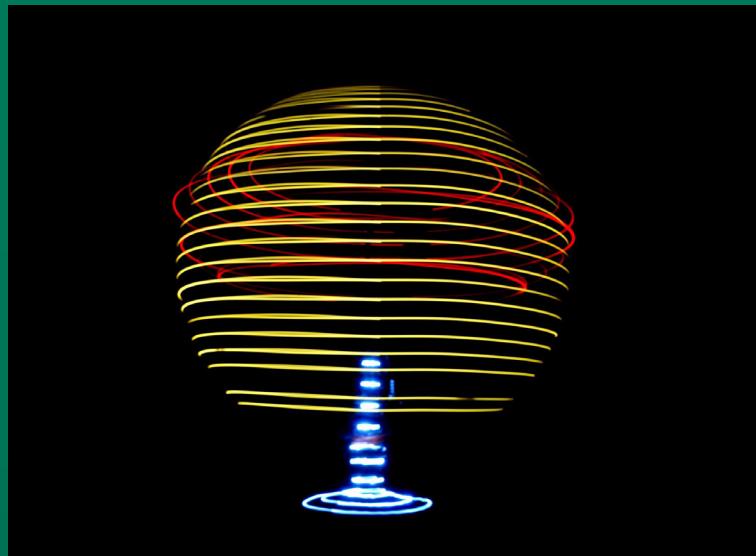




THE BOSTON CONSULTING GROUP



The Association of Food, Beverage
and Consumer Products Companies



ACCELERATING DIGITAL INNOVATION IN CPG

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ACCELERATING DIGITAL INNOVATION IN CPG

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EXECUTIVE SUMMARY

FACED WITH DIGITAL DISRUPTION and competition from smaller rivals and startups, traditional consumer packaged goods (CPG) companies are turning to their IT organizations for help. Chief information officers (CIOs) are being asked to lay a foundation for future innovation. Just about any kind of innovation a CPG company may undertake today—such as integrating more tightly with third-party e-commerce channels or setting up interactive store displays—has implications for, and an impact on, the company's core IT systems. CIOs must plan for changes even as they continue to oversee their company's legacy systems and software.

This report provides a snapshot of how the industry's CIOs are balancing their growing responsibilities. It is based on a 2017 survey of 37 major CPG companies, conducted by The Boston Consulting Group and the Grocery Manufacturers Association (GMA). BCG also interviewed roughly one-third of the participating companies. Here are the main findings.

IT organizations across the CPG industry have made progress in reducing their operating costs.

- For large CPG companies, median IT operating costs were 1.39% of revenue in 2016, down from 1.58% in 2013. The savings were enabled by cuts in virtually every category of IT spending, including infrastructure, enterprise software projects, and management.
- Small and midsize CPG companies had even lower median IT operating expenditures in 2016 (1.28% of revenues) and have seen their IT expenses fall more rapidly since 2013. This is partly because of faster revenue growth at these companies.

Most CPG companies don't yet stand out as IT innovators—even those companies spending heavily on technology.

- IT innovation in CPG companies is best measured by the breadth and level of digital investments, the extent of direct-to-consumer

activities, the application of advanced analytics, and the use of innovation accelerators. Many CPG companies have made investments in these areas, but few have done so in a comprehensive way that has allowed them to break out of the pack.

- Although the CPG companies with the highest innovation scores have IT expenditures that exceed the median, some “full spenders” (CPG companies that devote more than 1.4% of revenue to IT operations) are no more innovative than frugal spenders. And a few frugal spenders have been able to achieve above-average innovation scores.
- The survey data let us assess CPG companies according to their level of IT innovation. In increasing order of their success at driving IT-enabled innovation, the companies are characterized as deliberators, explorers, pioneers, and (the most innovative of all) leaders.

Few CPG companies have embraced agile software development as an innovation imperative; more companies have made progress with software as a service (SaaS).

- As was true two years ago, when BCG and GMA last conducted this survey, there isn’t a high level of investment in agile software development. The majority of CPG companies use an agile approach for less than one-third of their projects. Only about half of CPG companies plan to increase their use of it in the near term.
- CPG companies’ commitment to agile development must increase. Five years from now, a CPG company that isn’t using agile for most of its development projects is unlikely to be competitive in terms of digital technology.
- On a brighter note, in the past two years, CPG companies have increasingly adopted SaaS applications and expanded their use of cloud environments. Although on-premises software remains dominant today, the shift to SaaS has begun, and the economic benefits are increasing.

INNOVATION IS NOW THE RESPONSIBILITY OF CIOS

FOR MANY YEARS, CHIEF information officers (CIOs) at consumer packaged goods (CPG) companies have primarily focused on ensuring that their IT systems ran smoothly. Sales forces depended on brand strength and consumer mass marketing to sell products; CIOs were expected to maintain enterprise resource planning, finance, and HR systems—and to do so while staying within budget. Generating revenue, directly or indirectly, was not the responsibility of CIOs at CPG companies.

Times have changed. Innovations from younger CPG companies and shifts in consumer preferences toward craft and artisanal products are reducing the demand for older, iconic brands and eroding their market share. Mature brands are also losing share because they don't use digital technologies to develop, market, and sell products as nimbly as younger CPG companies do.

As CPG companies look to recapture growth, they are increasingly turning to technology to foster innovation. That is thrusting CIOs and IT organizations into a role that is much more central to their companies' innovation efforts.

The new responsibility hasn't come with more resources, however. On the contrary, most CPG CIOs are facing increased budgetary constraints, either because of a loss in

their company's market share or a rise in shareholder activism, or both.

A picture of how CPG CIOs are responding to the new pressures emerges from BCG's biennial survey of the sector. Conducted in conjunction with the Grocery Manufacturers Association, the survey of 37 of the world's most prominent CPG manufacturers shows that CPG IT organizations still have a long way to go to meet the innovation imperative.

On the bright side, CPG IT organizations have made good progress in reducing their IT spending.

Four years ago, about one-third of all CPG companies could be characterized as frugal spenders, with IT operating expenditures accounting for 1.4% of revenue or less. Today, about half are below this threshold. (See Exhibit 1.)

A number of practices differentiate frugal CPG IT organizations from their full-spending counterparts. Frugal spenders, for example, are willing to live with slower recovery times from a critical systems outage than are full spenders. Frugal spenders also get by with smaller IT staffs. They pay less, on average, to those staffs. And they put more restrictions on all employees' access to IT services, such as printers and smartphones. These practices help them keep their IT costs low.

EXHIBIT 1 | Half of CPG IT Organizations Are Now Frugal Spenders



Sources: GMA Information-Technology Benchmarking 2013, 2015, and 2017; BCG analysis.

Note: Sample size is 37. Because of rounding, not all percentages add up to 100.

COMPANIES ARE UNDER PRESSURE TO RETHINK IT COSTS

CPG COMPANIES ARE UNDER increasing pressure to operate efficiently. The decline in revenues has led to more careful budgeting across all functions, at every level, and in every business unit, particularly at European and North American companies. Incumbents in the beverage, food, household products, and personal care categories are all in the same situation: there is a smaller company somewhere that has taken market share from them with some sort of innovation—often in the form of a product that promotes health, provides convenience, or is considered sustainable. As smaller competitors have gained momentum, CPG incumbents have been forced to scrutinize their expenditures on a company-wide basis and cut costs.

