Eastern Europe develop the capabilities to grow dairy production in their respective countries.

And finally, "now and for generations to come"—that one is partly about talent management for farmers. We can have all kinds of exciting developments as a company, but if there are no farmers, there is no food. So we need to make farming attractive to young people. "For generations to come" is also about sustainability, which is one of our most important areas of focus. We don't treat it as a "Friday at five o'clock in the afternoon" type of initiative—sustainability is not an afterthought, but something that is really at the center of our thinking.

McKinsey: *Indeed, one of your most intriguing initiatives has to do with sustainability: you are building the first dairy plant that runs partly on energy generated from cow manure. Please say more about that.*

Roelof Joosten: I've found that if you want to get people talking about sustainability, manure is one of the best things to talk about, because everybody has an opinion on it. Farmers, governments, local authorities, regional authorities, the company, researchers—everybody has something to say about it. It's amazing how many conversations I've had about cow manure.

One of FrieslandCampina's sustainability commitments is to have climate-neutral growth

Roelof Joosten

Vital statistics
Born in 1958 in Opsterland, the Netherlands

Married, with 3 children

Education
Holds an MS in chemical engineering from the University of Groningen

Participated in Harvard Business School's Advanced Management Program

Career highlights
FrieslandCampina (2004–present)
CEO (2015–present)

Chief operating officer, FrieslandCampina Ingredients (2010–15)

Managing director, FrieslandCampina Domo (2004–10)

Quest International (1998–2003)
Vice president, Quest Foods Europe

Unilever (1985–98)
Various positions in marketing and sales

Fast facts
President of the Dutch Dairy Association

by 2020. That means our CO2 levels in 2020 should be the same as 2010. That may not sound very challenging, but it is. We have to save something like 1,900 kilotons. And obviously we need the farmers to work with us on that, because 90 percent of our CO2 is generated at the farm. We're going to pay the farmer €10 for every ton of CO2 he or she saves.

It's going to require a change in philosophy and mind-set, to see manure not as a waste product but as a source of nutrients and energy. On October 4, we officially started operating our first manure digester[1] on a farm in [the Dutch province of] Friesland. Our intention is to have digesters operating in 1,000 dairy farms by the year 2020, which together will represent a 350 kiloton reduction in greenhouse gases.

A year ago, people said to me, "That will not be possible. It will not work." But now we're doing it—the technical installations, the maintenance, the financing, the permits. We're getting these manure digesters up and running. There are a lot of people standing on the sidelines or sitting on the reserve bench, and I've always said to them, "You never score a goal when you're sitting on the reserve bench. Either play or shut up."

McKinsey: *Innovation is clearly a priority for you, not just with regard to sustainability. You're partnering with start-ups to innovate in other areas as well, right?*

Roelof Joosten: Yes, we're working closely with a few start-up companies in areas that we think will affect our company in the near future. Together with these start-ups, we're shaping a "milkubator"—cool, eh? It's an incubator for innovation within our own company.

One of our partnerships is with GlycoSyn, a small company that is working on identifying and developing certain ingredients that will make infant formula respond better to the nutritional needs of infants. By working together, we hope to bring products with these ingredients to market in one or two years, whereas it might normally take us five to eight years if we did it alone.

McKinsey: *You're also experimenting with 3-D printing. Earlier you said, no food without farmers—but do you think 3-D printing might change that dynamic soon?*

Roelof Joosten: We have no clue yet what 3-D printing will bring, and you probably will not see a [3-D-printed] product from us in the next five years or so. We think 3-D printing will be very important in medical nutrition—for example, developing good-tasting, easy-to-swallow foods for the elderly or for people in hospitals. But 3-D printing can also enhance or maybe even change our view on ingredients and enable us to tap into what I call lifestyle nutrition: creating customized, personalized food for not just elderly people but also athletes, people with dietary restrictions, people who lack certain nutritional products.

McKinsey: *What about expanding geographically? Do you plan to expand your consumer business into the United States, for example?*

Roelof Joosten: We still have so many opportunities in our current markets. The United States is the largest consumer market in the world, but do we really want to be in that market, with all its challenges? The same applies to Latin America—we could come up with business plans that would make it an attractive market for us, but we'd have to take resources away from opportunities we see in our current markets.

Our priority is to do even better in the areas where we already play. As a company, you need to keep your focus on what you're good at, and don't get too greedy. You'll be tempted by many opportunities; you have to choose the right ones. You can't do everything.

McKinsey: *You probably see many opportunities in Asia, or even just within China. I know you're especially passionate about China. What do you think companies can learn from that market?*

Roelof Joosten: I'm fascinated by China. I've been there quite often, so I've gotten a lot of exposure to the phenomenal change and the speed of change. It's going even faster than people think. There's no time to breathe, almost. Things change so fast—so if you're successful today, you might not be successful tomorrow. In China, you have to expect the unexpected.

I was there two weeks ago, and I visited a shopping mall. It was built probably only two or three years ago, and it was amazing to see how modern it looked. But there was no one there. It was empty. Hardly anybody shops in a shopping mall anymore in China; they shop online. And they learn from their friends how to shop, where to shop, what they should look for, what the new trends are. And how do they learn these things? Through communities like WeChat. If your company is not active in these communities, that's a warning sign. That's why we've plugged into these types of communities, like [the Chinese parenting portal] Babytree.

Our experience in China has helped us everywhere else. Our organization is slowly but steadily shifting funds away from the classic advertising and promotion (A&P) channels and into digital, because we can communicate far more effectively with consumers through digital channels. In some ways, traditional A&P is like spraying your messages around with a water hose and hoping that you'll wet people enough so that they go and buy your products.

McKinsey: *What digital-marketing initiatives have worked well for you?*

Roelof Joosten: Our digital loyalty program in the Netherlands, called Eurosparen, already has more than a million members. We know what consumers are buying and what they want, because we're in communication with them all the time online and through the Eurosparen app.

Eurosparen is obviously much more advanced from an infrastructure perspective, but our digital efforts in other countries are also moving fast. We're now investing in mobile and digital marketing in other countries like Egypt, Russia, Indonesia, Saudi Arabia, Myanmar, and Vietnam. The dairy market in Vietnam is difficult, but we're growing there, largely because we've partnered with Facebook, YouTube, and Google to deliver personalized messages to consumers.

One challenge is that you need a different breed of people to do digital marketing well. The whole contingent of commercial people today have different skills from the people you need for tomorrow; there are only a few who can make the transition. Fortunately for us, the talent pool in the Netherlands is not too bad. In Amsterdam, for instance, there are people who are really into gaming who might make good FrieslandCampina employees in the future.

McKinsey: *I imagine talent is a perennial issue. And not just digital talent, but managerial and executive talent as well.*

Roelof Joosten: Talent management is critical. In the past six months especially, I've been focusing on defining a career path for our future leaders and young management trainees. About a year ago, we had losses in that area that we really regret—several high-potential employees left our company. That was a worrying sign for me. So we pay close attention to a few talent-management metrics: we look at coverage; we look at whether we're doing enough to groom future leaders and young talent. We now spend a lot more time in our executive board meetings talking about talent management. I find it exciting—a blessing, really—to be surrounded by very talented people, many of whom are much more talented than I am, I think. They challenge me, rather than the other way around.

I believe we've become more competitive from a talent perspective. More people want to join the organization. And I think that's partly because we've struck a chord among millennials in particular. FrieslandCampina is not a typical consumer-goods company. It has that duality of the consumer business and the ingredients business on one hand, and the commodity element on the other hand. So we as a company are thinking through the entire milk value chain. At our company, you get to know the farmers, and you can look them in the eyes and talk to them about their livelihoods. I think millennials in particular are inspired by that—they want to relate to real people, rather than just unknown shareholders.

McKinsey: *That's an interesting observation. Your structure gives you some advantages, but I'm sure there are also drawbacks. What do you see as the toughest challenge for FrieslandCampina?*

Roelof Joosten: Processing 12 billion liters of milk and selling it. Because we're owned by a cooperative of farmers, we have to process all the milk the farmers produce. In the first half of this year, we processed 12 percent more milk than we did in the first half of 2015. We had to sell most of the additional volume at a big loss because the worldwide dairy market is growing at only about 2 percent. Conclusion: we're throwing money away. So we're working on an instrument, which hopefully our member farmers will approve by the end of this year, that will allow us to better adapt supply to demand. Most other companies can shut off supply; we can't. It's a rare kind of organization. But that also makes it fun.

McKinsey: *It's good to hear you're having fun. Do you think you've changed since you became CEO?*

Roelof Joosten: I don't feel that I've changed that much myself, but the behavior of those around me changed when I became CEO. It seemed like they started seeing me through different eyes. Other CEOs warned me that this would happen—that some people would behave differently. So I learned that it's important to have people around you who will keep you honest and who will always be honest with you. For me, there are individuals in the company who will still be up front with me. Also, my family watches me carefully. They always warn me not to "walk next to your shoes," as they say in Dutch—they tell me not to become arrogant.

McKinsey: *One final question: What's the best advice you've ever received?*

Roelof Joosten: In the northern part of the Netherlands, they have a saying that goes something like this: "Whatever you do, whatever you are, it could always be worse." I think that's true. Another piece of advice that I live by is, "Never forget where you came from."

And, as far as FrieslandCampina is concerned, I try to remember that I'm only a *voorbijganger*—a passerby, in a sense. FrieslandCampina has developed over the past 140 years, and many people worked passionately to get it to where it is now. I'm here to lead it today, and then somebody else will come after me. So I better take good care of it for now. ■

---

[1] A manure digester breaks down manure into methane, then converts it into electricity. An additional benefit is the prevention of methane, a greenhouse gas, from entering the atmosphere.

Dymfke Kuijpers and **Marc van Rooijen** are senior partners in McKinsey's Amsterdam office.

© Toko Ohmori

The quest for quality in fresh-food retailing

In fresh foods, quality is critical—but hard to define and measure. Here's how retailers can make the quality investments that yield the highest returns.

Raphael Buck, Daniel Läubli, and Nora Ottink

Just a few years ago, European consumers in search of high-quality fresh food would never even have considered going to a discount store. Supermarkets were the only modern format with credible offerings in fresh fruits, vegetables, meat, fish, dairy, baked goods, and delicatessen. That's no longer true. In recent years, discounters have significantly upgraded their product range and presentation in fresh-food categories.

According to surveys in several European countries, consumers believe that discounters' fresh products are as good as—and sometimes even superior to—those at supermarkets, and lower priced to boot. This perception is worrisome to supermarkets, and rightly so, because fresh products drive store traffic, basket size, and customer loyalty. Recent research has shown that if customers are satisfied with a retailer's fresh offerings, they will shop there more frequently, spend more money on each visit, and start to buy from the retailer's other departments as well. For instance, a leading retailer found that more than 50 percent of its loyal customers would highly recommend its fruits, vegetables, and meat departments (compared with 20 percent for the health and beauty department, or 13 percent for sweet snacks). Another large grocery retailer found that fresh-food quality—not price—was the number-one driver of satisfaction among its customers.