Zero-based budgeting partly explains why IT organizations are flatter.

In the past few years, private equity players have set the benchmark for expense reduction at CPG companies—and no firm has done this more dramatically than 3G Capital. As an outsider in the CPG industry, 3G Capital has been comfortable acting as a change agent. The firm took H.J. Heinz private in 2013 and then engineered the merger of

Heinz and Kraft Foods Group two years later. Both companies were forced to implement a particularly uncompromising form of zero-based budgeting (ZBB) in which open communication about business units' numbers and the swift replacement of underperforming managers increased the stakes associated with budget reviews.

From a cost perspective, the move to ZBB was transformative. In 2012, when Heinz and Kraft were still independent, their combined EBITDA margin would have been 17.6%. In late 2017, when they were one company under 3G Capital, their EBITDA margin was almost 32%. The improved margin allowed Kraft Heinz to generate \$3 billion more in annual operating profit than the companies generated independently in 2012, despite a decline in revenue that affected the “big food” industry as a whole. (The revenues of Heinz and Kraft fell 2.8% a year over this five-year period.) Other mature CPG companies followed Kraft Heinz’s lead, implementing ZBB programs of their own. Essentially, ZBB has become a way of increasing margins at a time when the CPG sector as a whole isn’t growing.

CPG companies’ IT organizations haven’t been exempt from ZBB, and this partly explains why so many of them look different today than they did two years ago. IT staffs are smaller and organizations are flatter. In 2016, the number of full-time equivalents (FTEs)

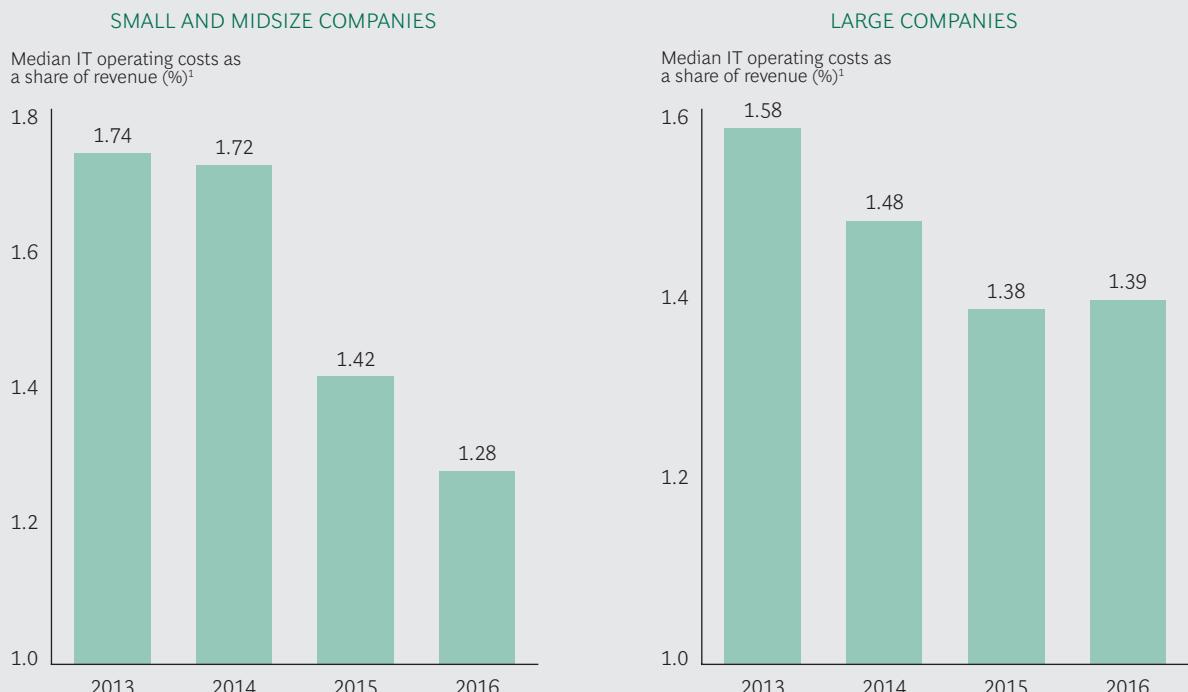
for every \$1 billion in revenue was about 32, down from 36 in 2014, according to our survey. Each FTE supported 69 employees in 2016, compared with 58 in 2014. For practically every category of IT spending, the amount expended as a percentage of revenue in 2016 was less than the amount expended as a percentage of revenue in 2014; the costs for infrastructure, enterprise software projects, management, and depreciation and amortization were all lower. The only exception was applications support; its costs were higher, though this was at least partly because of the increased use of software as a service.

The overall decline in IT spending also reflects the comprehensive actions that some CPG companies are taking. These companies are exiting high-cost data centers and replacing expensive telecom networks with low-cost internet connections. They're consolidating redundant applications, eliminating noncritical maintenance, and cutting down on their use of expensive contractors. They're also flattening their organizations and increasing managers' spans of control.

The companies taking these comprehensive actions have lowered the CPG industry's median IT spending level over the past four years. The efficiency gains have been greater among small to midsize CPG companies than they have been among large ones. Small and midsize companies have also increased their market share and revenues. As a result, their IT operating costs as a percentage of revenue have declined. Large CPG companies have faced more challenges to growth; because of this, their IT operating costs as a percentage of revenue have declined less than those of smaller CPG companies. For large companies, median IT operating costs were 1.39% of revenue in 2016, compared with 1.28% of revenue for small and midsize CPG companies. (See Exhibit 2.)

Given the slowing growth among mature CPG companies, being disciplined about IT costs is necessary. So, too, is prioritizing IT innovation, but CPG companies haven't made nearly as much progress in this area.

EXHIBIT 2 | Small and Midsize CPG Companies Have Lower IT Costs



Sources: GMA Information-Technology Benchmarking 2017; BCG analysis.

Note: Small and midsize companies' revenue is less than \$5.5 billion; large companies' revenue is \$5.5 billion or more. The sample size is 14 small and midsize companies and 23 large companies.

¹Includes depreciation.

DEFINING IT INNOVATION IN CPG COMPANIES

BEFORE WE ADDRESS THE question of how CPG companies can become more innovative at a time of low growth, let's take a look at what sets innovative organizations apart. BCG's IT innovation analysis considers four dimensions:

- **The Breadth and Level of Digital Investments.** This refers to the number of ways in which a CPG company makes digital investments to enhance its capabilities. For instance, a CPG company may invest in digital marketing; integrating its systems more tightly with those of third-party e-commerce channels, such as Amazon and Walmart.com; adding transparency to its supply chain so, for example, customers know exactly when a shipment is arriving; or improving cybersecurity. The breadth and level of such investments speak to how fully the company's operations are digitalized, and they are a sign of innovation.
- **The Extent of Direct-to-Consumer Activities.** CPG companies have an opportunity to create consumer databases in three main ways: by collecting information from consumers who use company-owned digital media, such as websites and apps; by purchasing third-party data; and—perhaps most powerfully—by combining the two. The existence of these databases and the richness of their

insights about individual consumers are indicative of innovation; so is a company's use of such databases to test new product concepts or to target customers with personalized offers on the basis of their unique demographics.

Some early examples of direct-to-consumer activities include Tyson Foods' and Campbell Soup's forays into selling meal kits; Procter & Gamble's pgshop.com, an e-commerce site that sells products such as Pampers diapers and Tide detergent; and Unilever's acquisition of the Dollar Shave Club, which markets a \$1-a-month razor blade subscription service.

- **The Application of Advanced Analytics.** CPG companies can use analytics to improve business performance in a number of ways. At many companies, analytics programs now optimize pricing, increase the effectiveness of the sales force, or improve inventory management.

Demand forecasting and equipment management are other areas where the use of analytics is growing. Some companies are using analytics to predict demand for new products, and these automated forecasts have turned out to be more accurate than manual ones that rely on spreadsheets or sales managers' prior experience and judgment. Other compa-

nies are using analytics to more effectively manage plant equipment. At these companies, sensors alert operations staff when equipment needs to be serviced, helping to avoid breakdowns and costly delays.

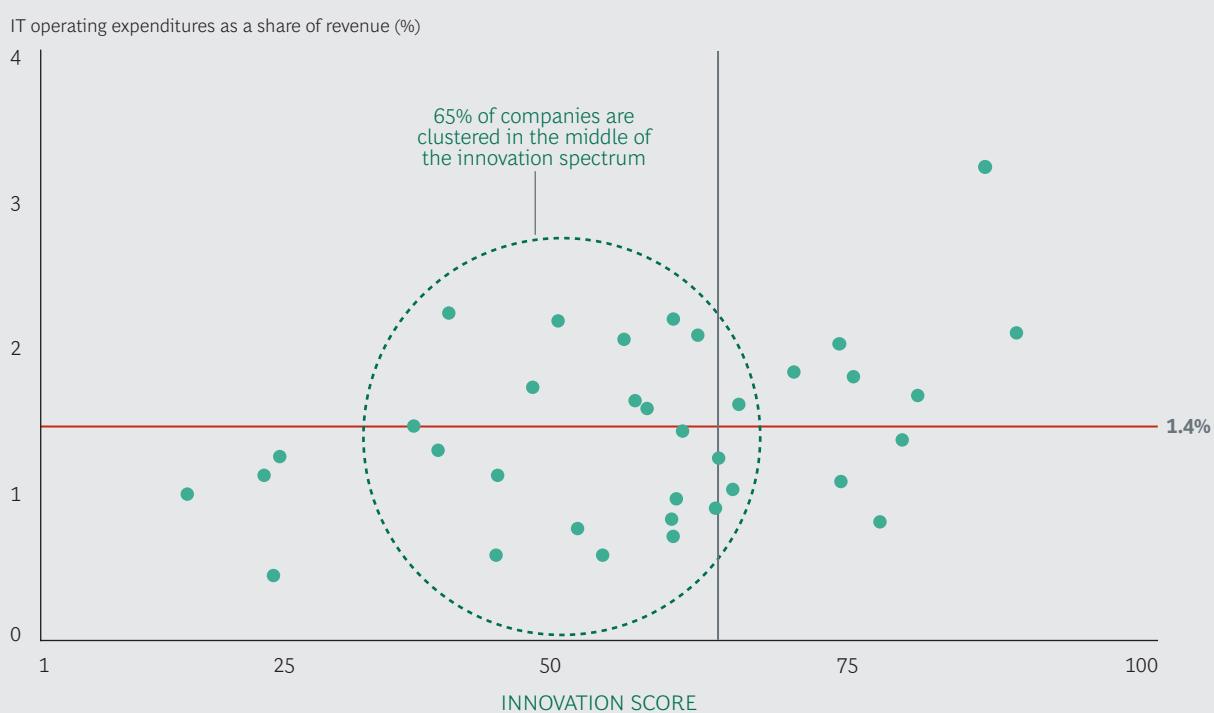
- **The Use of Innovation Accelerators.** A CPG company's commitment to innovation is also evident in its willingness to explore new technologies. For instance, the company might invest in startups; agree to pilot new technologies; open offices in places such as Silicon Valley, Berlin, or London, all of which have talent with the latest skills; hold "hackathons" in which programmers collaborate; or pay outside developers to build working prototypes of new products.

The Unilever Foundry is a good example of an innovation accelerator. In effect, Unilever uses the Foundry to crowdsource solutions to problems that its business units are facing in digital technology and software development. The startups and young companies that appear on Unilever's radar as a result of the Foundry help the

company overcome some technological hurdles. These startups also expose Unilever to ideas and technologies that it may not otherwise learn about. For instance, through the Foundry, Unilever learned about paper-thin sensors that could be embedded in printed posters to make them interactive. Seeing the potential, Unilever worked with the UK-based developer of the technology to build interactive store displays for supermarkets.

BCG analyzed CPG companies' activities along these dimensions and calculated a composite innovation score, from 1 to 100, for each company. Only about one out of every three CPG companies qualifies as innovative; the rest have middling to low innovation scores. (See Exhibit 3.) Although companies' CIOs and IT organizations are clearly doing a better job of controlling costs, most of them aren't yet devoting sufficient attention to enabling innovation. (See the appendix for the list of companies that participated in this year's survey.)

EXHIBIT 3 | Even at Higher Spending Levels, IT Innovation Tends to Be Limited



Sources: GMA Information-Technology Benchmarking 2013, 2015, and 2017; BCG analysis.

Note: Sample size is 35. The innovation score is a composite number that reflects a company's performance on the four dimensions of IT-enabled innovation. The lowest-scoring company in our survey had an innovation score of 13; the highest score was almost 86.

WHAT INNOVATORS DO DIFFERENTLY

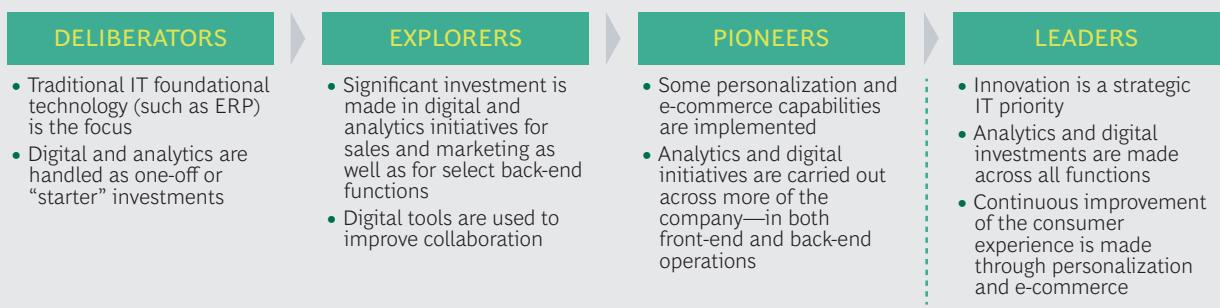
TO GET A SENSE of what's happening in IT organizations, and to help them understand what they could be doing differently, we surveyed CIOs and other IT executives at CPG companies. The survey covered 16 digital transformation priorities and allowed us to assess CPG companies according to their level of IT innovation. (See the sidebar "Measuring Digital Transformation.") In increasing order of innovativeness, companies are characterized as deliberators, explorers, pioneers, or leaders. (See Exhibit 4.)