The intensifying competition in fresh food means that retailers must become known for consistently high-quality products. That's no easy task. Grocers and discounters are all too familiar with the execution challenges of selling fresh food. The products are highly perishable. The assortment is large and diverse—a typical delicatessen counter alone has more than 100 products. Each offering has different handling requirements, and the quality of goods that suppliers provide can vary from week to week.[1] Which products are worth the investment in higher quality? Out of tens of thousands of them, how can a retailer know which ones have the greatest influence on perceptions? Better-tasting garlic, for example, may please some consumers, but in most Western European countries, that alone won't substantially increase sales or customer loyalty.

Furthermore, quality can be difficult to define and isolate. When consumers judge the quality of fresh-food products, they take into account much more than just taste and appearance. Depending on the item in question, other intrinsic attributes, such as smell, consistency, and ripeness, can play important roles as well. External factors—for instance, packaging, pricing, and advertising—may also affect consumer perception.

In our experience, retailers can achieve distinctiveness in quality by following a three-pronged approach: conducting structured consumer research using dynamic surveys, systematically identifying and addressing the root causes of quality problems, and instilling a quality-focused organizational culture to ensure continuous improvement. The impact of using such an approach is almost immediate: at one European food retailer, sales of fresh produce rose by as much as 24 percent in certain categories, and customer satisfaction and loyalty increased dramatically.

Conduct dynamic consumer research

As one retail executive lamented, "We have tens of thousands of SKUs; I don't know where to focus our quality efforts." The most successful retailers choose their focus areas by figuring out what matters most to consumers—they conduct consumer research to zero in on the exact products and product attributes that shape perceptions of quality.

The idea of quality-focused consumer research can be unappealing and overwhelming to fresh-food retailers. They don't relish the thought of asking throngs of consumers an endless number of questions about tens of thousands of products, and possibly ending up with nothing but generic insights that don't provide clear direction on what or how to improve. But we know from experience that consumer research can be rigorous and rich without being unwieldy: the secret is in carefully structured, dynamic surveys—in which questionnaires automatically route respondents to new questions based on their answers to previous questions.

To kick off a major quality-improvement effort, a leading European grocery chain conducted in-depth, dynamic surveys of more than 8,000 households in its markets. Through a series of structured questions, the retailer identified fruits, vegetables, and meat as the categories that most influenced the consumers' decisions about where to shop.

The retailer then sought to find out which products in those categories made the biggest impression on consumers. Again using the dynamic questionnaire, it identified some 50 products—out of 7,000-plus in the fresh categories—that met three criteria: the product strongly affected the consumers' opinions of the quality of a store's fresh offering, consumers gave the retailer lower marks than competitors for the quality of that product, and the product accounted for a substantial part of the department's revenue. In the meat department, minced meat and chicken fillets met these criteria (Exhibit 1). Other products that met the criteria included strawberries and asparagus. The retailer prioritized these 50 products for quality improvements.

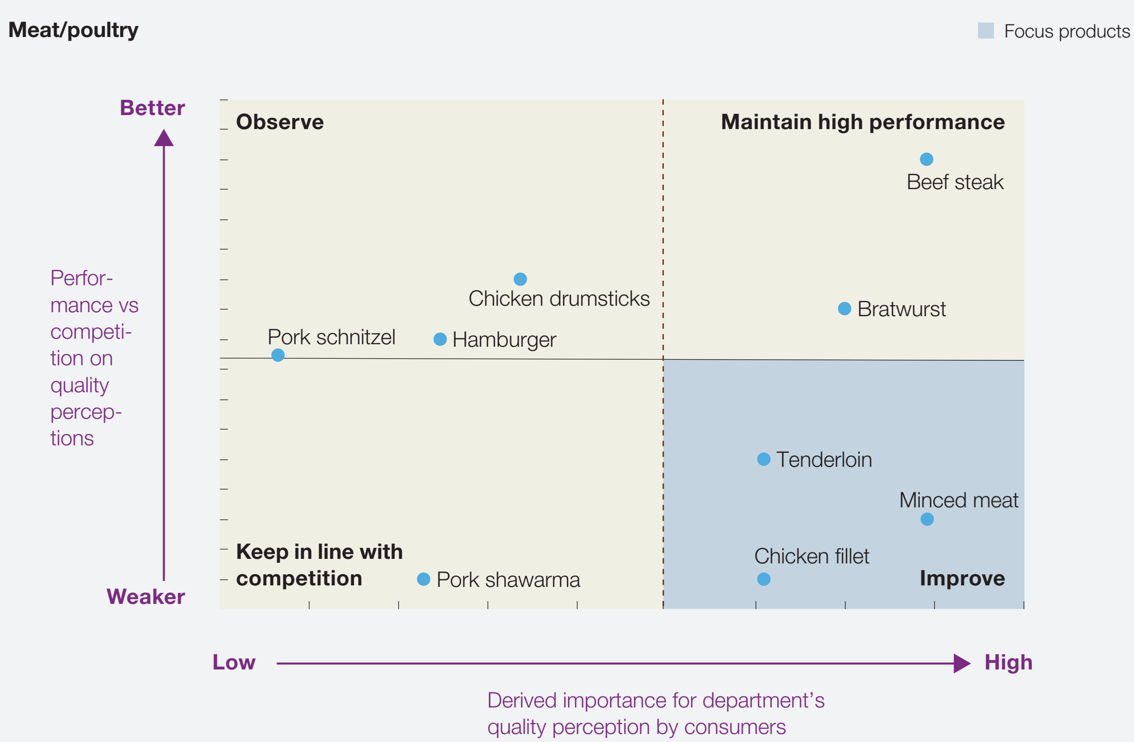
Another set of structured survey questions elicited the attributes that most affect consumers' quality perceptions of each high-priority product. For minced meat, the top quality indicators included taste, roasting properties (especially water content), and smell. For strawberries, what mattered most to consumers were juiciness and smell—not color and size, as the retailer had initially thought.

Analyze and address root causes

Conducting structured consumer research is crucial to unearthing actionable and precise insights, but it's only one part of a robust data-gathering exercise. The retailer also conducted "blind" tastings of products, performed chemical analysis on the products, and linked the results to the consumer research. In this way, the retailer determined which quality issues were intrinsic to products and which resulted from the consumers' perceptions of them. For instance, if the chemical analysis showed that the retailer's strawberries had a high brix level (a measure of sweetness) but consumers complained that the strawberries were bland, the issue was perception related, not intrinsic.

Exhibit 1 **Quality efforts should focus on products that matter most to consumers.**

DISGUISED EXAMPLE



Source: Market research; McKinsey analysis

Category managers and product buyers, working with suppliers, then held intensive workshops to hypothesize about the root causes of each quality issue. They analyzed the supply chain "from field to fork," looking closely at how each stage of the supply chain contributes to or detracts from the quality of products. For instance, if a fruit's color strongly influences the consumers' quality perceptions, what factors affect the color? Is the fruit variety a factor? Is the fruit getting discolored during handling or transport? Is the lighting in stores somehow altering the fruit's appearance?

Such workshops are an effective means of fostering a constructive dialogue, getting the right people to think about and collaborate on quality, and challenging assumptions and hypotheses. And as this retailer discovered, bringing in suppliers to participate in root-cause analysis and problem solving can be a powerful way to generate ideas for improvement.

One end product of the workshops should be a targeted action plan that addresses the root causes of perceptions of poor quality. Initiatives could entail switching to new types or varieties of products, adjusting their specifications, or changing certain aspects of the supply chain, store operations, merchandising, or marketing. The aforementioned retailer, for example, introduced a juicier variety of strawberries. For minced meat, it changed its product specs (lower water content and fewer additives). Within weeks, the retailer came up with precise quality-improvement measures for all 50 items.

An end-to-end quality program—including designing survey questionnaires, conducting market research, analyzing results, identifying the root causes of quality problems, and planning and launching quality-improvement initiatives—typically takes three to four months. The exact duration depends on how much market research is already available, the number of products and departments in scope, and the size of the survey sample.

Instill a quality-focused culture

Executing this disciplined approach shouldn't just be a one-off undertaking. Rather, it should be part of an ongoing quality-management process, helping to embed a continuous-improvement mentality into the organization's way of working. A retailer should articulate its quality aspirations—for example, "become number one in both technical and perceived quality in the meat and seafood departments." It should then define its quality targets and agree on testing tools, guidelines, timing, performance indicators, resources, and roles and responsibilities.

To instill a quality-focused culture, retailers must pull the four levers defined in McKinsey's influence model.[2] Exhibit 2 shows a number of tactics that have proved effective in orienting mind-sets and behavior toward a focus on product quality.

Role modeling by senior leaders, for example, can go a long way toward creating awareness and buy-in. One retailer published photos (on its intranet and in internal newsletters) of the CEO participating in blind tastings.

To foster conviction and understanding, a European retailer has its category managers and sourcing staff regularly test the quality of fresh products. Employees buy items from the retailer's stores and those of competitors, compare them, conduct informal blind tastings at the office, and brainstorm ideas for quality improvements.

Exhibit 2 **Retailers can use a range of tactics to instill a quality-focused mind-set.**

Capability building is an indispensable element of a quality-focused culture. Retailers should train and coach category managers and purchasing staff to analyze consumer-research findings, to detect the sources of quality problems, to look across the entire value chain for hypotheses about root causes, and to develop and implement action plans.

Finally, formal mechanisms should reinforce the quality culture. As an executive at a leading European retailer said, “Our category managers are trained to focus on sales and margins, so it can be difficult to convince them to give quality the attention it deserves.” Retailers should therefore incorporate quality-focused metrics into the performance-management system and link them to compensation schemes for category and sourcing managers.

We've found that a quality-focused culture makes employees much more engaged: it generates energy and excitement, and they begin to take more pride in their products—in part because the quality improvements are immediately obvious, both in the stores and in the retailer's financial results. Indeed, the payoff for disciplined quality programs includes not only motivated employees but also significantly higher sales, greater customer loyalty, and a true competitive advantage. ■

[1] For more on the challenges and opportunities in fresh food, see Raphael Buck and Arnaud Minvielle, "A fresh take on food retailing," *Perspectives on retail and consumer goods*, Winter 2013/14, McKinsey.com.

[2] For more on McKinsey's influence model, see Tessa Basford and Bill Schaninger, "The four building blocks of change," *McKinsey Quarterly*, April 2016, McKinsey.com.

Raphael Buck and **Daniel Läubli** are partners in McKinsey's Zurich office, and **Nora Ottink** is an associate partner in the Amsterdam office.

The secret to smarter fresh-food replenishment? Machine learning

With machine-learning technology, retailers can address the common—and costly—problem of having too much or too little fresh food in stock.

Christoph Glatzel, Matt Hopkins, Tim Lange, and Uwe Weiss

Fresh food, already a fiercely competitive arena in grocery retail, is becoming an even more crowded battleground. Discounters, convenience-store chains, and online players are recognizing the power of fresh-food categories to drive store visits, basket size, and customer loyalty. With fresh products accounting for up to 40 percent of grocers' revenue and one-third of cost of goods sold, getting fresh-food retailing right is more important than ever.[1]

It's also more complex than ever. Fresh food is perishable, demand is highly variable, and lead times are often uncertain. Furthermore, many retailers now carry broader fresh-food assortments that include exotic and hard-to-find items, as well as "ultrafresh" items with a shelf life of no more than one or two days. Retailers are constantly having to make difficult trade-offs when placing orders with fresh-food suppliers: order too much, and the food goes to waste; order too little, and you lose sales and erode customer loyalty. But with demand fluctuating daily, how can retailers know the right amount to order?

Most traditional supply-chain planning systems take a fixed, rule-based approach to forecasting and replenishment. Such an approach works well enough for stable and predictable product categories, but fresh food is much more complicated. Because local demand and conditions vary from day to day, planners have to manually enter different types of data—price changes or promotions, for instance—into their replenishment systems. These daily manual processes are time consuming, error prone, and heavily reliant on individual planners' experience and gut instincts.

There's a better way. A number of leading retailers have found a solution that revolutionizes their supply-chain planning: machine learning.[2] Based on algorithms that allow computers to "learn" from data even without rules-based programming, machine learning allows retailers to automate formerly manual processes and dramatically improve the accuracy of forecasts and orders. Retailers that use machine-learning technology for replenishment have seen its impact in many ways—for instance, reductions of up to 80 percent in out-of-stock rates, declines of more than 10 percent in write-offs and days of inventory on hand, and gross-margin increases of up to 9 percent.

The advantages of machine learning in replenishment

Unlike standard supply-chain software systems, machine-learning solutions can collect, analyze, and adjust large data sets from a wide range of sources, without high investments in personnel. A machine-learning algorithm can make demand forecasts based not just on historical sales data but also on other influencing parameters: internal factors such as advertising campaigns and store-opening times, and external factors such as local weather and public holidays. Advanced algorithms currently used by leading retailers already analyze more than 50 parameters. And the calculations are done at a much more granular level than standard systems are able to do: retailers can determine the effect of each

parameter on each SKU in each store (and in each distribution center, where relevant) on a daily basis.

A machine-learning system can also take into account supply-chain constraints such as supplier delivery times and minimum or maximum order quantities. Based on all these considerations, it then generates order proposals for the entire product range every 24 hours. Each order proposal optimizes for product availability while minimizing the risk of waste and markdowns, as we discuss in further detail below. Central planners can spot-check these proposals, but we've found that with best-in-class machine-learning solutions, human intervention is rarely warranted. The manual data-entry and administrative work that staff needs to do in individual stores and at headquarters is therefore significantly reduced.

Machine-learning solutions are available as cloud-based, software-as-a-service (SaaS) applications. Unlike other replenishment-optimization solutions, which typically require upgrades to a retailer's IT systems, SaaS applications work as an intelligent overlay to existing enterprise-resource-planning systems, making them more flexible and faster to implement. They also don't require large investments in hiring new personnel—rather, a retailer can build its own staff's capabilities, eliminate a significant amount of planners' data-entry tasks, and reallocate valuable staff time toward more value-added activities.

By using predictive applications powered by machine learning, an international supermarket chain with more than 1,000 stores automated most of the central planning and decision making for daily orders in one of its largest fresh-food departments. And because the retailer operates several food-processing plants, it was also able to integrate warehouse and manufacturing processes—for instance, through just-in-time production—to reduce stock in the entire supply chain, increase in-store product availability, and get fresher products on store shelves.

Best-in-class demand predictions

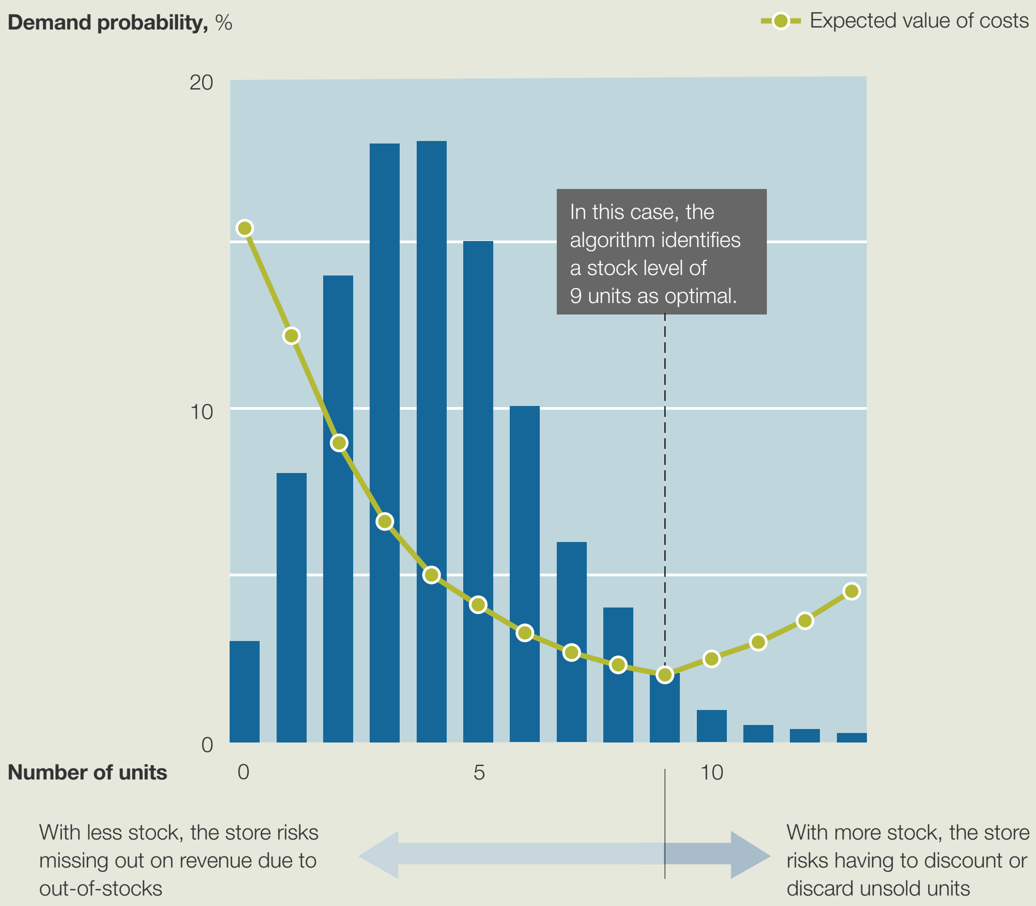
For decades, retailers have extrapolated demand by looking at historical sales data—an obviously imperfect methodology that skews demand forecasts downward, since it doesn't measure unmet demand. Advanced machine-learning algorithms overcome this problem. The algorithms build demand-probability curves using sales and inventory data, making cost-benefit calculations that evaluate the risk of waste against the risk of out-of-stocks.

To illustrate: on the exhibit, the histogram shows the demand probability for a specific SKU-store-date combination. Let's use pineapples in Store #123 on June 10 as an example. The vertical bars show that stocking four pineapples in that store on that day will probably be enough to meet demand; the store will likely sell most or all of them, so the risk of having rotten pineapples in the store is small. But what if a customer wants to buy a fifth or sixth pineapple that day? The store would lose out on revenue because pineapples would be out of stock. The green curve on the exhibit represents the expected value of costs for each stock level, taking into account potential loss of revenue due to out-of-stocks, as well as potential markdowns and waste. In this case, the algorithm identifies a stock level of nine units as optimal.

The system can align individual ordering decisions with the retailer's strategic goals and key performance indicators (KPIs). For instance, if the retailer is more concerned about margins than revenues, the algorithm will adjust decisions accordingly. It can also work toward improving several KPIs at the same time.

Exhibit

Machine-learning algorithms help retailers determine optimal stock levels, taking into account both waste and lost sales.



Newly developed algorithms can simultaneously optimize pricing and replenishment, leading to even greater profit increases in fresh categories. The algorithms simulate how changes in price will affect demand. For instance, if a small price reduction would lead to a significant increase in sales volume, the system would recommend larger order quantities. On the other hand, if demand for a product wouldn't change much even if it were sold at a deep discount, the system would recommend smaller order quantities so as to minimize losses due to markdowns. Because price elasticities change constantly—sometimes on a daily basis—machine learning's ability to continually integrate data on pricing and replenishment can make a tremendous difference in a retailer's profitability.

■ ■ ■

To capture the full value that machine learning offers, retailers shouldn't just stop at software implementation. Instead, they should take the opportunity to concurrently refine their business strategy for their fresh-food departments and translate that strategy into detailed assortment rules—for example, defining which subcategories and SKUs should always be in stock at which hours of the day. Retailers should also review their end-to-end supply-chain planning processes, including store-level ordering and inventory management. Delivery frequencies may need to change; certain fresh-food products may require twice-daily deliveries, for instance, to ensure that the store won't run out of the product before the end of the day. In addition, retailers should make adjustments to capacity planning and labor scheduling in distribution centers.

People processes, too, should change. Demand planners, both at the store level and at headquarters, will be spending their time differently and will need new performance-management metrics and incentives. And finally, retailers ought to reevaluate how they work with suppliers, renegotiating some supplier contracts and perhaps even helping suppliers adjust their own forecasting and ordering processes. By taking these actions, retailers will be better able to build on—and sustain—the vast improvements that machine-learning technology can bring. ■

---

[1] Raphael Buck and Arnaud Minvielle, "A fresh take on food retailing," *Perspectives on retail and consumer goods,* Winter 2013/14, McKinsey.com.
[2] Dorian Pyle and Cristina San Jose, "An executive's guide to machine learning," *McKinsey Quarterly,* June 2015, McKinsey.com.

Christoph Glatzel is a senior partner in McKinsey's Cologne office, where **Tim Lange** is a consultant. **Matt Hopkins** is a London-based principal at Blue Yonder, a retail-analytics firm with which McKinsey has a partnership. **Uwe Weiss** is the CEO of Blue Yonder.

The authors wish to thank Alessia Ubaldi for her contributions to this article.

© Toko Ohmori

Digital innovation in consumer-goods manufacturing

Consumer-goods companies have begun to capture value by applying digital tools to manufacturing. Here's a look at how they're doing this today—and how they might do so tomorrow.