In the revenue-challenged CPG environment, both leaders and deliberators think that their marketing functions would benefit from a digital transformation. Beyond that, their thinking diverges, with leaders apt to see more functions as benefiting from change. (See Exhibit 5.)

Leaders, which are the most innovative companies, have the highest IT spending as a percentage of revenue—a median of 1.72%, compared with 1.18% for deliberators. (See Exhibit 6.) To put this in perspective, a leader with \$10 billion in revenue would spend \$54 million more on IT than a deliberator of the same size. Companies in the leaders category also pay more in compensation, an average of \$135,000 per IT FTE, compared with an average of \$125,000 for deliberators, a difference largely explained by leaders hiring highly skilled staff to pursue new areas, such as digital services, analytics, cloud computing, and mobile services. Leaders also work on 12.4 of the 16 digital transformation priorities, on average—more than twice the number that deliberators work on.

Leaders also stand out because of how they use analytics. Leaders' analytics use extends

EXHIBIT 4 | CPG Companies Can Be Characterized by Their Approach to Innovation



Source: BCG analysis.

Note: ERP = enterprise resource planning.

MEASURING DIGITAL TRANSFORMATION

Increasingly, IT organizations are trying to assess the progress of their digital transformations—and figure out how they stack up against their peers. However, sometimes these efforts are made without a clear definition of digital transformation. That, in turn, limits the usefulness of these

assessments and makes peer-group comparisons impossible. To help CPG companies get a sense of their progress, BCG surveyed each participating company about its investments in 16 digital transformation areas. (See the table below.)

SURVEY TOPICS

E-commerce	<ul style="list-style-type: none">Enabling third-party online channelsMobile commerce platforms and applicationsWeb commerce platforms and applications
Consumer engagement	<ul style="list-style-type: none">Digital marketingSocial media platforms and applicationsOne-to-one consumer relationships
Enhanced data collection and management	<ul style="list-style-type: none">Cybersecurity and data privacyMaster data integrationData analytics and big dataDigital workforce and collaboration tools
Front-end enterprise applications	<ul style="list-style-type: none">Digital merchandisingDigital selling
Back-end enterprise functions	<ul style="list-style-type: none">Digital financeDigital supply chain: transportation and logisticsSourcing and supplier relationship managementDigital inventory management

to multiple parts of the CPG value chain, including sales force effectiveness, inventory management, digital marketing, the supply chain, manufacturing, and e-commerce. Deliberators are much further behind in how they use analytics, though our survey suggests there is a great deal of interest in this area and that the gap in adopting analytics could narrow appreciably over the next 18 months. (See Exhibit 7.)

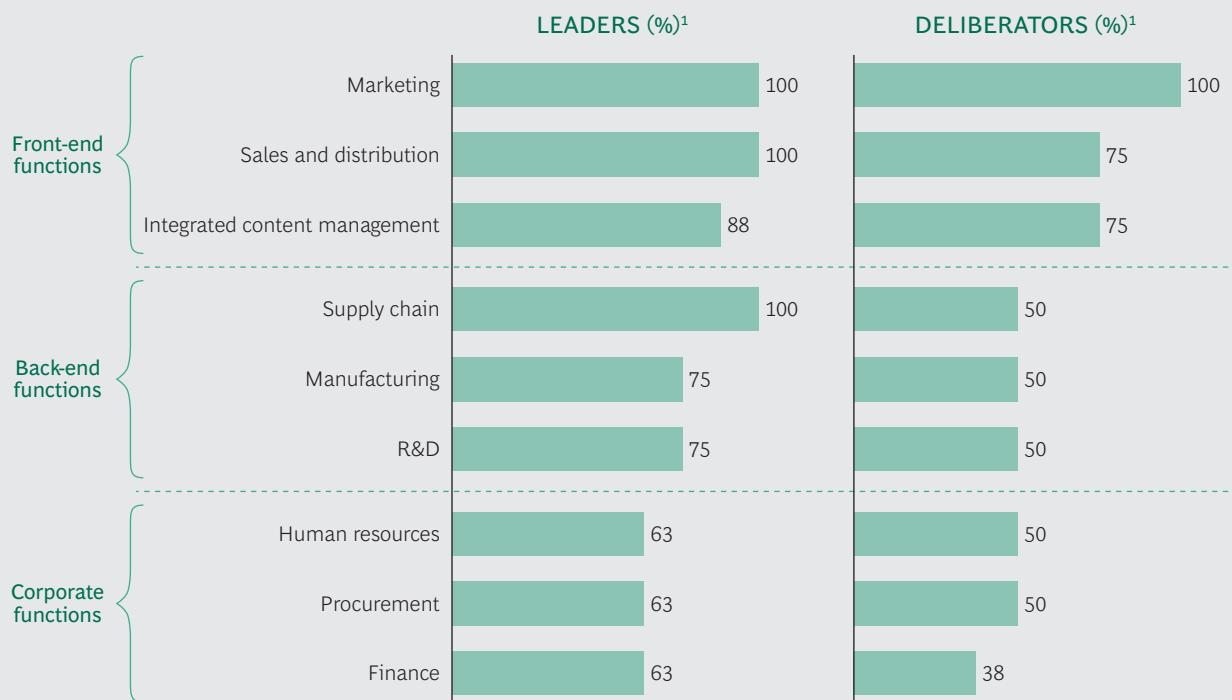
Leaders are the most avid users of innovation accelerators when compared with their counterparts. Of the survey participants that qualify as leaders, all have set up some kind of internal innovation lab to build new digital solutions, and most encourage their staff to participate in internal hackathons. These coding events bring programmers together, either physically or virtually, with the goal of turning an idea into a working prototype.

In addition, half of all companies in the leaders category have taken board seats on startups (often after making an investment in the startup), and half attend venture capital

firms' "demo days," which give companies in a VC firm's portfolio the opportunity to showcase their products and services. Both startup and VC relationships provide ways for CPG companies to hear about nascent ideas that may help their companies. CPG companies in other categories make use of innovation accelerators much less frequently; deliberators, in particular, tend to lack formal mechanisms for interacting with startups.

With their broader digital agendas, leaders are also more apt than deliberators to be using or planning to use new technologies, such as smart packaging (to track supply chain information), augmented and virtual reality (to help plant workers come up to speed on maintenance procedures), and machine or computer vision systems (to inspect goods as they are moving along a production line).