Søren Fritzen, Frédéric Lefort, Oscar Lovera-Perez, and Frank Sänger

Consumer-goods companies have been at the forefront of digital innovation in commercial areas such as marketing and sales. Supply chain and operations have been less of a focus for their digital efforts, but recently, leading consumer-goods companies have started to explore the use of digital solutions in manufacturing processes. This is a natural development; Industry 4.0—the digitization of the entire manufacturing value chain—is slowly becoming a reality.[1]

Some consumer-goods companies, however, are unsure where to start: Which aspects of manufacturing can benefit most from today's digital technologies? And what should leading-edge companies set their sights on next? In this article, we examine the two most prevalent ways in which consumer-goods companies are using digitization in manufacturing: applying digital tools to lean transformations and using advanced analytics to optimize specific manufacturing processes. We then look at the next horizon of opportunity for digital manufacturing in the consumer-goods sector. Finally, we discuss the organizational enablers that can help digital-manufacturing efforts succeed.

Taking lean to a new level

Lean transformations have already had a dramatic impact on many companies, but digital solutions are taking lean operations to a new level. Consider the case of a food-manufacturing company that invested in lean techniques but didn't have a standard process or system for collecting data, tracking performance, and sharing information. The company's data—sales- and operations-planning data, machine-level data (such as those in sensors), benchmarks, operating standards for equipment, training materials, work plans, and so on—resided in several different databases and repositories, making it difficult for supervisors to find and analyze information. For instance, due to ad hoc tracking of equipment downtimes, supervisors never knew the exact quantity of goods produced until shipping time, when shortages could disrupt the entire supply chain.

Following a practice that has worked well in other industries, the company consolidated data and assets into a cloud-based digital hub. The hub contains three suites of tools to support day-to-day lean operations: a performance-tracking and management system, a set of modules for assessing operational capabilities and planning improvement initiatives, and a platform for best-practice sharing and real-time collaboration.

Supervisors can now access company-wide information on intuitive dashboards and heat maps, allowing them to detect performance gaps and compare metrics by product, site, and region. They can easily access detailed historical performance data or information on specific operational topics, such as the breakdown of overall equipment efficiency (OEE) by category. Since the hub automates data collection, data exports, tracking of key performance indicators, and generation of email reports, employees' paperwork has substantially decreased.

The digital hub also introduced a new culture of collaboration and continuous improvement. For instance, all functions now systematically track and share equipment-downtime information via the hub. The shared data enable more productive cross-functional discussions about production problems, including root causes and potential solutions. Frontline workers are thus more likely to discover and resolve issues in real time, preventing small problems from becoming major disruptions. Staff members can submit new best practices or improvement ideas at any time, which makes them feel more invested in the transformation. And scaling up is easy, with managers able to deploy the new digital tools to new sites or business lines rapidly, using minimal resources.

After launching the digital hub, some of the company's factories improved OEE by as much as 20 percent within a few months.

Unlocking manufacturing insights through advanced analytics

Leading consumer-goods companies have already scored big wins by using advanced analytics in a number of manufacturing processes. In our view, some of the highest-impact developments have been in quality control, predictive maintenance, and supply-chain optimization.

Quality control

A potato-chip manufacturer wanted to ensure that its products had a consistent taste, especially when it came to "hotness," or spiciness. In the past, it had assessed hotness by conducting taste tests in which a panel of human testers rated various taste parameters (for example, rating the hotness level on a scale of one to ten)—an expensive and unreliable process, since taste is subjective. To increase accuracy, the manufacturer began using infrared sensors to identify and measure recipe parameters associated with hotness. It then developed customized algorithms to process the sensor data and determine how they were correlated with the recipe. Researchers also compared the sensor data with the results of a taste-test panel for each batch. Together, this information allowed the company to create a quantitative model for predicting hotness and taste consistency. Within a year of implementing the program, customer complaints about variability in the flavor of the company's chips dropped from 7,000 a year to fewer than 150—a decrease of 90 percent.

A margarine producer took a similar approach when attempting to understand how variations in multiple process settings could change product viscosity, an important quality parameter. During a pilot, the company tested variations of a number of parameters (such as temperature) and used sensors to evaluate emulsion crystal size, the primary determinant of viscosity. After analyzing data from the pilot—much more detailed and extensive than what it would have obtained in the past—the company was able to correlate viscosity levels with certain parameter variations. With this information, analysts created a model that predicted the viscosity that other parameter combinations would produce, which reduced the need for additional testing and helped the company identify optimum operational settings. This approach reduced the fraction of margarine tubs that had to be discarded because of quality issues from 7 percent to almost zero.

Predictive maintenance

Consumer-goods companies have begun to apply predictive analytics to maintenance activities, decreasing maintenance costs by 10 to 40 percent. A diaper manufacturer had historically replaced all cutting blades at certain intervals, regardless of their condition. This sometimes resulted in blades being replaced too soon—which increased costs—or too late, after their dullness had already affected diaper quality. To address these problems, the company turned to sensors that could detect microfibers and other debris—indications of blade dullness—by analyzing video feeds of diapers during the manufacturing process. After uploading the results of the analysis to the cloud, the company analyzed them in real time, using customized algorithms to determine the optimal time for blade replacement. By making adjustments to the maintenance schedule, the company lowered costs while improving product quality.

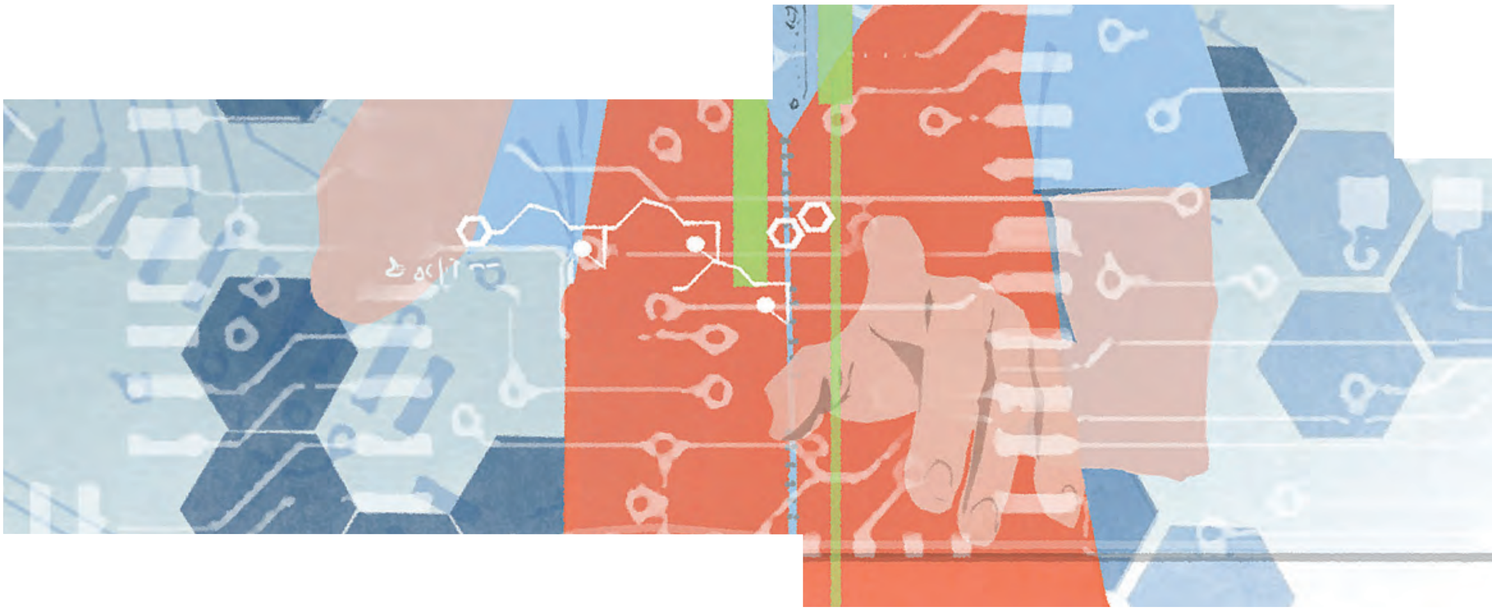
Supply-chain optimization

At a leading European dairy company, raw-milk purchases represented almost 50 percent of the cost base. Most of the raw milk was used to produce pasteurized milk; the company had to decide how much of the rest to use to make butter, cheese, or powdered milk. The profits associated with each of these product categories fluctuated significantly, adding another layer of complexity. In the past, the company gave its regional businesses the freedom to make their own raw-milk allocation decisions, provided they followed a set of simple guidelines. In an effort to reduce costs and optimize supply-chain planning, the company used an analytics software solution that determined the best allocation plans for each region, taking into account variables such as available milk supply, regional factory capacity, and global demand. The improved allocation helped the company increase profits by about 5 percent without changing production volumes or capacity.

The next horizon for digital manufacturing

Consumer companies may also soon reap greater benefits from new digital tools that are continually being refined. Consider the following innovations:

- *Augmented-reality tools.* These tools provide data about the user's environment in real time and facilitate information sharing. With smart glasses, for instance, employees can see and view new work orders while on the factory floor, or take and transmit photos of broken machines to offsite experts. We estimate that smart glasses could improve productivity by 5 to 10 percent by increasing the speed of operations, improving communication, and enabling paperless processes. Other augmented-reality tools could provide instructions to technicians responsible for complex changeovers or to warehouse workers searching for particular items.



- *3-D printing.* Consumer-goods companies could use 3-D technology to facilitate product design and the manufacture of samples. At one shoe manufacturer, 3-D technology reduced the number of work hours needed to create prototypes by more than 80 percent, significantly decreasing prototyping costs. Companies could also use 3-D printing to print low-frequency replacement spare parts on demand at a production site rather than keeping them in stock or having them shipped after a breakdown. This approach would reduce the cost of holding spare parts, facilitate maintenance processes, and reduce downtime.[2]

- *Connected sensors and controls.* Companies across industries have recognized the potential of the Internet of Things (IoT) and invested in connected sensors, such as those that can detect unusual machine vibrations and transmit their findings to monitors in a remote location, allowing offsite staff to direct corrective actions without having to travel to the facility. In heavy industries like mining, IoT sensors have reduced costs by 40 percent and downtime by half. While some consumer companies (such as the diaper manufacturer mentioned earlier) have invested in IoT sensors, most lag behind their peers in other sectors. We believe this will change as IoT offerings become more sophisticated and consumer companies realize the value at stake.[3]

Organizational enablers for digital manufacturing

Some companies, especially those in the services sector, have already made changes to their organizational structures and strategy to support digitization efforts—for example, by buying niche technology players or creating innovation labs in talent-rich locations. Consumer-goods companies must now follow their example to gain maximum benefits as they digitize their own production lines.[4] Since few consumer-goods companies today have the in-house capabilities needed to support the development and use of innovative digital manufacturing tools, they must upgrade their strategies for recruiting, training, and retaining data scientists, software engineers, and other technology staff (exhibit).[5] Competition for this talent is stiff, with demand four times higher than supply for some positions.[6]

Corporate governance must also become more agile to promote digital manufacturing. The technology staff responsible for developing and testing tools should generally have the authority to set budgets and priorities, since they will lose momentum if they have to wait weeks for approval from upper management. When a major initiative does require leadership support or input, local teams should have easy access to decision makers.

Exhibit

Consumer companies will need more capabilities to apply digital manufacturing techniques.

Old	New
New-product introduction	
Relying on expensive trials to introduce new products and having no knowledge of potential impact	Modeling impact and associated costs of new products across the supply chain, reducing the need for trials
Digital experts	
Viewing digital as part of IT, rather than part of day-to-day operations	Viewing digital as a core dimension of manufacturing that must be integrated into daily processes
Managers	
Making decisions based on the previous day's performance or in response to large failures requiring urgent attention	Having real-time data and operational metrics to proactively act on trends before they become an issue
Engineers and maintenance	
Conducting routine inspections and fixing breakdowns	Receiving information generated by equipment about potential problems and taking action to prevent breakdowns
Data scientists	
Using data to understand how failures or losses occurred	Putting data at the core of the decision-making process and using it proactively to improve performance, prevent future losses, and optimize systems
Operators	
Working with technology behind guards and requesting expert support when issues arise	Interacting directly with technology and handling problems independently

Source: McKinsey Global Institute analysis

Finally, large consumer-goods companies may need to pursue partnerships with smaller players or start-ups to gain essential digital capabilities. Many companies in other sectors have already pursued this strategy, with good results. For instance, Amazon acquired Kiva Systems, a small robotics company, to develop the cutting-edge robot technology now in widespread use across its warehouses. Partnerships among large players can also contribute to the development of solid digital platforms. Consider the recent collaboration between SAP, the enterprise-software giant, and UPS, a large package-delivery company. The companies ultimately hope to create a global network that provides industrial 3-D-printing services, on-demand production capabilities, and other services.

■ ■ ■

Consumer companies are already benefiting from the use of digital tools in marketing and sales—applying them to manufacturing is therefore an obvious next step. What is also clear, however, is that companies cannot simply implement digital solutions and hope to achieve lasting impact. They must also undertake an organizational transformation that involves acquiring new talent and capabilities, streamlining the decision-making process, making governance more flexible, and collaborating with external partners. This transformation touches every group within the company and will require the full commitment of employees at all levels. But the long-term benefits of digital solutions, which will usher in a new era of manufacturing efficiency, more than justify the effort. ■

[1] For more on Industry 4.0, see Cornelius Baur and Dominik Wee, "Manufacturing's next act," June 2015, McKinsey.com, and Matthias Breunig, Richard Kelly, Robert Mathis, and Dominik Wee, "Getting the most out of Industry 4.0," April 2016, McKinsey.com.

[2] For more on 3-D printing, see Daniel Cohen, Katy George, and Colin Shaw, "Are you ready for 3-D printing?," *McKinsey Quarterly,* February 2015, McKinsey.com.

[3] See Dan Aharon, Peter Bisson, Jacques Bughin, Michael Chui, Richard Dobbs, James Manyika, and Jonathan Woetzel, "Unlocking the potential of the Internet of Things," McKinsey Global Institute, June 2015, McKinsey.com.

[4] For more on the factors behind successful digital transformation, see "Raise your Digital Quotient," a series of articles on McKinsey.com.

[5] Matthias Daub and Anna Wiesinger, "Acquiring the capabilities you need to go digital," March 2015, McKinsey.com.

[6] "The agile development methodology talent gap," Yoh, 2016, yoh.com.

Søren Fritzen is a senior partner in McKinsey's Copenhagen office, **Frédéric Lefort** is a partner in the Gothenburg office, **Oscar Lovera-Perez** is an associate partner in the London office, and **Frank Sänger** is a senior partner in the Cologne office.

The authors wish to thank Jochen Großpietsch for his contributions to this article.

© Toko Ohmori

Rethinking the rules of reorganization

Play favorites. Ask for bad ideas. Skip meetings. Here's some unconventional advice on how consumer companies can get the most out of an organizational redesign.

Camilo Becdach, Shannon Hennessy, and Lauren Ratner

With the global consumer sector changing at an unprecedented pace, retailers and consumer-goods manufacturers are actively reshaping their business and strengthening their presence in new and fast-growing markets and channels. To help fund their efforts in these new growth areas, companies are on a seemingly constant quest to cut selling, general, and administrative costs—and many of these cost-cutting programs involve reorganization. For example, according to our analysis, approximately 60 percent of companies in the S&P 500 index have launched a large-scale cost-reduction and reorganization initiative within the past five years.

Yet our research shows that only 26 percent of those companies have successfully prevented costs from creeping back up. Worse, many consumer companies are failing to reallocate resources even as their strategies change: their budgets remain skewed toward mature, low-growth brands rather than newer, high-potential brands, or they continue to invest heavily in traditional capabilities such as retail real estate while underinvesting in newer capabilities such as digital marketing and data analytics.

How can companies capture—and sustain—the impact of their cost-cutting and restructuring efforts? We believe part of the answer lies in jettisoning widespread but outdated beliefs about organizational redesign. Our extensive work with leading retailers and consumer-goods companies has shown us that, in many cases, companies would be better off doing the opposite of what conventional wisdom tells them to do. In this article, we outline five new rules of organizational redesign. By following these rules, companies can simultaneously cut costs and drive growth—and do so for the long term.

Rule one: Shake up the core of the organization.

When embarking on cost-cutting programs, many consumer companies adopt a hands-off posture toward what they consider strategic functions—those they see as core to the business, such as marketing and merchandising—and focus instead on finding back-office efficiencies. Companies have repeatedly searched for savings in their cost centers and support functions by implementing lean techniques as well as through more transformative changes such as automation and outsourcing. The core functions, on the other hand, remain full of unexplored opportunities. For example, even companies that have shifted a considerable portion of their media budget from print to digital media continue to retain their print-marketing infrastructure.

The entire organization—no exceptions—should be in scope when contemplating a cost-reduction effort. In our experience, when companies assess the savings potential in all their departments, they identify twice as much savings in the core functions as they do in back-office functions.

Looking at interactions across departments can surface even greater savings potential. Many companies—particularly those that have been in belt-tightening mode for several years—have already tapped into the most obvious savings opportunities within departments or business units, but they've yet to examine inefficiencies in cross-functional, cross-channel, or cross-regional activities and processes. One example of a cross-cutting activity is retail promotions, which typically involve the marketing, sales, and merchandising departments and require coordination across channels (stores, catalogs, and online).

A global beverage manufacturer had been hesitant to even consider trimming its market-research budget, as the company had always viewed market research as central to its success. But, as part of a broad cost-cutting effort, the company decided to review market-research spending line by line: who had commissioned each piece of research, for what purposes, which suppliers conducted the research, and how the results were used across the organization. The company found that its market-research spending was more than twice the industry average and that its supplier base was highly fragmented, consisting of more than 50 providers. Based on its findings, the company made several changes: it redesigned and simplified cross-functional work flows, consolidated its vendor relationships, and created rate cards for standard research types. These changes lowered the company's market-research costs by 20 percent without adversely affecting revenues.

As this example suggests, a cost-cutting program—which companies sometimes view as a necessary evil—can actually help a company become more effective and more agile. Reducing costs, especially in core functions, can be a catalyst toward creating a leaner, faster, and ultimately healthier organization.

Rule two: Play favorites.

Every part of the business must be fair game for cost cutting, but that doesn't mean that every part of the business should have identical cost-reduction targets. When it comes to budgets, management would be smart to play favorites.

An equitable mandate—for instance, "All business units must cut costs by 10 percent"—may sound sensible and wise; after all, it's much easier to get buy-in from across the organization when everyone sees that the burden is shared equally. But such an approach misses the point of a reorganization. Setting across-the-board targets is counterproductive if the goal is to reallocate resources from low-growth to high-growth areas.

Some companies already play favorites, but in a way that doesn't support their strategic priorities. For example, at a global specialty retailer, the bulk of the merchandising department's staff and budget was dedicated to mature brands as opposed to newer, high-growth brands (exhibit). This situation persisted even though the company's strategic plan had called for greater investment in the newer brands. We've seen the same kind of misalignment at several other consumer organizations, from food manufacturers to household-products companies.

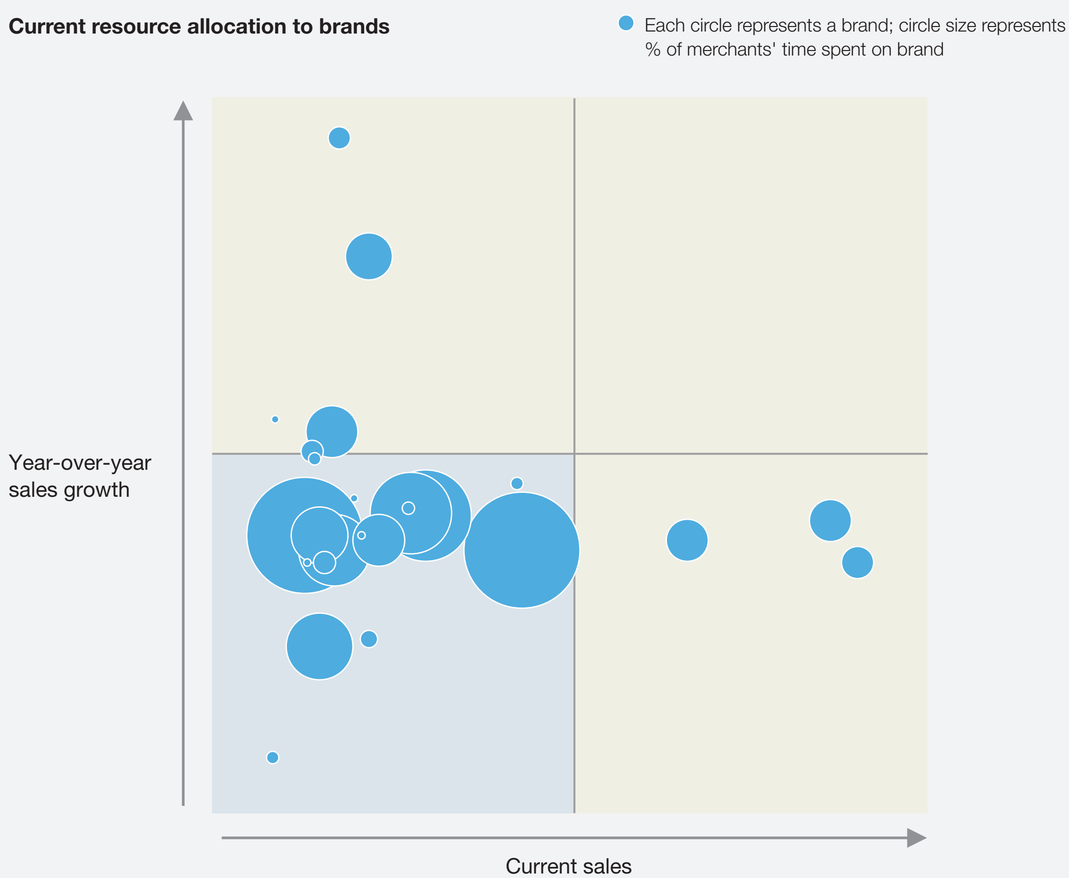
A better approach is to set different cost-reduction targets and investment levels based on a business unit's growth and efficiency potential. Leaders should also define the capabilities that are critical to growth and invest in those capabilities while "leaning out" other areas to free up funding.[1] For example, a global retailer found that by having its copywriters work in both print and digital media instead of exclusively in one media channel, it could create new job positions in digital analytics.