EXHIBIT 5 | Leaders and Deliberators Perceive the Digital Opportunity Differently

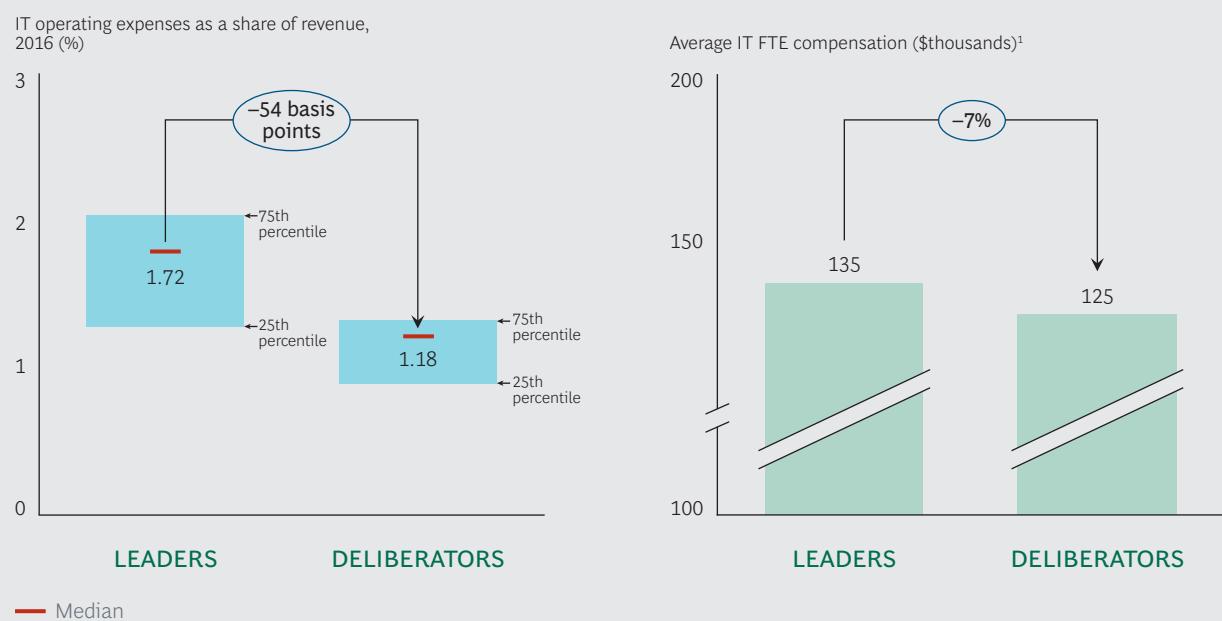


Sources: GMA Information-Technology Benchmarking 2013, 2015, and 2017; BCG analysis.

Note: Sample size is 16. Eight companies are leaders, and eight are deliberators.

¹Participants were asked, "Which functions in your company are covered under the scope of digital transformation?" The percentages reflect the level of consensus among leaders and deliberators about the value of adding significantly more digital elements to each function.

EXHIBIT 6 | Innovation Leaders and Deliberators Spend Differently

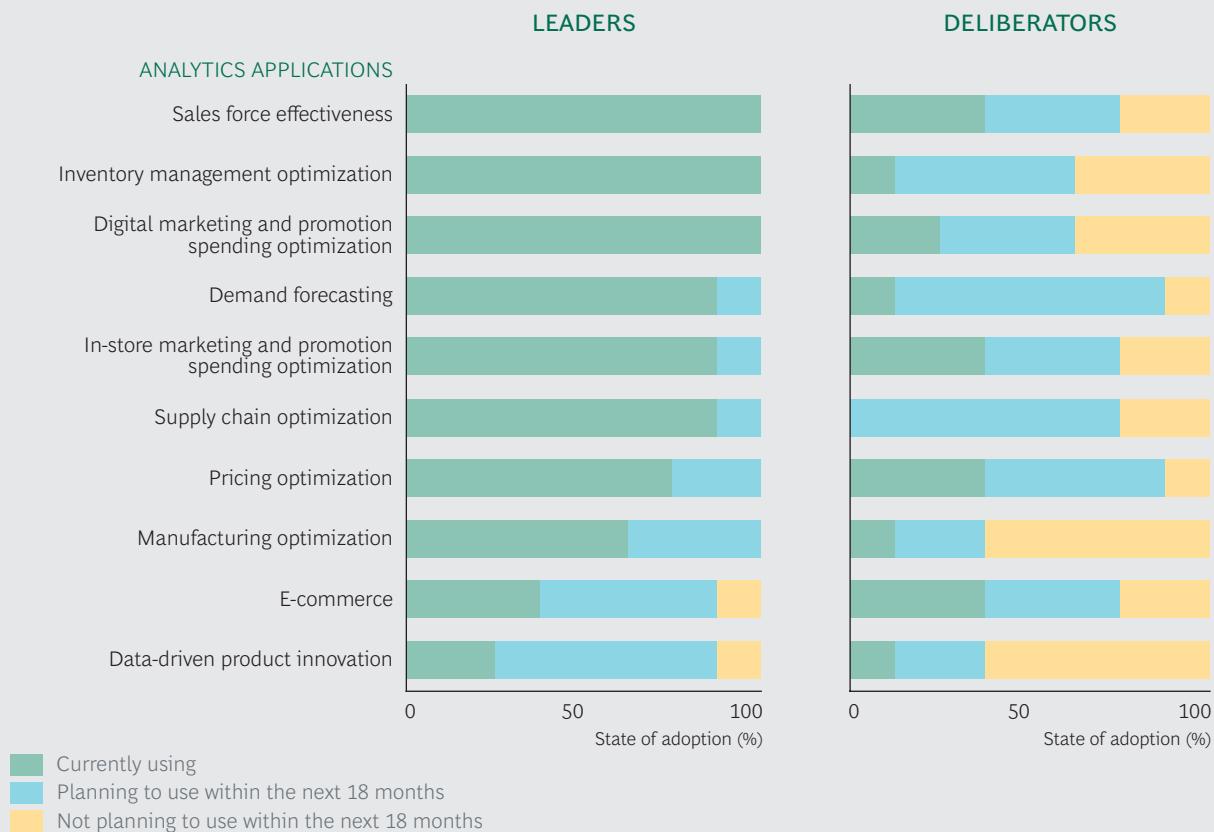


Sources: GMA Information-Technology Benchmarking 2017; BCG analysis.

Note: Sample size is 16. Eight companies are leaders, and eight are deliberators. IT operating expenses include depreciation. FTE = full-time equivalent.

¹Average reflects the arithmetic mean.

EXHIBIT 7 | Leaders Have Adopted Analytics Faster Than Deliberators



Sources: GMA Information-Technology Benchmarking 2013, 2015, and 2017; BCG analysis.

Note: Sample size is 16. Eight companies are leaders, and eight are deliberators.

SAAS IS NO LONGER A DIFFERENTIATOR

In previous reports, CPG companies were considered to be leading edge if they had shifted some of their IT workload to software as a service (SaaS) platforms and the cloud. (See *GMA Information-Technology Benchmarking 2015: Navigating the New World of IT in Consumer Packaged Goods*, BCG report, December 2015, and *GMA Information-Technology Benchmarking 2013: The New Mission for IT Consumer Packaged Goods*, BCG report, December 2013.)

Implementing these technologies is no longer a sign of innovation in CPG, because more and more companies are doing so. Underscoring the shift, one survey participant said: “I do not want to ever own or manage another piece of software again.”