Rule three: Ask for bad ideas.

An ambitious cost-reduction initiative will have the best chances of success if people in the organization are empowered to think creatively and to make bold—even outlandish—suggestions. Role modeling by senior leaders goes a long way here: when leaders aren't shy about offering up ideas that could be controversial or unpopular, they embolden others to do the same.

Exhibit

A specialty retailer found that its merchandising team was spending the most time on mature, low-growth brands.



One hindrance to idea generation is a territorial profit-and-loss (P&L) owner. Conventional wisdom prescribes that the person with P&L responsibility also take charge of a cost-cutting program, because that person will be the most motivated to make it successful. The flip side is that the P&L owner has largely brought about the current state of affairs and therefore may not have an objective view. He or she may find it difficult—even impossible—to envision different ways to structure the work or different roles for individuals he or she hired. The P&L owner might concede to incremental moves but resist a fundamental rethinking of the organization, which in some cases is what's needed.

One proven approach for ensuring objectivity is to form a steering committee comprising the functional leaders and at least two C-level executives. The steering committee's role is to make decisions for the benefit of the entire company rather than just one business area. Committee members should regularly challenge the status quo and push for a "no sacred cows" mentality—for instance, spurring the business unit to consider options that it may have previously viewed as off-limits (such as automation and the use of third-party providers). What might seem a terrible idea to the P&L owner could be an intriguing idea to committee members. Even rejected ideas shouldn't be permanently discarded, but instead kept on a running list to be revisited in the future.

At a US multicategory retailer, the steering committee asked to be informed of all cost-reduction ideas—even those that the business unit had considered and rejected. One such idea was to do away with the gift boxes given to shoppers during the holidays. The business unit felt the move was too radical and would annoy customers who had come to expect retailers to provide free boxes for their holiday-gift purchases. The steering committee implemented it anyway, and the result was $2 million in annual savings. The retailer's chief competitors soon followed suit, eliminating their own practice of giving customers free gift boxes.

Another way to ensure the objective evaluation of ideas is to appoint a neutral "cost-category owner" who can ask tough questions and bring a fresh perspective. At a packaged-goods company, the head of supply chain served as the category owner for marketing co-op funds. This executive was able to discover maverick spending that marketing executives hadn't been aware of.

Rule four: Move beyond benchmarks.

Managers either love or hate benchmarks. Those in the former camp see benchmarks as valuable metrics for understanding the competitive landscape and for triggering important internal discussions; they believe companies should strive to meet or exceed benchmarks. Those in the latter camp argue that every company is unique and that it's therefore unhelpful and illogical to compare one company's decisions, structure, and head count to another's.

Both camps are right, to some extent. Organizational benchmarks can tell a company, for example, the average number of employees its competitors have in each department. But that information is meaningless without deeper insights into what those employees actually do. Thoughtful leaders use benchmarks not as default targets, but rather as indicators that shed light on areas in which a company's investment differs markedly from competitors, and then as a starting point to generate ideas for how to operate more efficiently.

Leading companies complement benchmarks with a thorough diagnostic, encompassing internal quantitative and qualitative analyses (such as time-allocation surveys that highlight the activities to which employees devote most of their workdays). Done right, a diagnostic will surface what should change: Where are the bottlenecks in core processes? Are employees using cutting-edge tools, or are manual processes limiting their productivity? Are they spending too much time on low-impact tasks?

Through benchmarking, a retailer saw that its marketing team was 45 percent larger than the marketing teams of several competitors. Instead of reflexively cutting head count, the retailer dug deeper and discovered that its marketing team produced more than twice the number of catalogs as comparable retailers did. These findings led to data-driven discussions about the retailer's marketing investments. It decided to discontinue its least profitable catalogs, reduce the number of in-store events, and consolidate all marketing-analytics functions—previously dispersed across the company—into centers of excellence. These moves helped shave 15 percent off the company's baseline marketing spend.

Rule five: Skip meetings and stop writing reports.

A reduction in force won't necessarily lead to a reduction in work. Leaders must spell out exactly which activities should cease, which ones should change, and which should continue. Otherwise, those critical decisions could be left up to lower-level employees, and costs could creep back up.

We've found that, in many companies, certain activities take up an inordinate amount of time but yield little benefit. One example is the often dreaded meeting. In general, meetings occur too frequently, last too long, involve too many people, and often don't end with clear next steps. When a US apparel retailer administered time-allocation surveys among members of its product-development team, it found that designers were spending an astounding 70 percent of their week either preparing for or attending meetings. The survey results were an eye-opener and became a powerful case for change. The retailer reduced the number and frequency of meetings as well as the number of meeting attendees, in part by allowing team members to give certain approvals via email or online instead of in person.

Another way to reduce work is to examine a company's decision-making processes. Many companies find that they can halve the number of people involved in making certain strategic decisions. Typically, after an organizational redesign, about 80 percent of decision rights are obvious; only 20 percent—we call them "pinch points"—are murky (in many cases due to shared responsibility) and thus need senior-leadership attention. As part of an effort to increase organizational effectiveness and agility, a global retailer identified its "high-value, high-pain" pinch points—cross-functional decisions that had far-reaching financial or strategic implications but that were widely perceived as slow and painful. A clean-sheet redesign of approximately ten pinch points led to faster, simpler decision making. The duration of each end-to-end process went from ten weeks to approximately six weeks, and in some processes half the steps were eliminated.

Like meetings, business reports can be time wasters. At a global food-and-beverage company, the finance function was constantly churning out financial reports. After close investigation of who was requesting the reports and how frequently, how long they took to prepare, and how they were being used, the company eliminated the laborious but low-impact reports. In total, the finance staff stopped producing 25 percent of the reports, thereby freeing up time for more-valuable activities such as deeper financial analysis.

There may be other activities, beyond meetings and reports, that companies can either de-emphasize or stop doing entirely. Leaders could come up with a list of such activities by asking questions such as, "What tasks are being done purely because the company has always done them? What tasks are employees constantly complaining about as not being worth the time and effort? Are there operations that we could shut down without major repercussions?" The answers may prove surprising.

An organizational redesign won't "stick" without thoughtful change management.[2] One aspect of change management can be compared to a marketing campaign, aimed at making the case for change and inspiring and motivating the organization—perhaps through frequent CEO missives and heartfelt testimonials from leadership. Another is more like a military campaign, concerned with adjusting budgets, establishing checks and balances, and monitoring progress. Retailers and consumer-goods companies that pay close attention to both these hard and soft aspects of change management—while keeping in mind the five rules outlined above—will be well on their way toward building an organization that can continually control costs while also, crucially, building new muscle for growth. ■

[1] For more on resource reallocation, see Yuval Atsmon, "How nimble resource allocation can double your company's value," August 2016, McKinsey.com.

[2] See Boris Ewenstein, Wesley Smith, and Ashvin Sologar, "Changing change management," July 2015, McKinsey.com.

Camilo Becdach is an associate partner in McKinsey's Southern California office; **Shannon Hennessy** is a partner in the Dallas office, where **Lauren Ratner** is a specialist.

Which retail and manufacturing activities are the most automatable?

In both the retail and manufacturing sectors, more than half of employees' work can be automated, according to recent research from the McKinsey Global Institute.

Michael Chui, James Manyika, and Mehdi Miremadi

Which jobs will or won't be replaced by machines? The answers are nuanced: our latest research has begun to show that while automation will eliminate very few occupations entirely in the next decade, it will affect portions of almost all jobs to a greater or lesser degree, depending on the type of work they entail.

In discussing automation, we refer to the potential that a given activity could be automated by adapting currently demonstrated technologies—that is, whether or not the automation of that activity is *technically feasible*.[1] Each occupation is made up of multiple types of activities. Occupations in retailing, for example, involve activities such as processing data, interacting with customers, and setting up merchandise displays. Since all these activities differ in automation potential, we arrive at an overall estimate for the sector by examining the time US workers[2] spend on each of them during the workweek (exhibit).[3]

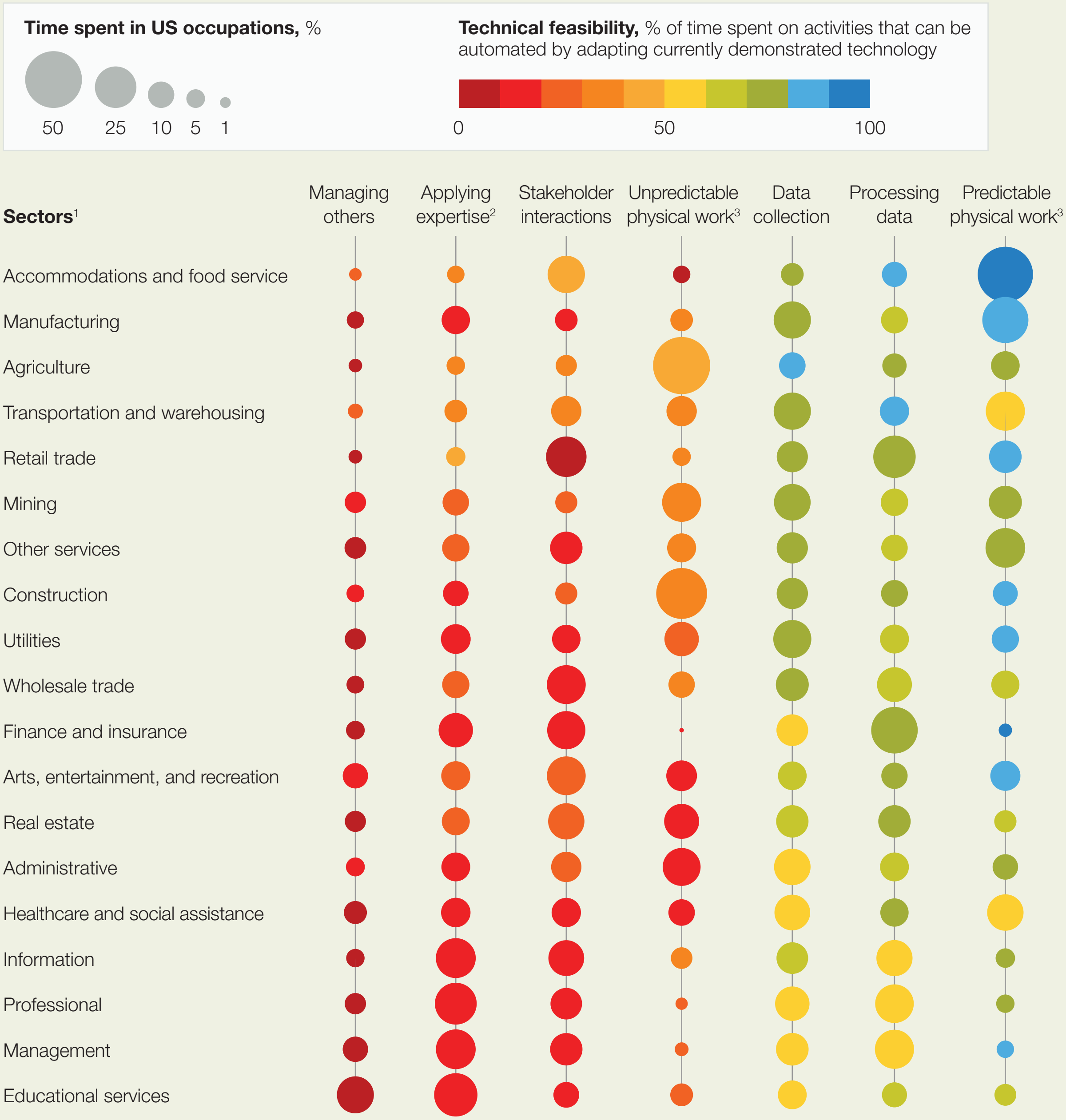
Technical feasibility is a necessary precondition for automation but not a complete predictor that an activity will be automated. A second factor to consider is the cost of developing and deploying both the hardware and the software for automation. The cost of labor and related supply-and-demand dynamics represent a third factor: if workers are in abundant supply and significantly less expensive than automation, this could be a decisive argument against it. A fourth factor to consider is the benefits beyond labor substitution, including higher levels of output, better quality, and fewer errors. These benefits are often greater than those of reducing labor costs. Regulatory and social-acceptance issues, such as the degree to which machines are acceptable in any particular setting, must also be weighed. A robot may, in theory, be able to replace some of the functions of a nurse, for example. But for now, the prospect that this might actually happen in a highly visible way could prove unpalatable for many patients, who expect human contact. The potential for automation to take hold in a sector or occupation reflects a subtle interplay between these factors and the trade-offs among them.

Almost one-fifth of the time spent in US workplaces involves performing physical activities or operating machinery in a predictable environment. We estimate the technical feasibility of automating such activities at 78 percent. Since such activities figure prominently in sectors such as manufacturing, food service and accommodations, and retailing, these sectors are the most susceptible to automation.

Manufacturing. We estimate that some 59 percent of all manufacturing activities could be automated, given technical considerations. The overall technical feasibility, however, masks considerable variance. Within manufacturing, 90 percent of what welders and cutters do, for example, has the technical potential for automation, but for customer-service representatives that feasibility is below 30 percent. The potential varies among companies as well. Our work with manufacturers reveals a wide range of adoption levels—from companies with inconsistent or little use of automation all the way to quite sophisticated users.

Exhibit

Automation is technically feasible for many types of activities in industry sectors, but some activities can be more affected than others.



In practice, automation will depend on more than just technical feasibility. Five factors are involved: technical feasibility; costs to automate; the relative scarcity, skills, and cost of workers who might otherwise do the activity; benefits (eg, superior performance) of automation beyond labor-cost substitution; and regulatory and social-acceptance considerations.

[1] **Agriculture** includes forestry, fishing, and hunting; **other services** excludes federal-, state-, and local-government services; **real estate** includes rental and leasing; **administrative** includes administrative support and government administration; **healthcare and social assistance** includes private, state-government, and local-government hospitals; **professional** includes scientific and technical services; **educational services** includes private, state-government, and local-government schools.

[2] Applying expertise to decision making, planning, and creative tasks.

[3] Unpredictable physical work (physical activities and the operation of machinery) is performed in unpredictable environments, while in predictable physical work, the environments are predictable.

Source: McKinsey analysis

Automation of some human activities in an occupation does not necessarily spell the end of the jobs in that line of work. On the contrary, their number at times increases in occupations that have been partly automated, because overall demand for their remaining activities has continued to grow.

Food service and hospitality. Almost half of all labor time in this sector involves predictable physical work—including preparing, cooking, or serving food and collecting dirty dishes. According to our analysis, 73 percent of the activities workers perform in this sector have automation potential, based on technical considerations. Restaurants are now testing new concepts like self-service ordering or even robotic servers. Solutions such as Momentum Machines' hamburger-cooking robot, which can reportedly assemble and cook 360 burgers an hour, could automate a number of activities.

Retail. We estimate that 53 percent of retail activities are automatable, though much depends on the specific occupation. Stocking merchandise and gathering customer or product information have a high technical potential for automation. But retailing also requires cognitive and social skills. Advising customers which cuts of meat or what color shoes to buy requires judgment and emotional intelligence. We calculate that 47 percent of a retail salesperson's activities have automation potential—far less than the 86 percent possible for the sector's book-keepers and accountants.

Automation of some human activities in an occupation does not necessarily spell the end of the jobs in that line of work. On the contrary, their number at times increases in occupations that have been partly automated, because overall demand for their remaining activities has continued to grow. For example, the large-scale deployment of bar-code scanners and associated point-of-sale systems in the United States in the 1980s reduced labor costs per store by an estimated 4.5 percent and the cost of the groceries consumers bought by 1.4 percent. But cashiers were still needed; in fact, their employment grew at an average rate of more than 2 percent between 1980 and 2013.

The hardest activities to automate with currently available technologies are those that involve managing and developing people (9 percent automation potential) or that apply expertise to decision making, planning, or creative work (18 percent). These activities, often characterized as knowledge work, can be as varied as coding software, creating menus, or writing promotional materials. For now, computers do an excellent job with very well-defined activities, such as optimizing trucking routes, but humans still need to determine the proper goals, interpret results, or provide commonsense checks for solutions.

Understanding the activities that are most susceptible to automation could provide a unique opportunity to rethink how workers engage with their jobs. It could also inspire top managers to think about how many of their own activities could be better and more efficiently executed by machines, freeing up executive time to focus on the core competencies that no robot or algorithm can replace—as yet.

[1] We define “currently demonstrated technologies” as those that have already exhibited the level of performance and reliability needed to automate 1 or more of 18 capabilities involved in carrying out work activities. In some cases, that level of performance has been demonstrated through commercially available products, in others through research projects.

[2] The full results of our research, forthcoming in early 2017, will include several other countries.

[3] For a deeper look across all sectors of the US economy, see the data representations from McKinsey on automation and US jobs, on public.tableau.com.

This article is an edited excerpt from “Where machines can replace humans—and where they can’t (yet),” which first appeared in July 2016 on McKinsey.com.

Michael Chui is a partner in McKinsey’s San Francisco office, where **James Manyika** is a senior partner; **Mehdi Miremadi** is a partner in the Chicago office.

The practical—and powerful—uses of big data in retail

A set of user-friendly apps equips retail CEOs and category managers with valuable real-time insights, helping them make consumer-centric business decisions.

Peter Breuer, Tobias Wachinger, and Christian Weber

Big data and advanced analytics are no longer just corporate buzzwords. And they're not esoteric tools used by only a handful of the most innovative companies. In the retail industry, they've become table stakes—capabilities that every retailer must develop in order to remain competitive. Yet, despite the massive amounts of transaction data (and, in some cases, loyalty-card data) that retailers collect every day, few retailers have actually managed to tap into big data and advanced analytics on a practical level, much less integrate them into the day-to-day decisions of managers and employees across the organization.

Most retail executives are aware that mining their data to generate timely and actionable insights requires sophisticated solutions. In addition, the insights need to be easily accessible and presented in an intuitive way if they're to be of any use to category managers and frontline decision makers.[1]

McKinsey's Customer Insights solution delivers robust, easy-to-interpret retail insights. Customer Insights (built on our 4tree 2.0 platform and part of McKinsey's Periscope suite of solutions) is a series of application-based tools that analyze transaction and loyalty-card data to help retailers understand shopper behavior.[2] The tools perform real-time analyses and simulations on big data sets, and present the information in simple charts and graphs that are useful to decision makers at various levels of a retail organization, helping them make better merchandising decisions. The tools can be customized according to individual retailers' needs and preferences, and then rolled out organization-wide in a matter of weeks.

The Customer Insights apps support retailers in three critical areas: assortment, promotions, and brand-performance analysis. The typical impact of using the apps is a 2 to 5 percent increase in return on sales. In addition, some retailers have opted to sell subsets of the solution's outputs to suppliers, generating new revenue that typically exceeds their investment in Customer Insights by a factor of three to five.

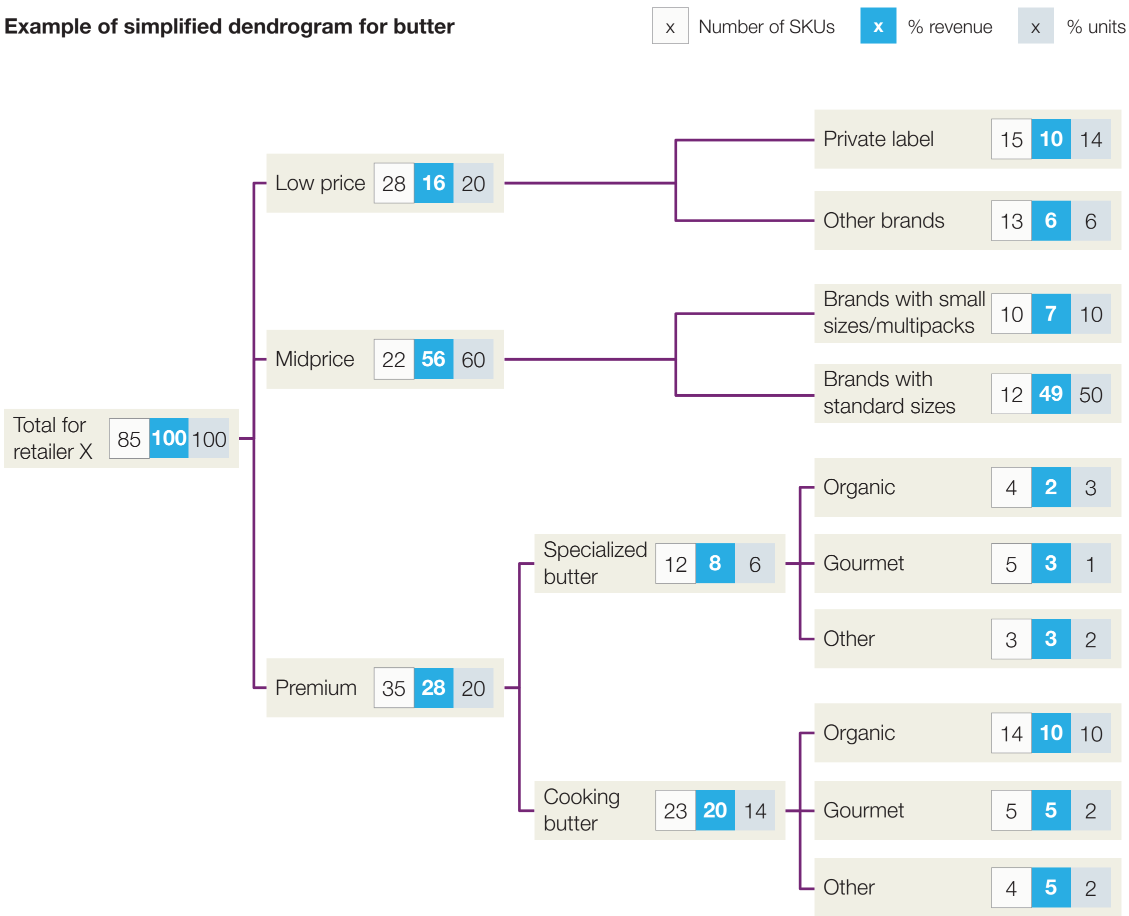
Assortment optimization

Statistically derived "customer decision trees," or dendrograms, are a core part of the Customer Insights offering. The assortment app generates dendrograms that illustrate the hierarchy of choices that customers make before buying a specific SKU within a product category—and the results are often surprising to category managers. The exhibit, for example, shows a partial (and vastly simplified) dendrogram for the butter and margarine category at a European retailer. When buying butter, this retailer's customers consider price levels first—not brand or type, as the retailer initially believed.