In our 2015 survey, we found that the scope of CPG companies’ adoption of SaaS varied significantly: 15 application areas, on average, for heavy SaaS users and only 4, on average, for light SaaS users. In the past two years, the disparity has shrunk: we found that heavy users have implemented SaaS in 14 application areas, and light users have adopted it in 9 areas.

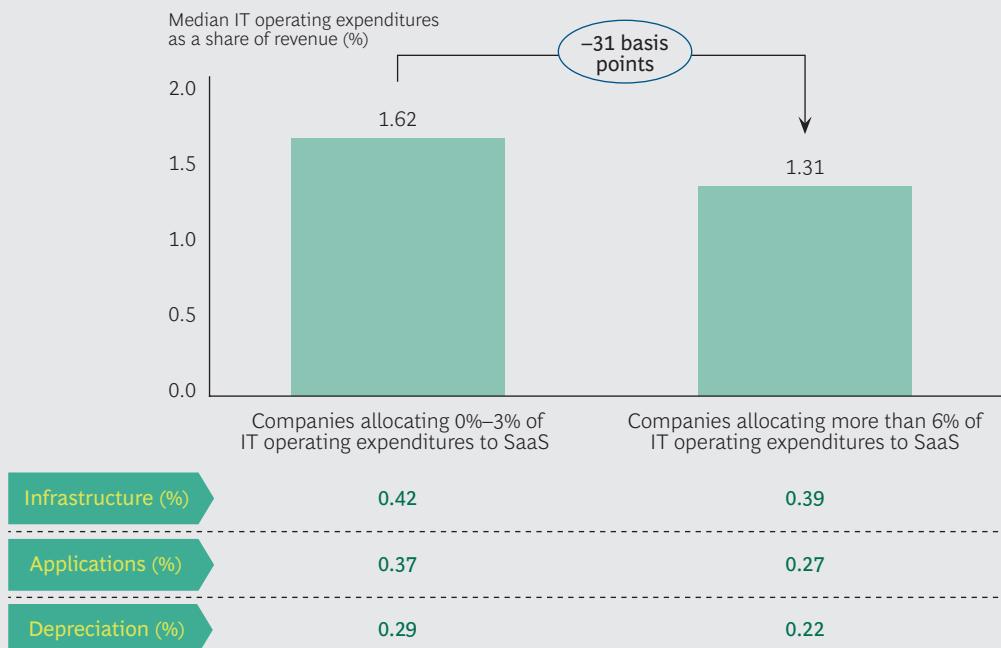
Some CPG IT organizations have had legitimate reasons for not investing in SaaS. Many couldn’t get the functionality and capabilities that they needed in off-the-shelf solutions. Others have been concerned about spotty internet connections and even outages. Such considerations have kept many companies from using SaaS for their most critical applications.

However, the scales are tipping toward SaaS and for several reasons. First, business people like the more intuitive, modern interfaces of SaaS software—a preference that CIOs are aware of. Second, CIOs recognize that SaaS software is going to improve rapidly given the resources that enterprise software vendors (such as JDA Software, Microsoft, Oracle, and SAP) are pouring into these offerings.

Third, in an era when budgets are under pressure, CIOs like the economics of SaaS. CPG companies that are heavy users of SaaS have application costs per dollar of revenue that are 10 basis points lower than companies that are light users. (For a \$10 billion CPG company, the difference translates into an annual savings of \$10 million.) The former also have lower infrastructure and depreciation costs. (See Exhibit 8.) CIOs can reinvest these savings in IT innovation, allowing them to self-fund growth-enabling technology investments.

As a result of these factors, the rate of SaaS adoption has increased significantly. Most CPG companies now rely on SaaS for undifferentiated but essential applications, such as email and payroll. More significantly, SaaS is starting to be used in areas where it previously wasn’t seen as a possibility. For instance, 22% of CPG companies now use a SaaS version of ERP, and 14% rely on a SaaS platform to support plant maintenance. (See Exhibit 9.) Because of companies’ growing use, SaaS

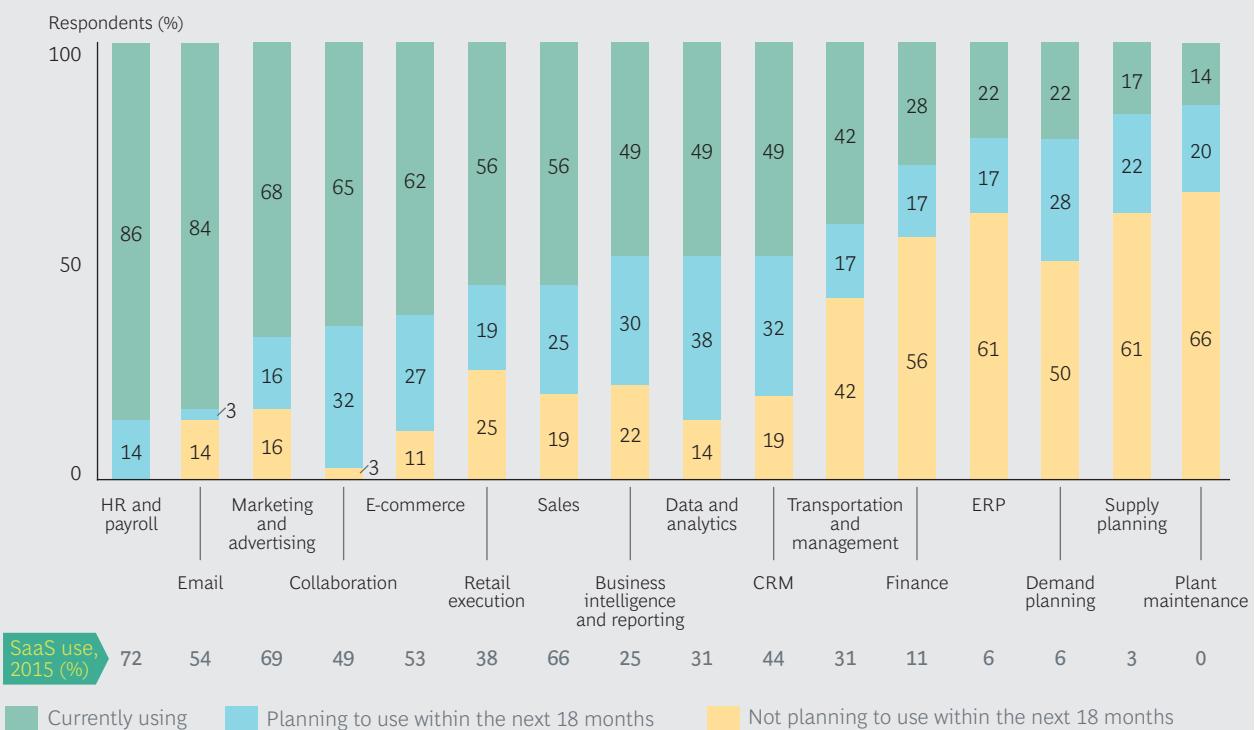
EXHIBIT 8 | IT Spending Is Lower When SaaS Is Used More Heavily



Sources: GMA Information-Technology Benchmarking 2017; BCG analysis.

Note: SaaS = software as a service. Sample size is 25. Ten of those companies allocated 0% to 3% of IT operating expenditures to SaaS, and 15 allocated more than 6% of IT operating expenditures to SaaS. Although some components of spending are shown here (such as infrastructure and applications), others (such as salaries) are omitted.

EXHIBIT 9 | How CPG Companies Use SaaS



Sources: GMA Information-Technology Benchmarking 2017; BCG analysis.

Note: Sample size is 37. SaaS = software as a service. CRM = customer relationship management. ERP = enterprise resource planning. Because of rounding, not all percentages add up to 100.

spending now accounts for about 6%, on average, of a CPG company's IT budget, compared with 3% two years ago.

Just as CPG companies have sharply increased their use of SaaS since 2015, so, too, have they expanded their use of cloud environments, including public clouds (such as Amazon Web Services) and private dedicated clouds. Some of this usage is exploratory—companies want to see what they can gain, and what they have to give up, by using the cloud for more of their computing and storage needs.

Exploratory or not, the usage numbers are growing: 47% of CPG companies now use a cloud platform to perform some testing of applications and provide quality assurance,

compared with 20% in 2015. Moreover, 41% now use a cloud platform to ensure production capacity for some enterprise applications, compared with 22% in 2016. CPG companies are also moving consumer-facing mobile applications to the cloud (50% are currently delivered through the cloud, compared with 36% in 2015) as well as analytics and big data applications (44% are currently in the cloud, compared with 33% two years ago).

Despite all of these changes, 73% of participants' IT workload still takes place in a manner that doesn't involve the cloud. This suggests that there are significant savings still to be realized.

THE CASE FOR AGILE DEVELOPMENT

ANY DISCUSSION OF IT innovation must include agile development methodologies. Although new to many traditional companies, agile development has been the approach of digital leaders—Amazon, Google, Netflix, and Spotify, for example—since they came into existence. Using agile methods, these companies have been able to release software updates much more quickly than they could using a waterfall model: often dozens of times, rather than once or twice, per year. The rapid cycling and the responsiveness enabled by agile development’s small-team approach have given its most faithful practitioners a huge productivity advantage.

What gives agile its edge is the involvement of a business manager.

What really gives agile development its edge, however, is the direct involvement of a marketing or business manager who has a significant stake in the software being developed. In agile development, this product owner meets with the software team weekly (sometimes even daily), helping to shape the final product and making course corrections in real time. If the IT application is complex

enough, the business person’s role is typically full-time. Having a product owner from the business side as a dedicated, standing member of an IT development team is a break from past practices—one that requires re-thinking organizational boundaries and finding new ways of working. But including a business manager can have big benefits—namely, much quicker development of high-quality software. (See the sidebar “General Mills’ Agile Approach Fosters Flexibility and Adds Value.”)

For many digital leaders, agile development has played a big role in surpassing rivals and taking the lead—and it continues to do so. If it seems unimaginable that anyone could overtake Google in search, Netflix in subscription video, or Amazon in e-commerce, it is largely because of the improvements these companies keep making to their core services through software updates. Google, Netflix, and Amazon don’t think in terms of upgrades to their service. The changes happen constantly and are largely imperceptible to outsiders. Over the years, though, their nonstop iterations have produced huge improvements in features, performance, and usability. These improvements have all been made using agile software development.

Successfully using agile is partly a function of identifying “products” and structuring teams around them. At an online retailer, for in-

GENERAL MILLS' AGILE APPROACH FOSTERS FLEXIBILITY AND ADDS VALUE

Six years ago, General Mills realized that it would have to make major improvements to its online properties, as more and more consumers were visiting websites such as BettyCrocker.com and Pillsbury.com. If the company wanted these visitors to return and to attract new ones, it would have to upgrade its websites' underlying software so that content changes could be made faster and functionality could be enhanced. The necessary improvements also included a mobile-first strategy reflecting the growing importance of smartphone and tablet users.

Given General Mills' size (more than \$15 billion in revenue) and its assortment of online assets, such an upgrade would normally be set up as a large IT project. The changes would be worked on for months before any new code would be released, creating a situation where the websites would take big jumps in functionality but at infrequent intervals. Such a project might not even start until another large IT project concluded, freeing up resources.

General Mills opted for a new approach. It pulled people from several existing IT projects and created a set of agile development teams. The teams' job was to continually improve the company's online properties—not for a predetermined amount of time, but permanently, and with ongoing funding. Each team included a business executive who was responsible for identifying necessary new features and functionality; it fell to the technologists on the teams to determine how to deliver those requirements.

The coding was done in three-week sprints—an agile best practice that let General Mills provide visitors with something better (faster response times, more content, or more intuitive interfaces) virtually every time they came back to one of the websites. The short coding bursts

also allowed General Mills' development teams to quickly shift priorities—something the company wanted to enable.

"In the old world, that would have been almost impossible," said Don Monk, who was a marketing solutions director at General Mills' Global Business Solutions unit. In a traditional approach to software development, switching priorities often means stopping some monolithic project that is well underway. "We all have a reluctance to do that," Monk noted.

General Mills is now expanding its use of agile software development to areas such as supply chain management, big data analytics, e-commerce, and revenue management. The goal is for agile software development to eventually become the standard approach, used for Greenfield software projects and incremental changes to existing systems.

In addition to the speed and flexibility enabled by agile, Monk likes the requirement of having a "product owner"—the overseer from the business side—constantly participating in discussions about feasibility, cost, and value.

This kind of business-IT collaboration is not yet common in the CPG environment. "Often you're not a partner with your business; you're just a service that's trying to keep costs low," said Monk, who is now vice president of solutions development and information technology in the Global Business Solutions unit. By contrast, he said, "When you get into the world of agile, they're with you, and they see exactly what's happening."

stance, teams may be organized around groups of features. For example, payments, the shopping cart, search, and the loyalty program could all be considered products with their own full-time staffs.

Bringing Agile's Ethos to CPG

Some CIOs argue that agile development doesn't work everywhere. The argument is that it can't be used for traditional companies' foundational systems, because such systems' monolithic nature (with all components being tied together) isn't a good fit for the agile approach of incremental changes. Those unsure about agile's potential also see it as impractical in situations where software development is being done on an outsourced basis or in an overseas office, because of the difficulty of staying in sync with evolving business objectives. There is also a suspicion that agile development increases IT costs.

When implemented properly, using agile methods lowers software development costs.

BCG's experience offers a more optimistic view in all of these areas. With respect to foundational systems, we think the high degree of collaboration fostered by agile development reduces errors and speeds implementation times.

Moreover, we know many outsourcing vendors that would like to use agile development with their clients, precisely because quality improvements can be made quickly. We think this is something CPG companies should consider, provided they're in a position to work collaboratively with their vendors and execute their software projects as a series of sprints (two- to four-week development cycles). Working this way with third-party vendors also requires a shift in the type of contracts that companies use. Basically, a company would pay for the use of a team, not for delivery on a set of specifications, so time-and-materials contracts make more sense than fixed-price contracts.

As for the argument that IT costs go up when agile development is used, we haven't seen it. In fact, it's our experience that when implemented properly, using agile methods lowers software development costs by 15% to 20%.