Exhibit

Statistically derived customer-decision trees yield quantified, actionable insights for retailers.

Example of simplified dendrogram for butter



One valuable metric that the assortment app can generate is the SKU "walk rate." The app calculates the likely sales loss if the SKU is unavailable, by estimating how many customers will purchase a substitute product versus how many will leave the store without buying a substitute. By analyzing incremental revenue, the tool can determine which products play a unique role in the assortment and which ones are substitutable. Category managers can thus make data-driven decisions as to which products to keep and which to delist. The insights can also support decisions on macro and micro space allocation and planograms. After optimizing assortments using the app, retailers typically see a 1 to 3 percent rise in sales.

Promotions optimization

Measuring the effectiveness of promotions is a notoriously difficult challenge for category managers. The promotion app within Customer Insights, powered by advanced analytics, allows managers to quickly understand customer shopping patterns and the performance of recent promotions (see sidebar, “Case example: Bottled water”). It helps category managers derive fact-based answers to questions such as, “Which products should we promote? On which day of the week, and for how long? For each product, which types of discounts are most effective in attracting profitable customers, not just cherry pickers?” By analyzing historical purchasing data, the app delivers insights about price elasticity, incremental traffic and volume generated by past promotions, cannibalization effects, and cross-selling effects. The app can also analyze loyalty-card data to identify the products—and, just as important, the combinations of products—that specific customer segments tend to buy repeatedly over a certain period of time, thus helping retailers craft highly targeted offers.

In short, the promotion app helps category managers plan promotions that more effectively spur specific consumer behaviors such as increasing the frequency of store visits, adding items to the shopping basket, or choosing higher-margin private-label products. Retailers that have used the promotion app have seen a 2 to 3 percent increase in sales of promoted products and increases of up to 10 percent in promotions margins.

Brand-performance analysis

The performance-analysis app allows a category manager to quantify each brand and supplier’s current portfolio performance (both overall and by SKU), the level of support

Case example: Bottled water

By using the Customer Insights apps, a retailer discovered that its higher-income customers were reducing their purchases of bottled water, with the steepest declines in specialty water and sparkling water. Furthermore, the retailer’s least profitable customer segments were cherry-picking, buying only the bottled-water brands being sold at discounted prices. The retailer’s promotions drove no incremental shopping trips or revenues and, in fact, reduced profit because customers were opting to buy discounted brands rather than the retailer’s private-label offering.

In response, the retailer broadened its selection of specialty and sparkling waters in stores in upscale neighborhoods. It also created promotions targeted at specific customers, rather than launching mass promotions. And it eliminated one of its biggest suppliers of bottled water, for two reasons: analysis showed that customers would willingly switch to private label if that brand weren’t available, and eliminating that brand would reduce promotional frequency in the category.

Within a year, the retailer earned back share from upscale competitors, grew the bottled-water category approximately 10 percent compared with the previous year, and significantly reduced cost of goods sold.

the supplier provides, the substitutability of its products, and how important its brands are to the retailer's customers. This wealth of information can help retailers identify potential areas for greater retailer–supplier collaboration.

■ ■ ■

Merchandising insights shouldn't be produced by a centralized analytics team and then handed over to decision makers. Instead, people in pivotal roles—such as category managers, promotion managers, regional managers, and the supplier-negotiations team—should receive training and ongoing coaching on how to use the tools as part of their day-to-day work. By equipping all relevant stakeholders with these digital tools, a retailer can quickly and continually turn consumer insights into business impact. ■

---

[1] See Peter Breuer, Lorenzo Forina, and Jessica Moulton, "Beyond the hype: Capturing value from big data and advanced analytics," *Perspectives on retail and consumer goods,* Spring 2013, McKinsey.com.
[2] To learn more about Customer Insights, visit 4tree.com and periscope-solutions.com/solutions/customer-insights.aspx.

Peter Breuer is a senior partner in McKinsey's Cologne office, **Tobias Wachinger** is a senior partner in the Munich office, and **Christian Weber** is a senior expert in the Hamburg office.

The authors wish to thank Yvonne Fahy and Sebastian Hanhues for their contributions to this article.

Contributors

Editorial-board member

External contributor

Camilo Becdach
Associate partner
Southern California

Klaus Behrenbeck
Senior partner
Cologne

Peter Breuer
Senior partner
Cologne

Raphael Buck
Partner
Zurich

Michael Chui
Partner
San Francisco

Søren Fritzen
Senior partner
Copenhagen

Christoph Glatzel
Senior partner
Cologne

Oliver Heinrich
Consultant
Munich

Shannon Hennessy
Partner
Dallas

Matt Hopkins
Principal
Blue Yonder

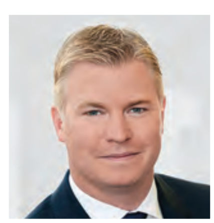
Roelof Joosten
CEO
FrieslandCampina

Benedikt Krings
Consultant
Munich

Dymfke Kuijpers
Senior partner
Amsterdam

Jörn Küpper
Senior partner
Cologne

Simon Land
Partner
Dusseldorf



Tim Lange
Consultant
Cologne

Daniel Läubli
Partner
Zurich

Frédéric Lefort
Partner
Gothenburg

Oscar Lovera-Perez
Associate partner
London

James Manyika
Senior partner
San Francisco

Dennis Martinis
Senior partner
Geneva

Mehdi Miremadi
Partner
Chicago

Alberto Mussa
Associate partner
Milan

Nora Ottink
Associate partner
Amsterdam

Lauren Ratner
Specialist
Dallas

Stefan Rickert
Partner
Hamburg

Jørgen Rugholm
Senior partner
Copenhagen

Frank Sänger
Senior partner
Cologne

Markus Schmid
Partner
Munich

René Schmutzler
Consultant
Hamburg

Alexander Thiel
Associate partner
Zurich

Marc van Rooijen
Senior partner
Amsterdam

Tobias Wachinger
Senior partner
Munich

Christian Weber
Senior expert
Hamburg

Uwe Weiss
CEO
Blue Yonder

Anja Weissgerber
Senior expert
Berlin

Stefano Zerbi
Partner
Milan

Regional contacts

Western Europe

Jörn Küpper
Senior partner, Cologne
Joern_Kuepper@McKinsey.com
Christophstraße 17
50670 Köln
Germany
Voice: 49 (221) 20 8 70

- **Austria, Germany, and Switzerland**

Tobias Wachinger
Senior partner, Munich
Tobias_Wachinger@McKinsey.com
Sophienstraße 26
80333 München
Germany
Voice: 49 (89) 55 94 0

- **France**

Clarisse Magnin
Senior partner, Paris
Clarisse_Magnin@McKinsey.com
90, Avenue des Champs-Elysées
75008 Paris
France
Voice: 33 (1) 40 69 14 00

- **Northern Europe**

Philip Christiani
Partner, Copenhagen
Philip_Christiani@McKinsey.com
Ved Stranden 14
1061 Copenhagen K
Denmark
Voice: 45 3393 3030

- **Southern Europe**

Antonio Achille
Senior partner, Milan
Antonio_Achille@McKinsey.com
Piazza del Duomo, 31
20122 Milan
Italy
Voice: 39 (02) 72406 1

- **United Kingdom and Ireland**

Jessica Moulton
Partner, London
Jessica_Moulton@McKinsey.com
No. 1 Jermyn Street
London SW1Y 4UH
United Kingdom
Voice: 44 (20) 7839 8040

Eastern Europe, Middle East, and Africa

Peter Breuer
Senior partner, Cologne
Peter_Breuer@McKinsey.com
Christophstraße 17
50670 Köln
Germany
Voice: 49 (221) 20 8 70

- **Africa**

Vikas Sagar
Senior partner, Johannesburg
Vikas_Sagar@McKinsey.com
Sandown Mews East
88 Stella Street
Sandown 2196 Johannesburg
South Africa
Voice: 27 11 506 8000

- **Central Europe**

Wojtek Bogdan
Senior expert, Warsaw
Wojtek_Bogdan@McKinsey.com
Metropolitan
Plac Pilsudskiego 2
00-073 Warsaw
Poland
Voice: 48 (22) 820 5700

Jurica Novak
Senior partner, Bucharest
Jurica_Novak@McKinsey.com
5 Demetru I. Dobrescu Street, district 1
010026 Bucharest
Romania
Voice: 40 21 207 83 00

- **Commonwealth of Independent States**

Alex Sukharevsky
Senior partner, Moscow
Alex_Sukharevsky@McKinsey.com
5 Lesnaya St., Building “C”
Moscow, Russia, 125-047
Voice: 7 495 424 8000

- **Middle East**

Alex Sawaya
Partner, Dubai
Alex_Sawaya@McKinsey.com
Dubai International Financial Center
Level 4, Building 4
P.O. Box 33538
Dubai, UAE
Voice: 971 4 389 9000

- **Turkey**

Ilke Bigan
Partner, Istanbul
Ilke_Bigan@McKinsey.com
Tekfen Tower
Buyukdere Cad. No. 209 Kat 14
34394 4.Levent
Istanbul
Turkey
Voice: 90 (212) 339 49 00

Winter 2016/17
Designed by Global Editorial Services

This McKinsey Practice Publication meets the Forest Stewardship Council® (FSC®) chain-of-custody standards. The paper used in this publication is certified as being produced in an environmentally responsible, socially beneficial, and economically viable way.

Printed in the United States of America.

FSC Logo here
63% BLACK