Agile is not strictly an approach for internet and software companies. For instance, financial services companies are adopting agile development for many applications. This makes sense because very few bank activities can't be handled by systems and software; extending credit, handling payments, and investing are all, in a sense, digital activities.

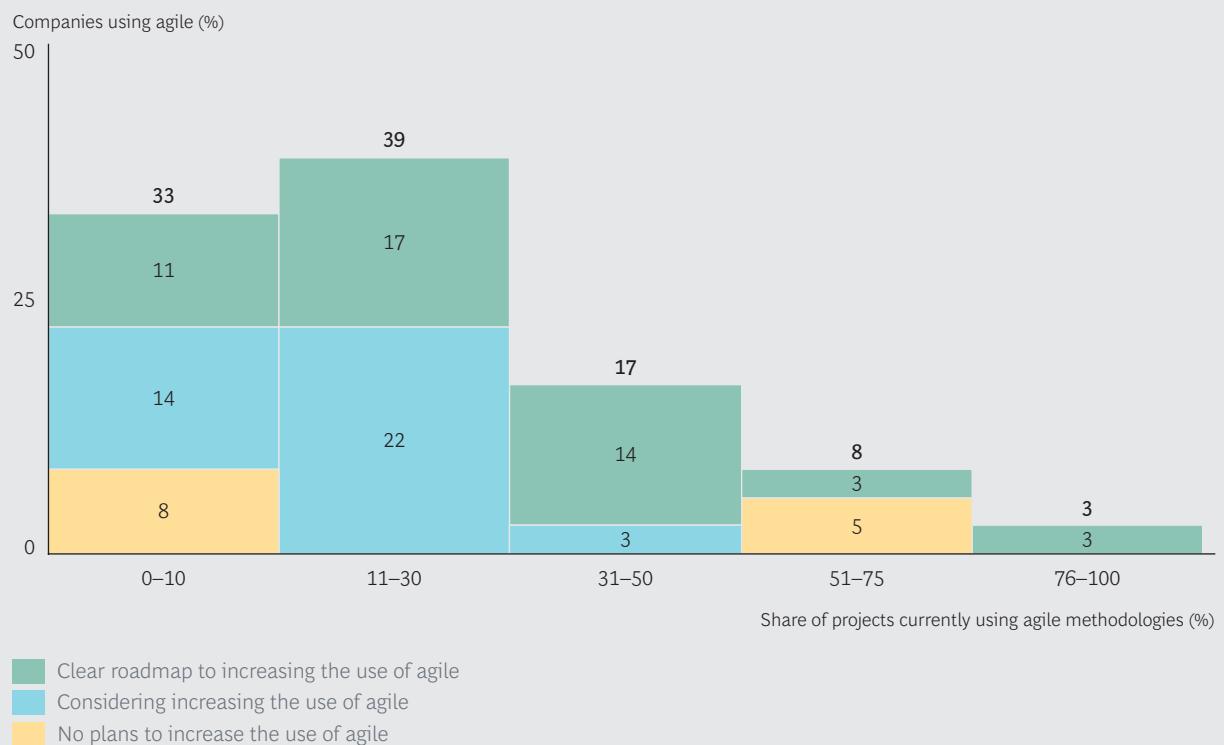
CPG by definition deals with physical products, so it isn't surprising that the sector would lag behind others in rethinking its approach to software development and in implementing agile methodologies. Today, much like two years ago, the majority of CPG companies use an agile development approach for less than one-third of their projects. Only about half of all companies have a definite plan to increase their use of it. (See Exhibit 10.)

This needs to change. No CPG company is suddenly going to replace Amazon or Google as the pacesetter in digital innovation. The scope of what companies do must reflect their starting points. But putting off the imperative of agile development would be a mistake. In five years, a CPG company that isn't using agile for most of its development projects will likely find it difficult to be competitive in terms of digital technology. The imperative to innovate isn't going to weaken; it's only going to intensify.

All Agile, All the Time

When companies use agile development all the time, for all their software projects—an approach we call agile at scale—there tends to be materially better business-IT alignment. With agile at scale, the risk of the IT organization's working in isolation is reduced, as is the risk of success metrics being poorly defined or not tracked. The product teams work through an ever-changing backlog of features that the product owner prioritizes on the basis of business value. And the metrics are ones that a business manager or company director would readily grasp: revenue growth,

EXHIBIT 10 | CPG Companies' Plans for Agile Development Within the Next 18 Months



Sources: GMA Information-Technology Benchmarking 2017; BCG analysis.

Note: Sample size is 37.

the number of engaged users, the number of recipes shared on Facebook, digital coupon redemption rates, the percentage of improvement in forecasting accuracy, and so on. The measures are as varied as the companies doing the development, but in all cases they are directly relevant to the business.

Companies that implement agile at scale tend to have higher IT productivity, more self-managing teams, fewer postrelease issues that affect customers, and more tangible business results. In the years ahead, agile at scale will be an invaluable tool in the race to innovate.

APPENDIX

The 37 participants in this year's survey are a mix of companies, subsidiaries, and cooperatives. They are listed here in alphabetical order. (See the table.)

The information provided by the survey participants allowed BCG to benchmark companies on the basis of 31 performance metrics and gain insights. The performance metrics covered IT organizations' expenditures on staffing and various areas of technology.

We encourage CPG companies to participate in our future benchmarking surveys. Although

everyone can use the data in this document for comparative purposes, survey participants gain exclusive access to all 31 metrics and an iPad or web app to run their own customized analyses. The iPad or web app is a dynamic application that allows users to directly compare their IT performance with that of the other companies in the database. More than 400 summary and comparison charts are available.

To find out more about the app and how to participate in the survey, visit cpgit.bcg.com or contact any of the authors for more information.

PARTICIPATING COMPANIES

Agropur Cooperative	Land O'Lakes
Blue Diamond Growers	Luigi Lavazza
BRF	Maple Leaf Foods
Bumble Bee Seafoods	Marico
Bush Brothers & Company	Mars
Campbell Soup Company	McCormick & Company
Conagra Brands	Molson Coors Brewing Company
Danone	Mondelēz International
E.&J. Gallo Winery	Natura Cosméticos
General Mills	Nomad Foods
Henkel	PepsiCo
The Hershey Company	Procter & Gamble
Hormel Foods	Reckitt Benckiser Group
The J.M. Smucker Company	Reily Foods Company
Johnson & Johnson (the consumer division)	Scandinavian Tobacco Group
Kellogg Company	Tyson Foods
Kimberly-Clark	Unilever
King's Hawaiian	Vinamilk
The Kraft Heinz Company	

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The Boston Consulting Group has published other reports and articles that may be of interest to readers of this report. Recent examples include the following.

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An article by The Boston Consulting Group, July 2017

Designing the Tech Function of the Future
An article by The Boston Consulting Group, July 2017

Taking Agile Way Beyond Software
An article by The Boston Consulting Group, July 2017

Leaner, Faster, and Better with Devops
An article by The Boston Consulting Group, March 2017

GMA Information-Technology Benchmarking 2015: Navigating the New World of IT in Consumer Packaged Goods
A report by The Boston Consulting Group, December 2015

NOTE TO THE READER

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